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**PERSONALITY, TOP MANAGEMENT SUPPORT,
CONTINUANCE INTENTION TO USE ELECTRONIC
HEALTH RECORD SYSTEM AMONG NURSES IN
JORDAN**

ADI (MOHAMMAD RAMZI) ABED AL MAJID ALSYOUF



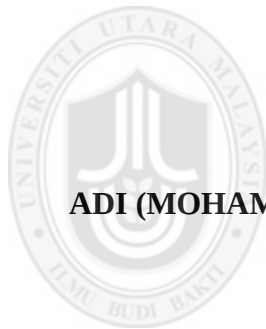
UUM
Universiti Utara Malaysia

**DOCTOR OF PHILOSOPHY
UNIVERSITI UTARA MALAYSIA
September 2017**

**PERSONALITY, TOP MANAGEMENT SUPPORT, CONTINUANCE INTENTION TO
USE ELECTRONIC HEALTH RECORD SYSTEM AMONG NURSES IN JORDAN**

By

ADI (MOHAMMAD RAMZI) ABED ALMAJID ALSYOUF



UUM
Universiti Utara Malaysia

**Thesis Submitted to
Othman Yeop Abdullah Graduate School of Business,
Universiti Utara Malaysia,
in Fulfillment of the Requirement for the Degree of Doctor of Philosophy**



Kolej Perniagaan
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Intention to Use Electronic Health Record System
Among Nurses in Jordan**

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ABSTRACT

Electronic health record system (EHRs) is preferred as standard documentation to track patient information and office visits. It is acclaimed as technological breakthrough capable to improve the healthcare industry's service delivery and system quality. Accordingly, Jordanian government initiated EHRs implementation in all public hospitals. However, only eleven out of 35 public hospitals have fully implemented EHRs and their usage remains low. Moreover, empirical research associated to the particular concern of EHRs is insufficient and the effort to appraise it is low considering its extensive ongoing implementation. Besides, comprehending and explaining nurses' continuous intention (CI) to use EHRs are crucial to gauge EHRs usage in Jordan. Considering the problem, this study highlighted on continuous intention (CI) of nurses to use EHRs model by incorporating the following theories; the Unified Theory of Acceptance and Use of Technology (UTAUT), Expectation-Confirmation Theory (ECT) and Five Factor Model (FFM). The model is insinuated to investigate whether UTAUT factors namely effort expectancy, performance expectancy, social influence, facilitating conditions, FFM domains (conscientiousness, extraversion, neuroticism, openness to experience, and agreeableness) and Top Management Support (TMS) predict nurses' CI to use EHRs. Total responses are 497 nurses. Partial Least Squares technique used for analysis. Results revealed significant positive relationship between UTAUT factors and CI. However, there is no significant evidence of relationship between TMS and CI. The study also disclosed significant mediating influence of performance expectancy on two separate hypotheses concerning two predictors namely agreeableness and openness to experience on CI. Additionally, the study revealed significant moderation impact of conscientiousness on the relationship between both performance expectancy and social influence with CI. The study has illustrated important attention to substantive differences between acceptance and continuance to use behaviors.

Keywords: unified theory of acceptance and use of technology, five factor model, top management support, electronic health records, nurses.

ABSTRAK

Sistem rekod kesihatan elektronik (EHRs) dipilih sebagai dokumentasi standard untuk mengesan maklumat dan lawatan pesakit. Sistem ini diiktiraf sebagai kejayaan teknologi yang mampu meningkatkan penyampaian perkhidmatan dan kualiti sistem industri penjagaan kesihatan. Oleh itu, kerajaan Jordan melaksanakan EHRs di semua hospital awam. Namun, hanya sebelas daripada 35 buah hospital awam melaksanakan EHRs sepenuhnya dan penggunaan EHRs masih rendah. Malahan, hasil penyelidikan empirikal berkenaan EHRs didapati belum mencukupi dan usaha untuk menilai penggunaan sistem EHRs masih rendah walaupun implementasi berlangsung secara ekstensif. Selain itu, usaha untuk memahami dan menerangkan CI jururawat untuk menggunakan EHRs adalah penting dalam mengukur penggunaan EHRs di Jordan. Berdasarkan masalah tersebut, kajian mengetengahkan model niat berterusan (CI) jururawat untuk menggunakan EHRs dengan menggabungkan Teori Bersepadu Penerimaan dan Penggunaan Teknologi (UTAUT), Teori Jangkaan-Pengesahan (ECT) dan Model Lima Faktor (FFM). Sebuah model dicadangkan untuk melihat samada faktor UTAUT iaitu jangkaan usaha, jangkaan prestasi, pengaruh social dan keadaan yang memudahkan, lima domain personaliti (*conscientiousness*, *extraversion*, *neuroticism*, *openness to experience*, and *agreeableness*) dan sokongan pengurusan tertinggi dapat meramal CI jururawat untuk menggunakan EHRs. Sejumlah 497 maklum balas diterima daripada jururawat. Teknik kuasa dua terkecil (PLS-SEM) digunakan untuk menganalisis data. Hasil kajian menunjukkan hubungan positif yang signifikan di antara faktor UTAUT dengan CI. Namun, tiada bukti hubungan yang signifikan di antara sokongan pengurusan tertinggi dengan CI. Kajian juga mendedahkan peranan jangkaan prestasi sebagai pengantara yang signifikan ke atas hubungan diantara dua variabel bebas iaitu *agreeableness* dan *openness to experience* dengan CI. Selain itu, kajian menunjukkan kesan penyederhana *conscientiousness* yang signifikan ke atas dua hubungan iaitu antara jangkaan prestasi dengan CI, dan antara pengaruh sosial dengan CI. Kajian menjelaskan perhatian yang imperatif perlu diberi ke atas perbezaan substantif di antara tingkah laku penerimaan dan tingkah laku meneruskan penggunaan.

Kata kunci: teori bersepadu penerimaan dan penggunaan teknologi, model lima faktor, sokongan pengurusan tertinggi, rekod kesihatan elektronik, jururawat.

ACKNOWLEDGEMENT

First and foremost, all thanks and praise be to Almighty Allah the Merciful, all hearing and all seeing who has answered our prayers to attain this noble quest. Alhamdulillah wa Lillahil Hamd. I am indebted to my supervisor Dr. Awanis Ku Ishak for her constructive contributions and criticisms, untiring support, guidance and patience with me throughout the period of my study. Your understanding, scholarly advice, weekly submissions and the numerous presentations have indeed made me a better and more equipped scholar and for this, I will eternally remain grateful. A special thank goes to the most important people in my life. First, to my parents, “Mohammad Ramzi” Alsyouf and Amneh Etoom, their love and prayer have given me strength to complete this study. Not to forget, thank you to all my family members; My lovely sisters Salam Alsyouf and Saja Alsyouf, also my brother Muath Alsyouf for being kind and supportive. Also, special thanks for my Beloved Uncle Professor Imad Alsyouf for his encouragement and support through my PhD journey. Finally, I would also like to thank my friends and colleagues specifically, Abd Alwali Khassawneh, Abdullah Alsaad and Ahmad Alshira’h whom have contributed in one way or another to help me complete this work successfully and for their help and encouragement.



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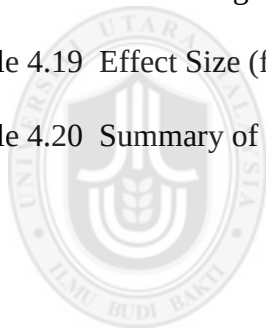
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LIST OF ABBREVIATIONS

A	Agreeableness
AVE	Average Variance Extracted
C	Conscientiousness
CIS	Clinical Information System
CMV	Common Method Variance
C-TAM-TPB	Combination of TAM and TPB Theory
E	Extraversion
ECT	Expectation-Confirmation Theory
EE	Effort expectancy
EMR	Electronic Medical Records
EHR	Electronic Health Record
EHS	Electronic Health Solution
FC	Facilitating Condition
HIS	Health Information System
ICT	Information and Communications Technology
IDT	Innovation Diffusion Theory
IS	Information System
IT	Information Technology
MM	Motivational Model
MPCU	Model of PC Utilization
N	Neuroticism
O	Openness to Experience
PE	Performance Expectancy

PhD	Doctor of Philosophy
PLS	Partial Least Squares
Q2	Construct Cross Validated Redundancy
R2	R-squared values
SCT	Social Cognitive Theory
SEM	Structural Equation Modelling
SI	Social Influence
SPSS	Statistical Package for the Social Sciences
TAM	Technology Acceptance Model
TMS	Top Management Support
TPB	Theory of Planned Behaviour
TRA	Theory of Reasoned Action
UTAUT	Unified Theory of Acceptance and Use of Technology
pc	Composite Reliability



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CHAPTER ONE

INTRODUCTION

1.1 Background of Study

Globally, healthcare systems have witnessed soaring pressure on both their physical and monetary resources because of increases in patient needs and the attendant operational overheads. Consequently, investing in information systems with a view to increasing the efficiency of medical systems and in decreasing costs related to running healthcare facilities has become a paramount issue for both governments and their agencies (Ayanso, Herath, & O'Brien, 2015). Basically, using information systems in healthcare involves compiling patient records from diverse sources into a central digital repository (Ayanso et al., 2015).

In the healthcare literature and the related extant practice, patient health record systems are known as electronic health records (EHR), clinical information systems (CIS), clinical information technology (clinical IT), and Electronic Medical Records (EMR) (Ayanso et al., 2015). These systems are noted for their robustness in managing a wide-range of information related to specific aspects of patient care, such as medical records, appointments, theatre management and ward reporting (Marques, Oliveira, Dias, & Martins, 2011).

Notably, electronic health records (EHR) software is sought after increasingly as the standard for documentation for tracking patient information and office visits (Steinfeld & Keyes, 2011). EHR has been acclaimed as a technological breakthrough that is capable of significantly altering the future of the healthcare industry in terms of improved service delivery and systems quality (Gilani, Iranmanesh, Nikbin, & Zailani, 2016).

In comparison to conventional paper-based methods, EHR systems ensures the legibility, accuracy and ease of retrieval of records for other organizational uses. Moreover, EHR systems are seen as catalysts for ensuring best medical practices, which eventually will lead to better patient management and related outcomes. Succinctly put, EHR systems can reduce medical errors, save operational time and costs, and provide opportunities for growth and general improvements in health-care practices (Daim, Behkami, Basoglu, Kök, & Hogaboam, 2016; Gilani et al., 2016; Ayanso et al., 2015; Boswell, 2011, 2013).

Moreover, EHR systems have been seen to be catalysts for ensuring the use of best medical practices, which eventually leads to better patient management and related outcomes. Succinctly put, EHR systems can reduce medical errors, save operational time and costs, provide opportunities for growth and general improvements in healthcare practices (Daim, Behkami, Basoglu, Kök, & Hogaboam, 2016; Gilani et al., 2016; Ayanso et al., 2015; Boswell, 2011, 2013).

Among other benefits, an EHR system provides remote and widened access for sharing patient information across networks between and among primary, secondary and tertiary healthcare providers so as to promote higher-quality healthcare service delivery (Daim et al., 2016; Gilani et al., 2016; Ayanso et al., 2015; Boswell, 2011, 2013). The importance and benefits of such a network-based information-sharing system rest in the fact that this system also aids administrative decision making relating to patient care services (Ammenwerth et al., 2003; Caison, Bulman, Pai, & Neville, 2008; Steinfeld & Keyes, 2011).

In the current era of globalization, the use of IT has been pervasive. Many countries are trying to utilize IT for development because, without up-to-date technologies and computerized devices, growing and competing is almost impossible in the contemporary world. Hence, in today's information and communication technology (ICT) world, sharing knowledge among different sectors of the economy has become necessary (Jones & Groom, 2011).

Many countries like India, China, Germany, the United States, and the Russian Federation are making their best efforts to maintain information systems and to develop their own knowledge-exchange systems to achieve a competitive edge. In developed countries in European countries like Germany, France, the United Kingdom, Norway, Sweden and other countries in the European Union, these information systems are so developed in the field of medicine that most hospitals are linked with each other electronically (European Commission, 2014).

In developing countries, such an advancement has not been so marked, but governments are providing incentives to organizations and encouraging them to use up-to-date information systems (Gambo, Oluwagbemi, & Achimugu, 2011). These include countries in the Arab world. Over the past decade ago or so, Arab countries have shown much growth and change in the healthcare sector especially in the Middle East. One reason is that the people of the Arab world are now demanding accountability and inclusion from their government at all levels (Alsadan, Metwally, Anna, Jamal, Khalifa, & Househ, 2015).

Consistent with the worldwide interest in Health Information Systems (HIS), Jordan has begun relying on HIS to improve the Jordanian healthcare sector and to meet the challenges that global competitiveness poses (EHS, 2016b). This new direction was grounded in the government's belief that HIS has the potential to augment the service quality and productivity of the healthcare sector and increase competitiveness by reducing costs and growing the effectiveness and efficiency of health services (EHS, 2016b).

Today, the Jordanian healthcare industry is noted as being among the best in the world best (Khammash, 2012). In 2010, the World Bank ranked Jordan as the leading medical tourism destination in the Middle East and the fifth-ranked centre in the world. The reputation for this ranking owes its success to several accredited hospitals in Jordan at both the local and international levels and the high quality of medical services offered in Jordanian hospitals (Khammash, 2012). Additionally, a considerable number of the country's highly trained healthcare practitioners have gained expertise and skills from

global healthcare service leaders like the United Kingdom, Germany and the United States. Furthermore, the quality of training received by its nurses and the therapeutic natural resources is high for example, Ma'in Springs and the Dead Sea (Khammash, 2012).

The Jordanian healthcare industry has been striving hard to remain competitive in the global sphere by delivering high-quality healthcare services. Currently, the industry is witnessing a convergence of care suppliers, payer sources, providers, and consumers (Rawabdeh, 2007). In addition, Rawabdeh (2007) mentioned with this emerging interdependence comes the heightened need for everywhere access to information and services. Such access helps industry members confront universal challenges, including pressures to reduce costs, intensive competition, the complexities of managing information as people and companies integrate, and an ongoing need to gain and retain a competitive advantage through growth and diversification.

Like healthcare systems in other countries, the Jordanian healthcare system has encountered many challenges and problems related to accessibility, limited quality improvement programs, inefficient use of available resources, poor management and inappropriate health information systems (Ajlouni, Dawan, & Diab, 2015; Ajlouni, 2010). Because these problems have become critical for the Jordanian government and its agencies, overcoming these challenges through investing in information will play a critical role in the Jordanian healthcare industry. This role is especially vital in expediting unit-level and organizational-level access to up-to-date information on patients, reducing

clinical and medical practice-related errors, making operational improvements in the healthcare system and improving general decision-making processes (Daim, Behkami, Basoglu, Kök, & Hogaboam, 2016; Gilani et al., 2016; Ayanso et al., 2015; Boswell, 2011, 2013).

In view of these multiple benefits, the Jordanian government has implemented several initiatives to reform the IT infrastructure and the healthcare sector environment to increase IT usage among and between both healthcare organizations and healthcare providers during the last decade. For example, in October 2009, Jordan launched the E-health program dubbed “Hakeem” by the Electronic Health Solutions company (EHS). Unfortunately, despite the announced benefits of the program, only 11 of the 35 public hospitals across the nation have implemented the program. Though the program has been implemented in several healthcare organizations, the number of empirical endeavours that have been conducted to measure the success of the program remains scant. The absence of studies of the continuance intention of users including all healthcare providers, but especially including nurses utilizing the system, is quite worrisome.

The healthcare system is already complex, and the introduction of a new system requires that individual roles be changed, the interrelation between and among personnel using the systems must be friendly, and potential users must be ready enough to accept the new system. Also, a balance must exist between business processes, often referred to as the “socio-technical” aspects of change, which is the interaction between two interrelated

systems, the technical system and the social system, within a particular environmental context (Greenhalgh et al., 2008).

In addition, the complexities of the technology have been attributed as another reason for the low adoption rates (Lluch, 2011; Venkatesh, Sykes, & Zhang, 2011; Thakur, Hsu, & Fontenot, 2012; Avgar, Litwin, & Pronovost, 2012; Cresswell & Sheikh, 2013). Complexity is one issue, and scale is another. As Hanseth (2007) noted the bigger the scale of a new technology project in healthcare, the greater the chances of the failure to adopt. Simultaneously, Health Information Systems such as the EHR open new frontiers and experiences to which healthcare staff must adjust that did not previously exist. Certainly, this process can create challenges that need to be addressed accurately to ensure the prompt adoption and continuance usage of a system by the personnel in the health industry and consequently to achieve the successful implementation for the purposes for which it was introduced (AL-Hadban, Hashim, & Yusof, 2016; Cresswell & Sheikh, 2013; McGinn et al., 2011).

Consequently, complexity might discourage workers in the healthcare industry from using new technology because they would be required to attend training programs. Doing so adds to the already time-constrained burdens associated with their already loaded schedules (Boonstra & Broekhuis, 2010; McGinn, Grenier, Duplantie, Shaw, Sicotte, Mathieu, & Gagnon, 2011).

Also, the extant IT and IS literature has also noted that the introduction and implementation of Health Information Systems has faced opposition, low acceptance and, in some cases, failures (Kabik, 2014; Al-Hilfi, Lafta, & Burnham, 2013; Novak, Anders, Gadd, & Lorenzi, 2012; Holden & Karsh, 2010). Lanzolla and Suarez (2012) explained the relationship between technology adoption (i.e., the purchase of a technology) and technology use. They noted that, across a myriad of organizations and industries, under-utilization of new technologies has been witnessed even after adoption. These industries are faced with the rising problem of “shelfware”, which refers to the under-utilization and/or abandonment of software (McCafferty, 2013).

This is characteristically known as IT project failure, the consequences of which lead to interferences in daily operations and attendant substantial financial losses. Sadly, reliable industry-related studies have documented that only half of all information and communications technologies (ICT) outsourcing projects are successful (Gefen, Wyss, & Lichtenstein, 2008). Meanwhile, though huge financial and related resources have been put into public sector IT projects, varying degrees and levels of failures have marred the effective delivery of services required of these systems (Budzie & Flyvbjerg, 2012).

In addition, despite impressive advances in hardware and software capabilities, the troubling problem of underutilized systems (Venkatesh & Davis, 2000) such as in Jordan continues. As IT innovations are thought to raise the productivity and quality of healthcare services, the expectation was that usage of these technologies would reach a higher rate. But, contrary to this hope, the usage of IT technology has remained relatively

low in the Jordanian environment, as the Global Information Technology Report ranked it as 45th in 2009 and that the rank dropped further to 59th of the 142 countries rated in 2014 (GITR, 2014). Moreover, according to the World Health Organization (WHO), the Jordanian healthcare system ICT Development Index rank dropped from 74 in 2011 to 76 in 2015 among the 125 countries listed in the report. These worrisome indicators are one of the primary factors for investigating the reasons behind this decline despite all the efforts to increase HIS usage in the public sector (WHO, 2015).

Despite all the efforts to implement EHRs, the mere acceptance of the use of EHRs does not ensure its continuance utilization. New users may re-evaluate their previous acceptance decision or may change their opinions based on psychologically motivated factors (Bhattacharjee & Lin, 2015). This a process that deserves additional study.

In addition, the processes involved in the adoption and use of an information system (IS) are critical in delivering the service for which it was set up. Differences between the pre- and post-adoption behaviours of users based on adoption stages. Insofar as the initial stage of pre-adopting an IS is critical and important, the first stride in its successful implementation and assuring the long-term sustainability and success of IT depends greatly on its initial acceptance and continued use (Bhattacharjee & Lin, 2015; Bhattacharjee, 2001). On a related note, HIS is available in hospitals; however, its use and continued use by the staff of the hospitals is not guaranteed (Avgar et al., 2012). Consequently, it is important to understand the attitudes of staff, which is a critical factor for adopting and using HI because the adoption and sustained usage of technology is a

precondition for its success (Ward, Stevens, Brentnall, & Briddon, 2008; McGinn et al., 2011; Cresswell & Sheikh, 2013).

Though numerous empirical academic papers have focused on the pre-adoption behaviours related to EHRs among healthcare professionals (Morton & Wiedenbeck, 2009), studies on post-adoption behaviours remain lacking. This lack of understanding can be problematic. For example, Gilani et al. (2016) asserted that a lack of understanding of factors prompting adoption in a system over time may make key decision makers, policy makers and leaders unable to ensure the optimal use of an EHR system in healthcare facilities.

A few decades ago, a myriad of models and theories were developed and proposed with the aim of identifying factors that influence the acceptance and use of IT, especially from the point of view of the end user (Davis, Bagozzi, & Warshaw, 1989).

However, to date, very few theories exist with respect to IT continuance, compared, for instance, with theories of IT acceptance (first-time use), such as innovation diffusion theory, the technology acceptance model (TAM), the theory of planned behaviour (TPB), social cognitive theory, and the unified theory of technology adoption and use (UTAUT) (Bhattacharjee & Lin, 2015).

However, recent research indicates that some continued IT usage may be habitual, that is, based on repeated behavioural sequences that are automatically triggered by environmental cues (Kim & Malhotra, 2005; Limayemet al, 2007), rather than purposeful behaviours. Other research suggests that IT continuance may be based on affective or emotional reactions such as cognitive absorption or satisfaction (Agarwal & Karahanna, 2000).

While ECT has been a reasonable start, as research builds in this area, it is important to consider alternative theoretical perspectives to provide for an improved explanation of IT continuance (Bhattacharjee & Lin, 2015). As Poole and Van de Ven (1989) stated, leveraging theoretical tensions between different theoretical perspectives can “stimulate the development of more encompassing theories” (p. 563). Such model comparison and unification has helped advance the understanding of research on IT acceptance (e.g., Venkatesh et al, 2003) and software project escalation (Keil et al., 2000).

The Unified Theory of Acceptance and the Unified Theory of Acceptance and Use of Technology (UTAUT) model (Venkatesh, Morris, Davis, & Davis, 2003), which synthesises 14 constructs extracted from eight established models and theories on IT acceptance, offer important insights. The UTAUT has proposed constructs that influence the intention to use as well as the actual use of IT. These factors are: 1) performance expectancy (PE), 2) effort expectancy (EE), 3) social influence (SI), and 4) facilitating conditions (FC). The essence of these factors is that they concentrate on how users perceive the usefulness of a system in increasing their productivity. These factors also

explain the ease with which people can learn to use a system. In addition, the role of significant persons in their places of work influences the behaviours of people with respect to their use of an IT. Also, the perceptions of the resources and support available to use the system have impacts (Brown & Venkatesh, 2005; Venkatesh et al., 2003).

The focus of the UTAUT and similar models is on predicting a single behaviour, but the events that occur after adoption are not considered (Maillet et al., 2015; Wolfenden, 2012; Benbasat & Barki, 2007). However, in the process of determining a behaviour, attitude is examined before behavioural intention and the actual use of the system. Upon implementation of the EHR, measuring a user's continuance intention to use after his involvement with the actual use of the EHRs would be appropriate, without modifying the intention concept that was employed in UTAUT. Consequently, the Expectation-Confirmation Model (Bhattacharjee, 2001) proposes an affective-based view of a user's continuance intention to use, which is similarly related to how attitudes toward the system have been measured. This has yet to be used in relationship to the Technology Acceptance Model (TAM) or the UTAUT (Maillet et al., 2015).

The present study builds on this stream of research (Maillet et al., 2015; Venkatesh, Thong, Chan, Hu, & Brown, 2011; Tao Zhou, 2011; Bhattacharjee, 2001), by examining how such use supports the activities of users and sense making of the information. Therefore, this study employed continuance intention in the UTAUT model instead of intention as a dependent variable due to the absence of studies of the continuance intentions of healthcare workers such as physicians, nurses, and staff to use an EHR

system in Jordan. This gap is quite worrisome. Wolfenden (2012) said that a lack of clarity and a scarcity of empirical underpinnings existed on the application of the UTAUT in the healthcare setting, especially on the factors that are most critical for clinicians to contemplate when considering the adoption of a new technology.

In addition, one shortcoming of the UTAUT is, as Barnett et al. (2015) noted, that UTAUT does not consider individual factors in its ability to explain intention (Alrawashdeh, 2011; Dadayan & Ferro, 2005; Nanayakkara, 2005). Though proposed in the IT and IS literature (Zmud, 1979; Nelson, 1990; Harrison & Rainer, 1992; Neufeld, Dong, & Higgins, 2007; Theotokis, Vlachos, & Pramataris, 2008; Pramataris & Theotokis 2009), Thatcher and Perrewé (2002, p. 382) noted, “although mounting evidence suggests individual differences influence IT use, more integrative research is needed to better understand the nomological net among individual differences that relate to IT acceptance and use”. Consequently, understanding how and why field users accept and use information systems technology is vital. Against this background of the need to know, theories of UTAUT (Venkatesh, 2012; Venkatesh, 2003) have proliferated.

In addition, utilizing misapplied managerial tactics to facilitate adoption behavior across various stages may result in unpleasant consequences, which may, in turn, lead to an overall reduction in IS effectiveness (Liao, Palvia, & Chen, 2009) or even the discontinued use of the system. Thus, Top Management Support (TMS) is seen as having an overarching role.

Several studies have investigated TMS within the context of health information technology use. This current study incorporated TMS due to its significant role in inspiring the adoption of innovations within healthcare organisations (Cresswell & Sheikh, 2013). Top management's information and knowledge about EHRs has been seen to diminish doubts about these innovations (Abdul Hameed & Counsell, 2012) and thus encourage healthcare providers to continue using EHRs. According to the best available literature review, a scarcity of study exists that has investigated the effects of TMS on CI.

In summary, the UTAUT was used to underpin the framework of this study as it is considered an all-inclusive combination of previous technology acceptance research (Venkatesh et al., 2012). The UTAUT has also been noted as a way to comprehensively explain employee acceptance of information technology in large organizations. Thus, using this theory in predicting the continuance intention of nurses for using EHRs in the Jordanian public healthcare system is appropriate. Notwithstanding the merits of the UTAUT model as illustrated above, the model does have limitations. As Barnett et al. (2015) noted, UTAUT does not consider individual factors in its ability to explain intention (Alrawashdeh, 2011; Dadayan & Ferro, 2005; Nanayakkara, 2005). To address this concern, this study used the Five Factors Model (Neuroticism, Extraversion, Openness to experience, Agreeableness and Conscientiousness) related factors to relate with continuance intention.

1.2 Problem Statement

Information technology is changing the shape of globalized operations in all fields. Over the years, most developed countries have succeeded in implementing information technology in major parts of their economies and societies including the healthcare sector. Conversely, developing countries, especially in the Arab world, are mostly far behind in properly implementing HIT systems within their healthcare sectors. Most Arab countries have lagged in HIT, and government-funded public hospitals often lack the professional utilization of IT (Alsadan, Metwally, Anna, Jamal, Khalifa, & Househ, 2015).

The Jordanian healthcare system is among those Arab countries encountering challenges and problems. These issues are related to accessibility, inefficient use of available resources, poor management and inappropriate health information systems (Ajlouni, Dawani, & Diab, 2015; Ajlouni, 2010). However, despite having implemented EHR systems, many countries, including Jordan, continue to face challenges, such as poor usability because EHR systems are not easy either to learn or to use. Thus, the ultimate promise of EHR systems may remain unfulfilled, and the work of the staff may not be made easier. Because of these difficulties their performance may be effected negatively, and their productivity may actually decrease (Dua'A, Othman, & Yahya, 2013). In fact, some healthcare practitioners think that an EHR system is arduous, difficult, and annoying to use and may not guarantee the privacy of patients (Meinert & Peterson, 2009; Al-nassar, Abdullah, Rozaini, & Osman, 2011b). Consequently, issues related to system ease of use, a decrease in user's performance and productivity will influence negatively the continuance intentions of users to utilize an EHR system after implementation.

Eventually, they may stop using the system altogether and hence return to paper documentation.

Over the last decade, information technology (IT) continuance has emerged as a prominent area of information systems research (Bhattacharjee & Lin, 2015). An IT system cannot be considered successful if users do not sustain its usage (Bhattacharjee & Lin, 2015) or if the system experiences under-utilization and/or abandonment (Lanzolla & Suarez, 2012). IT acceptance and continuance are conceptually and temporally distinct behaviours, in that continuance can occur only after acceptance (first-time use) (Bhattacharjee & Lin, 2015). Prior research (e.g., Sjajna & Scamell, 1993; Venkatesh & Morris, 2000; Venkatesh, Thong, Chan, Hu, & Brown, 2011) provides preliminary empirical evidence that user beliefs and attitudes do change over time. The absence of studies of the continuance intention of users to use EHRs among healthcare workers like nurses in Jordan is worrisome.

Empirically, the factors of IS innovation in general and HIS in particular have been the subject of previous research. UTAUT and ECT were the main theories that have been used extensively to explain the continuance usage of innovations, whereas the five-factor model (FFM) was predominant theory to investigate the impacts of personality on IS usage. However, a review of the applications of these theories in the IS domain reveals three important gaps. The first and the second gaps correspond to the application of FFM in understanding the user's personality impact on HIS innovation, while the third gap relates to the application of TMS as an external variable.

Regarding the first and the second gaps, this current research introduced the five-factor model as a way of making a theoretical contribution to the model represented. The five-factor model of personality has been used widely for empirical purposes related to management and psychology to predict attitudes, perceptions, and behaviours, but remains greatly under-researched in the field of IS (Boontarig, Chutimasakul, & Papasratorn, 2013; Zhou & Lu, 2011; Devaraj et al., 2008). Moreover, few researchers have examined the role of personality in health information technology use (Harle et al., 2014).

Characteristically, people tend to perform a behaviour when they are positively attuned to it and if they believe some important persons share the same views about usage with them (Ajzen, 1988). Accordingly, to personality psychologists, personality is associated with actual behaviour via cognitive processes, which shape someone's tendency to act in a particular way (Devaraj, Easley, & Crant, 2008; Barrick et al., 2002). The primary idea behind the user acceptance model is a focus on how individuals react to the use of technology, in which personality is posited to have an overarching role (Devaraj et al., 2008).

According to Jackson, Mun, and Park (2013), individual differences are crucial factors in identifying individuals who are most likely to test the usability and functionality of IT. Actively involving these individuals by bringing them on board in the usage of a new technology is critical. Furthermore, people who have been identified as being highly innovative have a higher tendency to consider technology in a favourable light. Hence,

with respect to innovative people, the tangible results of adoption are more demonstrable, and the situational and cognitive resources required for the use of the technology less reserved, and the opinions of others, more important (Jackson et al., 2013).

Psychologists have suggested that “simultaneous consideration of both the person and the situation” (Terborg, 1981, p. 569) plays a key role in understanding behaviour. Ever since Lewin’s (1951) study that behavior was shaped by the environment and the person, the notion that environmental or trait-based explanations of behavior was insufficient has been rejected (Bowers, 1973). It has been posited that “both situational factors and personality factors are imperative for understanding cognition, attitudes, and behavior” (George, 1992, p. 192) and that “it is generally accepted that both situation and personal variables in complex combinations affect attitudes and behavior” (Nelson, 1990, p. 80). Hence, several ways exist in which the interaction between persons and situations can occur (Terborg, 1981; Schneider, 1983).

In addition, quite a few studies have investigated personality within the context of health information technology use (Harle, Gruber, & Dewar, 2014). In the Jordanian context and to the best knowledge of this researcher, limited studies have been done that specifically explain the FFM of personality with the UTAUT in general and with respect to the continuance intention in the healthcare system specifically.

In regard to this study, the first gap that this current study will investigate is conscientiousness as a moderator in the relationship between performance expectancy,

effort expectancy, social influence, and facilitating condition with continuance intention to use. Conscientious personalities are intrinsically motivated to achieve, perform at a high level, and take actions to improve their job performance. The hallmark of the conscientious personality is self-control reflected in a need for achievement, order, and persistence (Costa et al. 1991); these traits are fundamental components of intrinsic motivation at work and high levels of job performance (Barrick & Mount, 2000, p. 21). Barrick and Mount (1991) pointed out the ubiquitous nature of this factor in arguing that it is difficult to conceive of a job in which the traits associated with the conscientiousness dimension would not contribute to job success. Thus, because conscientiousness reflects an intrinsic motivation to improve job performance wherever possible, conscientious people are expected to be more likely to consider carefully whether technology provides an opportunity to further on-the-job achievement and then act based on that assessment; conscientiousness will be related to the enactment of the continuance intention to use. This dispositional tendency will either increase or diminish the extent to which performance expectancy, effort expectancy, social influence, and facilitating condition result in continuance intentions to use the technology.

One interesting point to note about the previous innovation usage literature is that it primarily ignored conscientiousness as a moderator in the relationship between performance expectancy, effort expectancy, social influence, and facilitating condition with continuance intention to use (post-adoption). However, many studies have investigated conscientiousness as a moderator in the relationship between performance

expectancy, effort expectancy, social influence, and facilitating conditions with the intention to use (pre-adoption) (Wang & Yang, 2005).

In regard to this study, the second gap, this current study investigated the mediation effect of performance expectancy on the relationship between conscientiousness, extraversion, neuroticism, openness to experience, and agreeableness with continuance intention to use. Performance expectancy is the extent to which individuals believe that using a particular IT will enhance their job performance. The expectation is that technologies that users perceive as being useful are more likely to result in positive user intentions regarding their usage (Bhattacharjee & Lin, 2015). According to IT continuance research of the four key variables in UTAUT, performance expectancy (perceived usefulness in ECT) was the only factor that has a continued effect on users' IT CI because users are unlikely to continue IT use unless the IT benefits them in their future work. This pattern of effects is supported by empirical research in IT acceptance and continuance, particularly for utilitarian technologies (e.g., Karahanna et al., 1999; Bhattacharjee, 2001; Venkatesh et al., 2003).

However, pre-usage expectations may be modified over time as users learn about the IT from their first-hand experience. Pre-usage expectations are often based on second-hand information, such as vendor claims or industry reports and tend to be weaker and more unstable than post-usage expectations based on the first-hand usage experiences of users. The primary expectation that drives IT usage behaviours is the extent to which individuals

believe that using a particular IT will enhance their job performance (Bhattacharjee & Lin, 2015; Bhattacharjee, Perols, & Sanford 2008).

UTAUT is an adaptation of eight theories including: 1) innovation diffusion theory, 2) the theory of reasoned action, 3) the technology acceptance model, 4) the theory of planned behaviour, 5) model combining the technology acceptance model and theory of planned behavior, 6) the model of PC utilization, 7) the motivational model and 8) the social cognitive theory.

The literature has guided the thinking about how personality might influence UTAUT relationships. The theory of reasoned action (TRA) treats personality as an external variable that can only affect behaviour indirectly (Ajzen & Fishbein, 1980). Ajzen and Fishbein (1980) used the term “external” to offer the possibility that other exogenous or external variables might affect the established TRA relationships between and among beliefs, attitudes, intentions, and behavior. Personality is an exogenous variable in a model linking external variables to behavior; in particular, personality is hypothesized to lead to beliefs related to the behavior. In developing their theory, Ajzen and Fishbein (1980) used two of the Big Five factors — extraversion and neuroticism — as examples of personality traits that may play a role in decisions to engage in a particular behaviour.

Extending this logic to UTAUT, theoretical arguments based on the TRA suggest that personality factors would be related to specific beliefs about the performance expectancy of a particular technology and to social influence. One interesting point to note about the

previous innovation usage literature is that it primarily ignored the mediation effect of performance expectancy in the relationship between conscientiousness, extraversion, neuroticism, openness to experience, and agreeableness with the continuance intention to use (post-adoption). Many studies have investigated the mediation effect of performance expectancy in the relationship between conscientiousness, extraversion, neuroticism, openness to experience, and agreeableness with intention to use (pre-adoption) (Wang & Yang, 2005).

Regarding the third gap, an interesting point to note about the previous innovation usage literature is that it primarily ignored the role of the TMS. However, the characteristics of top managers are critical for encouraging the adoption of technological systems in healthcare establishments (Yusof, Kuljis, Papazafeiropoulou, & Stergioulas, 2008; Cresswell & Sheikh, 2013; Escobar-Rodríguez & Romero-Alonso, 2013). Their knowledge and expertise about HIS has gone a long way in minimizing the doubt and ambiguity that the introduction of a new system occasions, which determines how that system is implemented and subsequently adopted in an organization (Thong & Yap, 1995; Thong, 1999; Abdul Hameed & Counsell, 2012). Furthermore, Boonstra and Broekhuis (2010) argued that the level of belief by management about the capabilities of the HIS and the attendant level of support they show upon the implementation of the HIS will unquestionably inspire the healthcare staff.

Management's role in motivating and convincing the healthcare staff about the potential of HIS is critical, as the failure of management's support in this regard may lead to

challenges for adoption and usage (Terry, Thorpe, Giles, Brown, Harris, Reid, & Stewart, 2008; Thakur et al., 2012). Related empirical positions also posit that, if management is disoriented and fails to put in place a complete strategic framework for HIS implementation for their organizations, meeting realistic goals and objectives, which are requirements for employee performance, may not be fulfilled (Davidson & Heslinga, 2006; Ludwick & Doucette, 2009). Top management's information and knowledge about EHRs has been seen to diminish doubts about these innovations (Abdul Hameed & Counsell, 2012) and thus encourage healthcare providers to continue using EHRs.

1.3 Research Questions

The following are the research questions for this study.

1. Does a relationship exist between effort expectancy, performance expectancy, social influence, facilitating conditions and top management support and the continuance intention to use EHRs among nurses in Jordan?
2. Does performance expectancy mediate the relationship between personality dimensions (conscientiousness, extraversion, neuroticism, openness to experience, and agreeableness) and the continuance intention to use EHRs among nurses in Jordan?
3. Does conscientiousness moderate the relationship between performance expectancy, effort expectancy, social influence, and facilitating conditions) and the continuance intention to use EHRs among nurses in Jordan?

1.4 Research Objectives

The main objective of this research is to examine the continuance intention to use electronic health record systems in Jordanian public healthcare sector among nurses by extending UTAUT 2. Thus, this study has the following objectives:

1. To examine the relationship between effort expectancy, performance expectancy, social influence, facilitating conditions and top management support and the continuance intention to use EHRs.
2. To examine if performance expectancy mediates the relationship between personality dimensions (conscientiousness, extraversion, neuroticism, openness to experience, and agreeableness) and the continuance intention to use EHRs.
3. To examine if conscientiousness moderates the relationship between performance expectancy, effort expectancy, social influence, and facilitating conditions and the continuance intention to use EHRs.

1.5 Significance of the Study

The need for additional studies aimed at addressing the relationship between performance expectancy, effort expectancy, social influence, and facilitating conditions on CI to use EHR system is highlighted in the next chapter of this study.

Although some empirical endeavours have applied the UTAUT model in the medical setting (Chang, Hwang, Hung, & Li, 2007; Wills, El-Gayar, & Bennett, 2008), sharp contrasts in results have emanated from those studies. More specifically, the results between performance expectancy, effort expectancy, social influence, and facilitating conditions on intention to use EHR system have not been defined explicitly.

Consequently, the need for additional studies aimed at investigating specific factors that influence continuance intention to use in the Jordanian setting is called for. Faaeq, Ismail, Osman, Al-Swidi, and Faieq (2013) noted that results from studies that applied the UTAUT theory in their empirical endeavours exhibited inconsistencies in their findings. They further noted that these inconsistencies might result from different cultural and socio-demographic backgrounds. In view of these inconsistencies, a need exists to examine the above variables in the Jordanian context.

Another reason to choose the Jordanian context for conducting this study is because Jordan is a stable country intensely affected by Middle Eastern instability and the raging conflicts in neighbouring countries such as Syria, Iraq, and Palestine and less intensely from conflicts in more distant Arabic countries such as Libya, Yemen, and Sudan. These conflicts have increased the number of refugees entering Jordan, thereby creating a huge burden on the Jordanian healthcare infrastructure and health services system.

Few available reports with empirical underpinnings have been published showcasing the effects of EHR on Jordanian hospitals. Although a few descriptive/conceptual studies that have cast light on the advantages and disadvantages of implementing an EHR system do exist, limited studies have been undertaken with respect to the effect of EHRs on Jordanian healthcare system in terms of performance, effectiveness, efficiency, top management support, and the reduction of medical errors at both the organizational and individual levels. Thus, investigating the continuance intention of healthcare practitioners in Jordan to use an EHR system is a motivation for conducting this study.

From an empirical point of view, most studies of HIS adoption have been done in countries with developed and sophisticated systems (Venkatesh et al., 2011a; McGinn et al., 2011; Escobar-Rodríguez & Romero-Alonso, 2014). This situation further strengthens the need to investigate these phenomena in an emerging environment like Jordan particularly in view of the socio-cultural and economic differences that exist between countries and their related contexts (Holden & Karsh, 2010; Castillo, Venkatesh, & Zhang, 2010; Martínez-García & Pulido, 2010; Novak et al., 2012; Venkatesh et al., 2011a). However, assuming that specific, distinct solutions exist that can be applied to all contexts in all countries would be improper in view of the issues related to diversity (Boonstra & Broekhuis, 2010).

In recent times, the healthcare industries in developing countries have begun embracing EHRs. Accordingly, understanding the motivation behind their investments in such technologies has become imperative. Consequently, managers and policy/key-decision makers must be made aware of the factors that influence EHRs adoption and use. Therefore, this study sought to classify, understand and explain the factors that are most critical to organizations deciding to adopt EHRs in the healthcare sector among nurses. An understanding of this nature will lead to the creation and adoption of meaningful and practical guidelines for EHRs.

Basically, the present study contributes to the body of knowledge in two ways, namely, in theory and in practice. For the theoretical contribution, this study further explains the

factors that determine the continuance intention to use a particular technology. Based on the findings of previous studies, this study is being applied to the Jordanian context with respect to nurses on the introduction of new technologies and how the usability of the technology can be sustained. In addition to the above, the paucity of research on the application of the FFM and the UTAUT in the healthcare industry aimed at specifically identifying factors that help determine the continuance intention to use technology is a gap that needs to be filled. This study will help bridge this gap and further contribute to theory development. Moreover, the above has never been applied generally to the healthcare industry in Jordan. Furthermore, while the Jordanian healthcare sector is being targeted, this study specifically focuses on nurses in the industry.

On a related note, studies have successfully extended the Unified Theory of Acceptance and the Unified Theory of Acceptance and Use of Technology (UTAUT) in the E-health context in general and in health informatics context in particular. The original UTAUT comprises only the four constructs of performance expectancy, effort expectancy, social influence and facilitating conditions. In this current study, five factors associated with the personality dimensions of conscientiousness, extraversion, neuroticism, openness to experience, and agreeableness) are examined as potential influences on the continuance intentions of nurses to use technology. Therefore, this research model will overcome the weakness of UTAUT in that the impact of individual factors on behavioural intention is being researched. Furthermore, TMS is considered a critical factor in successfully implementing a new technology-based innovation.

In relationship to E-health, this research studies factors that enhance the acceptance of EHRs by nurses in the public health sector. This is because a limited number of studies have examined the continuance intention to use information technology among employees of the public sector, especially in the healthcare industry. Hence, the findings from this research will fill the gaps in the literature. Furthermore, this research will make a major contribution to knowledge concerning health information technology in Jordan with respect to the continuance intention to use EHRs by Jordanian nurses. This is something that has not been investigated so far.

With respect to practical contributions, this study will provide important insights to key stakeholders and decision makers in the healthcare industry in Jordan's public sector. The findings of this study will offer several suggestions to senior management and other relevant decision-makers about how to facilitate the successful implementation of EHRs technologies. These leaders could use the study's framework to guide them in how they can build continuance on the continuance intention of nurses for using new technologies with respect to the relationship between the end-user and the new system after implementation (post-adoption).

Furthermore, the study's findings will help healthcare leaders to overcome many obstacles after implementing EHRs. The results of this study should also provide beneficial information to EHS companies as well. The results can provide useful feedback with respect to the implementation of current EHRs and help bring to fruition future design plans and the implementation of EHRs in the healthcare industry.

1.6 Scope of the Study

This study investigated the continuance intention of EHRs among nurses in public hospitals in Jordan that have implemented EHRs. Table 1.1 shows that the “Hakeem” program has now been implemented fully at 11 public hospitals in Jordan.

Table 1.1
Public Hospitals that have implemented EHRs

Province	Hospital Name
North	Princes Rahmah Hospital
	Princes Badeaha Hospital
	Al Mafrag Governmental Hospital
Central	Al Mafrag / Gynaecology & Paediatrics
	Al-Ramtha Hospital
	Prince Hamzah hospital
	Prince the Second Hussain Ben Abdullah
	Al Zarqa Governmental Hospital
	AL Hussein for Cancer Hospital
South	Ma'an hospital
	Queen Rania Al Abdalla Hospital

Source: EHS (personal communication, October 13, 2015).

According to the Ministry of Health in Jordan, nurses have three classifications: 1) registered nurses and midwives, 2) practical nurses, and 3) portal nurses. Registered nurses and midwives hold a Bachelor’s degree, a Master’s degree or a PhD in nursing. Their job description includes giving medications on time and recording them in EHRs

and writing nursing notes related to patients in EHRs. They give intravenous solutions and check on patients from time to time; they do rounds with doctors and follow up if doctors write any orders and inform the doctors if the patient's condition changes or if they patient has any complaints and follow the patients' course of treatment and check to see if the practical nurse has recorded vital signs in system.

Second, practical nurses hold a diploma in nursing, and their job description includes measuring and recording a patient's vital signs in EHRs, providing nursing care for patients, measuring the blood sugar of patients and informing senior nursing staff about the results and follow-up on the administration of fluids.

The third type is portal nurses who hold a secondary high school certificate in nursing. Their job description includes: sending lab samples, bringing medications to the departments and sending and bringing patients to the x-ray department.

According to Ministry of Health in Jordan, the only nurses who are authorized to use EHRs are registered nurses and practical nurses. Therefore, this study will include the first and second types of nurses only.

Nurses function in a range of settings and handle a variety of patient care issues. The nature of their work includes, amongst others, treating and educating patients and their families on a variety of conditions, illnesses, and general well-being (Bureau of Labor Statistics, 2008); and recording patient histories, measuring vital signs, administering

treatments and carrying out follow-up on patients (Bureau of Labor Statistics, 2008). Interestingly, nurses are often at the frontline of patient care and provide important and crucial patient information to physicians, acting as a liaison between patients, patient families and physicians (American Nurses Association, 2010).

Notwithstanding that nurses represent most healthcare providers, much of the research regarding the adoption and implementations of HIS has been focused on physicians (Stubenrauch, 2009; Maillet et al., 2015). Those who are involved in healthcare include all manner of practitioners including doctors, staff and nurses. Among this group, empirical information critically examining the rate of adoption of IS especially among nurses is critically lacking. This gap needs to be bridged.

Even though nurses are on the front line of patient care, and the reasons why nurses have often have discontinued using an EHR system or have stopped the adoption process at a specific stage of adoption have not been given significant attention (Ayanso et al., 2015). While the pre-adoption attitudes of personnel in the healthcare sector towards EHR systems have been examined and well-established in the literature (Wong, Legnini, Whitmore, & Taylor, 2000; Deutsch, Duftschmid, & Dorda, 2010), their post-adoption behaviours in relationship to their intention to continue to use or adopt extended functions have been accorded limited empirical notice in the IS and healthcare domain (Ayanso et al., 2015). Unfortunately, the continuance intention to nurses to use EHR systems has been scarcely noted at the moment. Hence, this current study is meant to examine

critically the post-adoption intentions of nurses in Jordan with respect to their continuance intention to use EHR systems.

In their study on factors that influence acceptance of the use of an IS, Maillet, Mathieu, and Sicotte (2015) have noted that the professional culture of nurses is generally favourable to adoption of innovations (Callen, Braithwaite, & Westbrook, 2009). The fundamental differences between paper-based patient records and EHR and the significant transformation of clinical practices raise important questions about IT's effect on the nurses' satisfaction, nursing workflow and the delivery of care (Cornell, Riordan, & Herrin-Griffith, 2010). In principle, an EHR should expedite access to valuable information and related activities like health promotion, patient evaluation, clinical interventions, and the organization of services (While & Dewsbury, 2011). These functionalities play a critical role for nurses in view of their important contributions to the effective functionality of the healthcare system (Goorman & Berg, 2000; Staggers & Thompson, 2002; Fitzpatrick, 2010). However, the decisions and eventual behaviours of users with respect to an IS are critically dependent on their affective responses (Zhang, 2013).

Therefore, this study considers the role of nurses as primary stakeholders in the healthcare system, as understanding their continuance intention tendencies to develop successful implementation strategies through theory-driven and evidence-based stratagem is critical.

1.7 Definitions of Terms

This section presents the conceptual definitions of all the variables examined within the context and gamut of the present study.

1.7.1 Continuance Intention

This is the continuance use of an information system through user post-adoption (Bhattacharje, 2001).

1.7.2 Performance Expectancy

This is the extent to which an individual believes that using a system will assist in achieving a better job performance (Venkatesh, Morris, Davis, & Davis, 2003). Performance expectancy is also the level to which individuals believe that technology will aid them in carrying out their jobs (Holtz & Krein, 2011).

1.7.3 Effort Expectancy

This is the extent of convenience that individuals perceive exists for using a system (Venkatesh et al., 2003). Effort expectancy also denotes how easy that individuals perceive the technology is to use (Holtz & Krein, 2011).

1.7.4 Social Influence

This is the degree to which an individual believes that others are important to him/her in deciding to use a new system (Venkatesh et al., 2003). Social influence also denotes the

degree to which an individual senses social pressures to use a particular technology and is dependent on their views (Holtz & Krein, 2011).

1.7.5 Facilitating Conditions

This is the extent to which an individual believes that organizational and technical mechanisms exist to support the use of the system (Venkatesh et al., 2003). Facilitating conditions also express the extent to which an individual believes that his or her organization supports and provides the necessary resources for the implementation of technology (Holtz & Krein, 2011).

1.7.6 Top Management Support

Top Management Support refers to the extent to which top management appreciates the significance of IS function and its level of involvement in organizational activities (Nathan, Apigian, Nathan, & Tu, 2004). Top management support (behaviour) refers to the explicit and active support of the top management in the introduction and development of new information technology (Bruque-Cámara, Vargas-Sánchez, & Hernández-Ortiz, 2004).

1.7.7 Personality

Personality refers to the cognitive and affective structures maintained by individuals to facilitate their adjustments to the events, people and situations encountered in life (Gough, 1976). In looking at the personality domain of nurses, Costa and McCrae (1992a) used

the NEO-FFI in which the Big Five personality factors included: 1) neuroticism, 2) extraversion, 3) openness to experience, 4) agreeableness and 5) conscientiousness.

1.7.7.1 Neuroticism (N)

Neuroticism (N) distinguishes between adjustment or emotional stability and estrangement or neuroticism (Costa & McCrae, 1992a). In addition, Costa and McCrae, (1992a) mentioned Individuals with low neuroticism are seen as having stable and normal emotions. On the other hand, individuals who are high in neuroticism are paranoid and self-consciously anxious and are susceptible to negative emotions as well as negative responses towards work-related stimuli.

1.7.7.2 Extraversion (E)

Next, the extraversion (E) scale gauges the propensity for individuals to be introverts or extroverts. Extroverts are the archetypally assertive, active, and talkative. However, introvert individuals are more challenging to define. Introverts are considered as those who lack extraversion in their personalities (Costa & McCrae, 1992a).

1.7.7.3 Openness to Experience (O)

Meanwhile, openness to experience (O) personality-type individuals are those with active imaginations, are aesthetic and sensitive, exhibit preferences for variety, are intellectual curious, and attentive to inner feelings and independence of judgment (Costa & McCrae, 1992a). High openness individuals characteristically lead richer lives, entertain

alternative ideas, and experience feelings stronger than do individuals with lower openness. Low openness or closed individuals have a narrower scope and less intense interests.

1.7.7.4 Agreeableness (A)

Agreeableness (A) is related with interpersonal tendencies. High agreeableness individuals are unselfish, compassionate, and eager to help, while low agreeableness individuals are aggressive, self-centred, doubtful of others, and competitive (Costa & McCrae, 1992a).

1.7.7.5 Conscientiousness (C)

Lastly, conscientiousness (C) is related to individuals who are more prone to planning, organizing, and accomplishing tasks. High C scores are indicative of a scrupulous, punctual and reliable person. A high C person would display inclinations such as being a workaholic or compulsively neat. Low C persons have lower moral standards and are less exact in goal seeking (Costa & McCrae, 1992a).

1.8 Organization of the Thesis

This thesis comprises five related chapters. This chapter includes the introduction and research background, the statement of the problem, research questions and objectives of the study, the significance of the study, the scope of the study and conceptual definitions. The second chapter presents an overview of the history of technology acceptance, the

underpinning theory, which is the UTAUT theory, and supportive theories, which include the Five Factor Model and the Expectation Confirmation Theory. Also, discussed in this chapter is the research framework and the process of its development based on the relevant literature in the domain of continuance intention. The hypothesis for each of the variables is reviewed. Next, the third chapter explains the research design, the research instrument, the population and sampling procedures, the pilot study and the data analysis procedure. Chapter four presents the results of the data analysis, and, finally, chapter five discusses the research findings, highlights the theoretical and practical implications of the study, specifies research limitations, and outlines future research directions.



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CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses related literature based on the conceptual model of this study. Specifically discussed and explained in details are the various technology acceptance models and attendant theories and their relationship with continuance intention. Also, presented in this chapter is personality dimensions and their relationship with nurses' continuance intention to use EHRs in the Jordanian public health sector. Based on the framework of this study, this chapter chronologically discusses the various variables and how they relate with each within the context of this study. Top management support, nurses' personality (FFM), performance expectancy, social influence, effort expectancy and facilitating conditions are discussed in details too. Finally, this chapter illustrates research framework development.

2.2 Technology Acceptance Theories

2.2.1 Introduction

The research pertaining to technology and people's reactions to Information and Communication Technology (ICT) has been an important subject since the 1980s. According to Rogers (2003), the basis for this study is predicated upon the theoretical foundation which opined that the willingness of a person to use a technology is dependent

on their research on diffusion and adoption. In addition to the above, some theories have been developed and greatly studied within the context of this study, namely the social cognitive theory (Compeau & Higgins, 1995; Venkatesh & Davis, 1996), the theory of planned behavior (Taylor & Todd, 1995a; Mathieson, 1991) and the technology acceptance model (Davis et al., 1989).

However, a person's decision to accept and adopt ICT is dependent upon a number of variables such as intentions, beliefs and individuals themselves (Liu, Miguel Cruz, Rios Rincon, Buttar, Ranson, & Goertzen, 2014; Bhattacharjee, 2001). Interestingly, a myriad of empirical endeavours into the behavioural, affective and cognitive reactions of persons to ICT and about those indicators that affects these actions, and the related theories used in explaining such occurrences have been done. Among these theories and models in which the underpinning theory is stemmed from for this study are the Unified Theory of Acceptance and Use Technology Model 1 (UTAUT), the Social Cognitive Theory (SCT), the Model of PC Utilization (MPCU), the Motivational Model (MM), the Combined TAM and TPB (C-TAM-TPB), the Theory of Planning Behavior (TPB), the Theory of Reasoned Action (TRA), the Diffusion of Innovation Theory (DIT), the TAM 2, and the Technology Acceptance Model (TAM). A summary of the above theories and their application within the context of this study is presented next.

2.2.2 Technology Acceptance Model (TAM)

The TAM as developed by Fred Davis is an instrument used in computer applications, information technology and related measure to predict user's acceptance (Davis, Bagozzi & Warshaw, 1989). Also, it is considered by researchers as one to the key information system related models used to explain usage and acceptance of information technology, and is further noted to significant predict computer technology use (Venkatesh & Davis, 2000; Lai & Li, 2005). More so, though the TAM has been greatly researched in relation to information usage and acceptance, researchers have noted a limitation in that it is not included among factors needed to analyze a person's attitude. Furthermore, violence and conflicts among users are also neglected in this model.

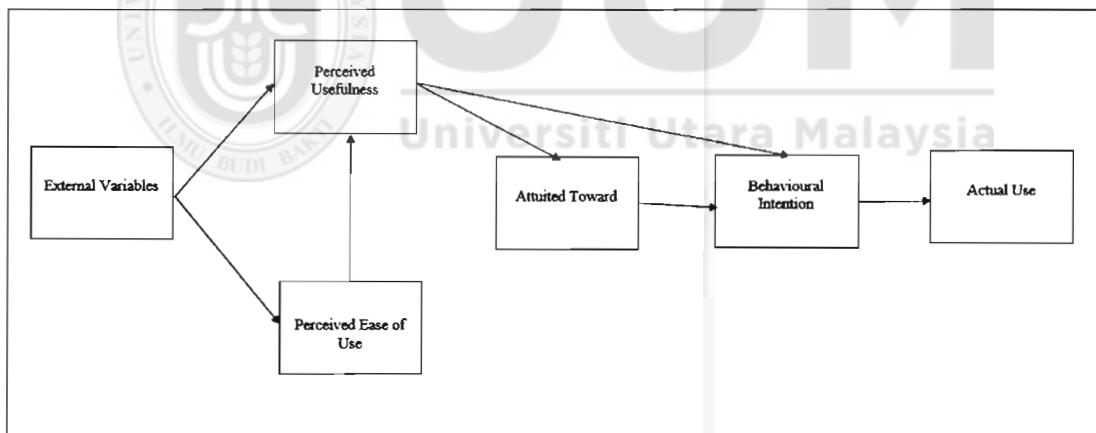


Figure 2.1

Technology Acceptance Model (TAM)

Source: Davis, Bagozzi & Warshaw, (1989)

2.2.3 Extension of the TAM (TAM2)

The TAM 2, which is an extension of the TAM was developed by Venkatesh and Davis (2000). The idea behind the extension was to additionally expound users' intention and perceived usefulness, with the use of the social influence process-based cognitive instrument. Elucidating further, it is noted that the social influence process is comprised of three interconnected elements that influence people's behaviour, and thus determines if users reject or adopt the technology. Subjective norm was identified as the first factor. It denotes the belief of a user that other important persons' opinions shapes their decision to use a technology (Lee, Kozar & Larsen, 2003). The second factor is image. It denotes the level at which a user perceives that the use of a certain system metamorphoses to an enhancement of his or her image. Voluntariness was identified by Moor and Benbasat (1991) as the last factor. It denotes the level of the user's belief that it is voluntary to actually use a certain technology.

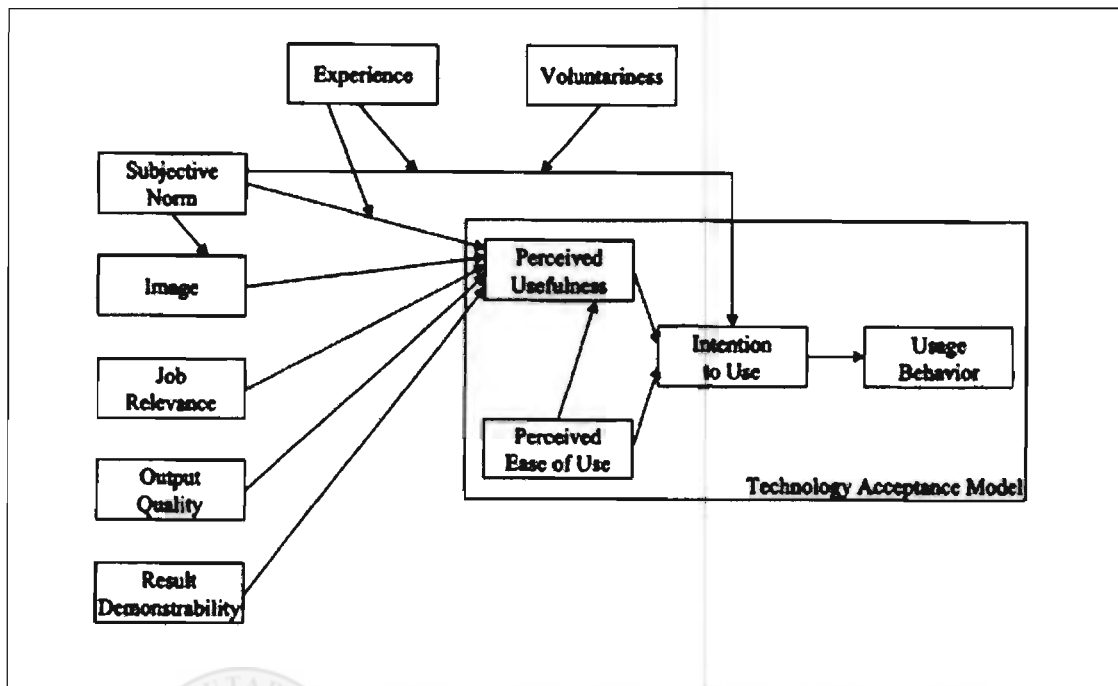


Figure 2.2
A Theoretical Extension of the Technology Acceptance Model
 Source: Venkatesh & Davis (2000)

2.2.4 Innovation Diffusion Theory (IDT).

Innovation diffusion connote the process of conveying an innovation and spreading its development in a social setting with the use of certain routes over a definite time period (Rogers, 1995). Furthermore, an innovation that is to be adopted is a notion, art, practice, or an object perceived as new by an individual. While innovation should not be something novel, people might however perceive it as new. Consequently, the IDT has been applied in the examination of innovations in a myriad of work settings and diverse organizational milieu since 1960 (Rogers, 2003).

Within the context of information systems, the IDT has been redefined into seven adaptation constructs by Moore and Benbasat (1991). Also, it has been noted that the Rogers (2003) IDT is an acceptance model which only concentrates on the qualities of the innovations without bearing in mind other psychological factors that are capable of influencing acceptance of innovations.

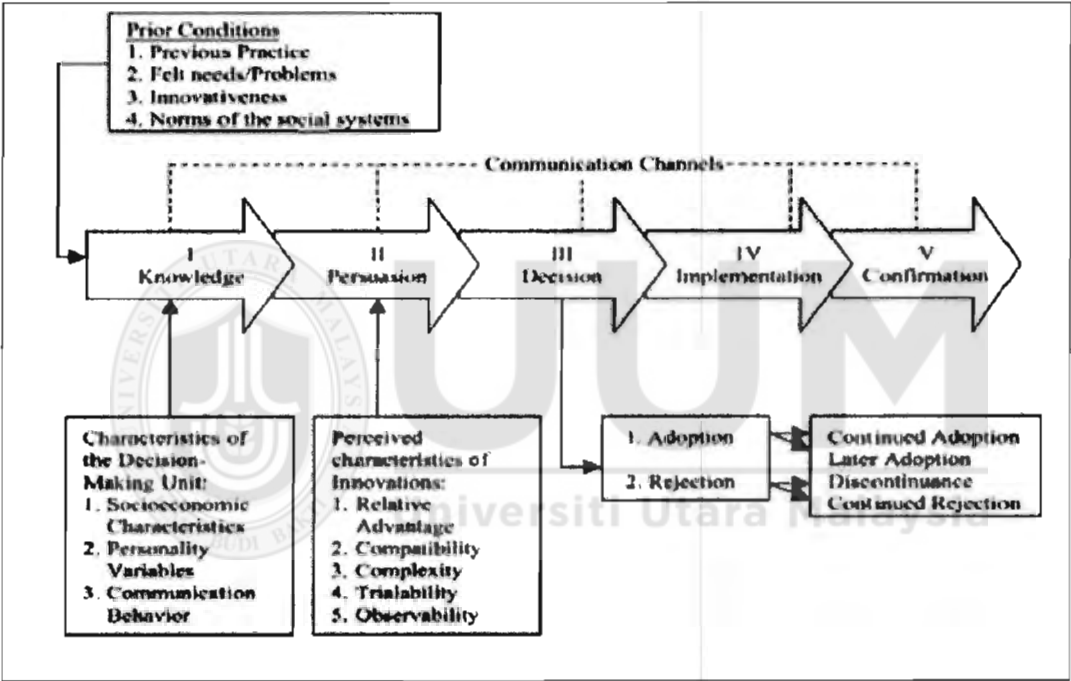


Figure 2.3
Diffusion Innovation Stage
 Source: Rogers (2003)

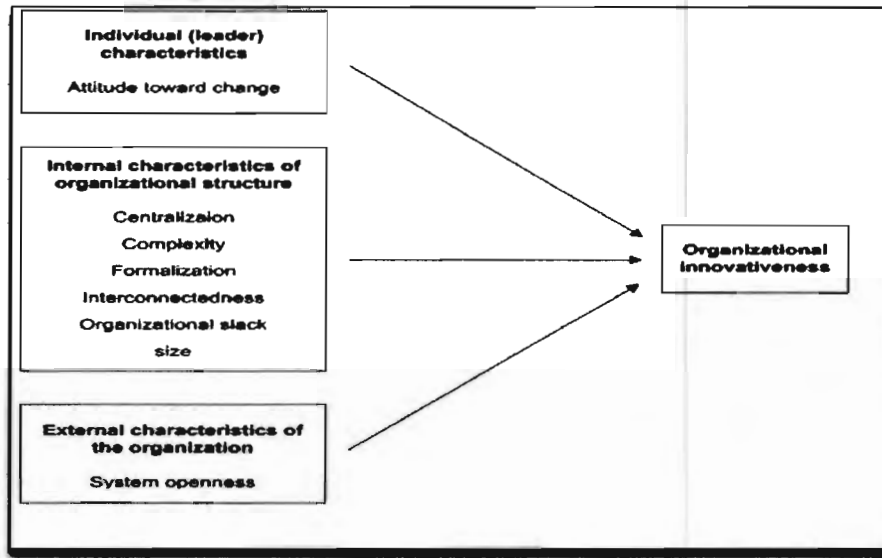


Figure 2.4
Diffusion Innovation Theory
Source: Rogers (2003)

2.2.5 Theory of Reasoned Action (TRA)

The TRA is a ground-breaking development of Fishbein and Ajzen (1975), and it is noted to be a model that emphasises behavioural intention rather than actual usage. More so, Sheppard, Hartwick & Warshaw (1988) noted that the TRA has been the topmost models that has been greatly used in explaining behavioural intention. Characteristically, the TRA is made up of four dimensions of attitude, behavioural intention, actual use, and subjective norms.

In the TRA, actual use is decided by behavioural intention rather than attitude towards users' behaviour (Norman & Smith, 1995). Also, users' attitude and subjective norms are

determined by the behavioural intention (Ajzen & Fishbein, 1975). However, a shortfall of this model is that it neglected the measure of skirmishes and violence among users.

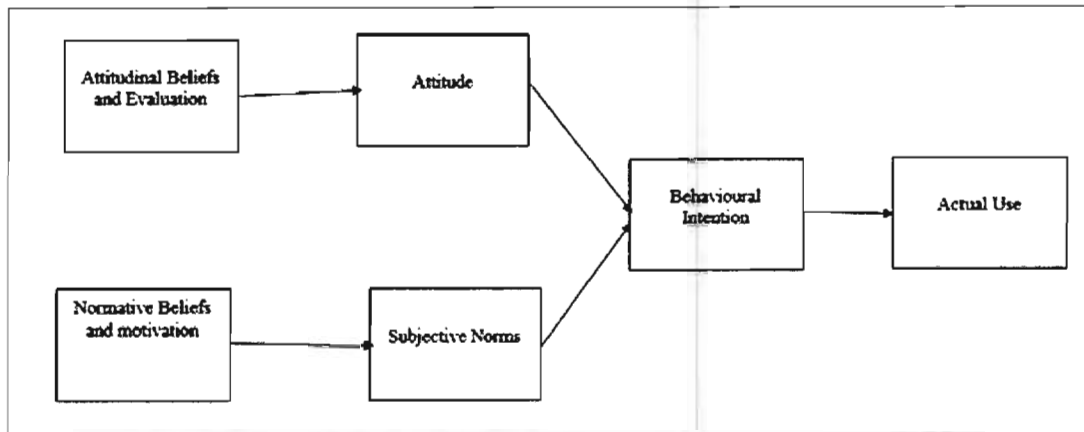


Figure 2.5
Theory of Reasoned Action
 Source: Sheppard, Hartwick & Warshaw (1988)

2.2.6 Theory of Planned Behaviour (TPB)

With the intention of further explaining the possibility of volitional behaviours, the TPB was developed as an addition to the TRA. Behavioural control was made as an addition to this model, and it defines how a person perceives, and the ability of such a person to act a certain behaviour in line with available amenities and resources that helps the person control this behaviour (Taylor & Todd, 1995a). Behavioural controls occurs in the form of context opportunity, facilitating factors and resources (Ok & Shon, 2006).

Interestingly, the TPB is commonly applied in ICT in attempting to evaluate a wide range of behaviours. The TPB model is noted for its ability to explain how people absolutely control their behaviour. For instance, Ok and Shon (2006) the TPB's ability as predictive

of acceptance much more than the TRA. Unfortunately, the TPB fails to ascertain conflicts and violence among users.

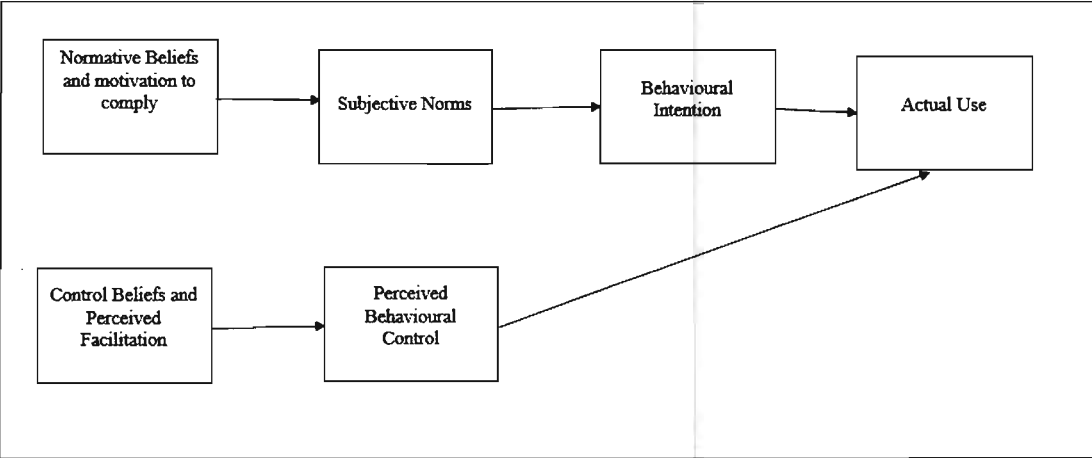


Figure 2.6
Theory of Planned Behaviour
Source: Taylor & Todd (1995a)

2.2.7 A Combination of TAM and TPB

The TPB in addition to some modified constructs from the TAM was used to develop the combination of TAM and TPB (C-TAM-TPB) by Taylor and Todd (1995b). The C-TAM-TPB is noted to be an efficient model in predicting users’ intention information technology usage. There are basically four determinants of behavioural intention in this model. They are, users’ attitude to use a technology, subjective norms, perceived behavioural control and perceived usefulness. Interestingly, insights on the denotation of these constructs were done in previous sections of this chapter, specifically while discussing the TAM and TPB.

Interestingly, social influence is derived from subjective norms whereas performance expectancy is derived from perceived usefulness and facilitating condition stemmed from perceived behavioral control. However, the influences of unsteady circumstances on users are neglected and that is identified as the weaknesses of the model (Yayla & Hu, 2007).

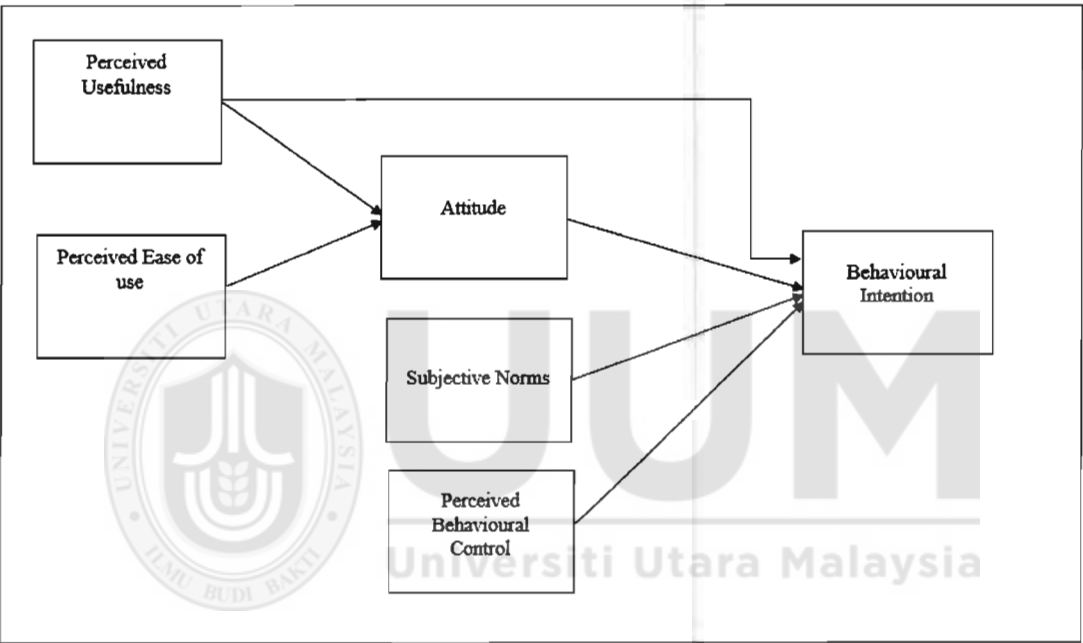


Figure 2.7
C-TAM-TPB
Source: Taylor & Todd (1995b)

2.2.8 Motivational Model (MM)

The motivational model has been adapted into use within the gamut of information technology by Davis, Bagozzi and Warshaw (1992) as it is in many other related context and empirical endeavours. Specifically, this model is purposed to appraise how individuals are psychologically motivated to perceive a certain behaviour (Davis et al. 1992). The MM defines the way users perceive extrinsic motivation and intrinsic

motivation. Characteristically, extrinsic motivation denotes the extent to which a user perceives that the use of a certain IT enables the achievement of better organizational outcomes (Alrawashdeh, 2011). Relatedly, intrinsic motivation denotes the execution of a behaviour by users on the basis that such users do not have other motivation other than accomplishing the task by self (Venkatesh et al., 2003).

2.2.9 Model of PC Utilization (MPCU)

As established by Thompson, Higgins and Howell (1991), the MPCU is an offshoot of the theory of human behavior and has been widely used to determine actual behavioral usage rather than behavioral intention. In determining actual behavioural usage, the MPCU uses six factors. Firstly, the factor of job fit, which refers to the degree users believe the use of a system should lead to an improvement in their job performance. Complexity denotes the degree a person believes less effort is needed in the use of a certain technology. Thirdly is the factor of long-term consequences which denotes the level where a user believes that he or she would receive some sort of results by using a certain system.

The fourth factor is affection towards usage. It denotes how negative or positive a person feels in the use of a specific system. The fifth factor, being social factors denotes how users think other people's opinion determines how they should exercise any behavior. The last factor is facilitating condition. It denotes how much environmental infrastructures easily facilitate the accomplishment of an activity.

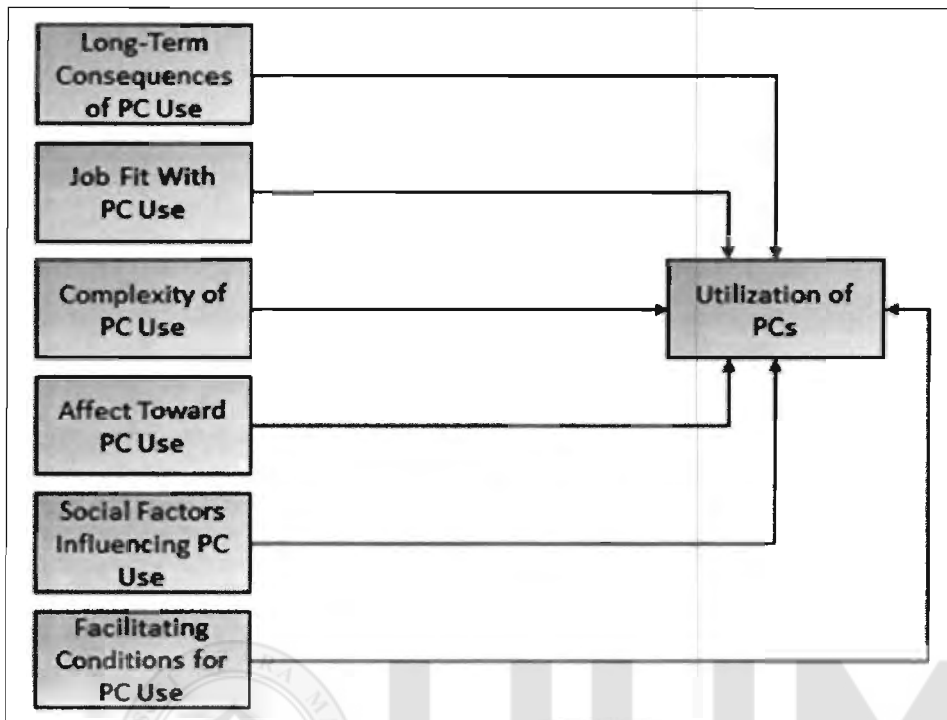


Figure 2.8
Model of PC Utilization
 Source: Thompson, Higgins & Howel (1991)

2.2.10 Social Cognitive Theory (SCT)

Social cognitive theory (SCT) is a derivative of the social learning theory which was later extended to predict behaviour of computer users (Compeau & Higgins, 1995). The theory adopted five constructs to determine user's behavior. They are, outcome expectation-performance which refers to the expectation of the technology used on the job. The second is outcome expectations-personal, which refers to the outcomes from using a particular information technology. Others are, anxiety, which refers to a person's emotional reaction when they use particular technology, and self-efficacy, which refers to a person's ability to use the technology to perform particular work. More so, the self-efficacy construct is

used to measure the influence of an individual factor on employee's intention to use the computer-based distance training system. The last construct is affect (like attitude), which refers to a person's feeling (negative or positive) towards using a particular technology (Compeau & Higgins, 1995).

The Social Cognitive Model has been used as a framework in many studies. Partridge (2007) used SCT to explore the factors influencing the members of a community to use ICT. His study suggested that the factors of social cognitive theory significantly affect internet usage in the community. Pauli, Gilson and May (2007) conducted a study by applying SCT as a framework to examine the influence of computer anxiety on the intention to use a computer. The study reported that the relationship between computer anxiety and computer using intention is mediated by computer self-efficacy. SCT was also adapted by Soh and Subramanian (2008) to examine the impact of self-efficacy and anxiety on technology usage in learning.

This theory proposes that self-efficacy and anxiety have a direct significant influence on user's behavior, but the information system literature indicates that anxiety and self-efficacy constructs do not have a direct influence on user's behavioral intention (Dadayan & Ferro, 2005; Rezaei, Movahed, Asadi & Kalantary, 2008; Venkatesh et al., 2003). Interestingly, in the SCT, three constructs including outcomes expectation-performance, computer self-efficacy and computer anxiety are used in the research model, whereby outcome expectation-performance is in line with performance expectancy, and computer

self-efficacy and computer anxiety are directly used to examine employee intention to use computer-based distance training system.

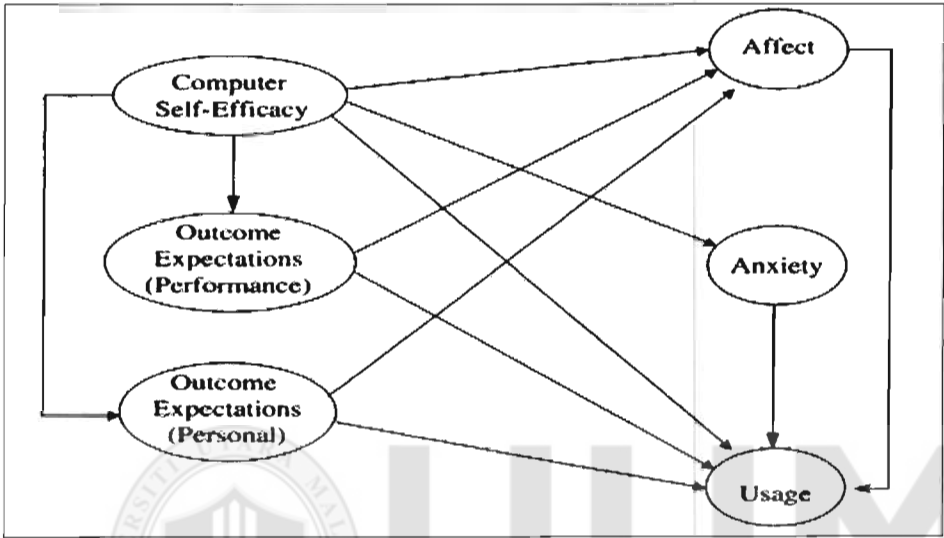


Figure 2.9
Social Cognitive Theory
Source: Compeau, Higgins & Huff (1999)

2.2.11 Unified Theory Acceptance and Use Technology (UTAUT)

Venkatesh et al. (2003) conducted a study to compare the similarities and differences between prior theories and models of user acceptance so as to formulate the Unified Theory of Acceptance and Use Technology (UTAUT). This comparison included the following models and theories: technology acceptance model (TAM) (Davis et al., 1989), theory of planned behavior (TPB) (Ajzen, 1991), theory of reasoned action (TRA) (Ajzen & Fishbein, 1975), the combination of TAM and TPB (C-TAM-TPB) (Taylor & Todd, 1995), model of PC utilization (MPCU) (Thompson et al., 1991), diffusion of innovation theory (DOI) (Moore & Benbasat, 1991), social cognitive theory (SCT) (Compeau &

Higgins, 1995), and motivational model (MM) (Davis et al., 1992). This work (formulated UTAUT) tried to overcome the difficulties faced by information technology researchers in developing their studies' framework (Venkatesh et al., 2003) in an attempt to understand users' acceptance of technology.

Unified Theory Acceptance and Use Technology (UTAUT) is made up of four constructs that predict user's behavioural intention and behaviour of use. They are, performance expectancy, effort expectancy, social influence, and facilitating conditions (Grant & Danziger, 2005; Payne & Curtis, 2008; Venkatesh et al., 2012, 2003). In addition, according to Venkatesh et al. (2003), the relationships between these constructs, behaviour intention and behaviour of use are moderated by four key factors namely, age, gender, voluntariness, and experience (Venkatesh et al., 2003). The following figure (Figure 2.10) shows UTAUT Model.

Performance expectancy refers to a person's belief that using a particular system will enhance his/her work performance (Payne & Curtis, 2008). Performance expectancy stemmed from five constructs of prior information technology acceptance models (Venkatesh et al., 2003). The constructs are, outcomes expectations in SCT, perceived usefulness in TAM, relative advantage in DOI, extrinsic motivation in MM, and job fit in MPCU (Hung, Wang & Chou, 2007; Venkatesh et al., 2003). According to Venkatesh et al. (2003), performance expectancy is a strong predictor of behavioural intention in both voluntary and mandatory settings in information technology context. Furthermore, they

added that the relation between performance expectancy and behaviour intention may be moderated by age and gender.

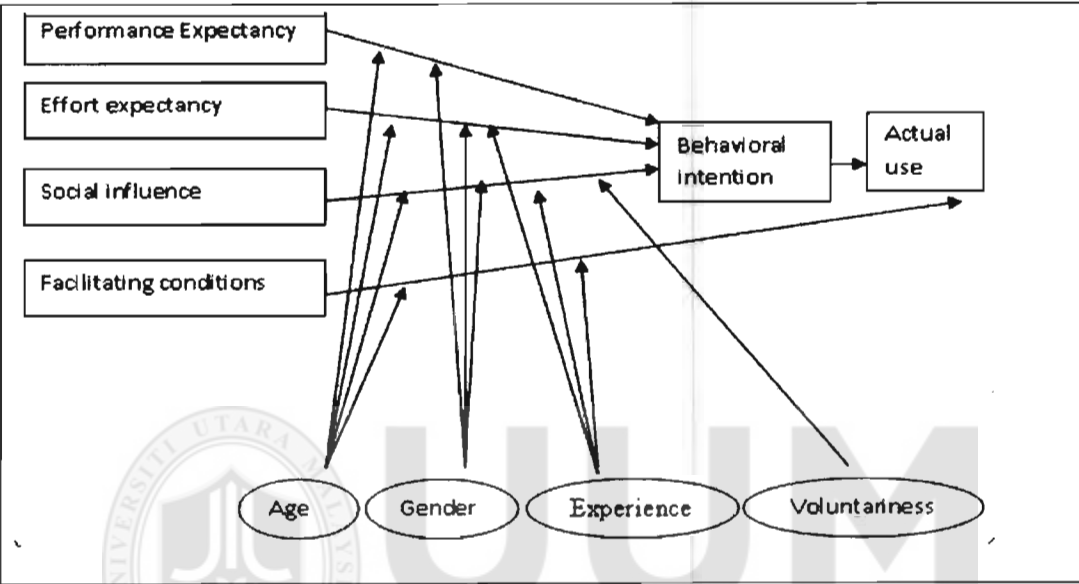


Figure 2.10
The UTAUT
Source: Venkatesh et al. (2003)

Effort expectancy is about a person’s perception on the use of use of a particular system. Similar to performance expectancy, this construct is also derived from three constructs that are taken from other existing models (Payne & Curtis, 2008). They are, complexity in DOI, complexity in MPCU, and ease of use in TAM (Hung et al., 2007; Venkatesh et al., 2003). Venkatesh et al. (2003) indicated that effort expectancy has a significant influence on behavioural intention of a user to use information technology. They added that the relationship between behavioural intention and effort expectancy may be

moderated by gender, experience and age (Venkatesh & Davis, 2000; Venkatesh et al., 2003).

Social influence refers to the perception of users on the opinion of other people on whether or not they should perform a behaviour (Payne & Curtis, 2008). This construct pertains to subjective norms in TAM2 and TRA, social factors in MPCU, and image in DOI. According to Venkatesh et al. (2003), social influence and behavioural intention relation is moderated by three factors namely, age, gender, and experience (Hung et al., 2007; Venkatesh et al., 2003). On a related note, facilitating conditions refer to a person's perception that the organization and technical infrastructure will help him/her to use the system (Payne & Curtis, 2008). This construct is also captured from three constructs from other models of perceived behaviour control in TPB, facilitating conditions in MPCU, and compatibility in DOI (Hung et al., 2007; Venkatesh et al., 2003). Venkatesh et al. (2003) indicated that the facilitating conditions construct is a good predictor of use of information technology. However, the relation between facilitating conditions and use behaviour is moderated by age and experience. As such, the system will affect older users who have a lot of experience (Venkatesh et al., 2003).

According to Davis et al. (1989), the prior acceptance model could successfully predict the adoption of information technology in approximately 40 percent of the cases. On the other hand, Venkatesh et al. (2003) indicated that UTAUT could successfully predict the adoption of information technology in approximately 70 per cent of the cases (70 percent

of the variance in user's intention). Furthermore, according to Venkatesh et al. (2003), this model is also fit to predict employee acceptance of information technology in large organizations. They later combined the scales used in prior technology acceptance models and theories to develop new scales, which have been used in their model, but that require more testing for further improvement (Marchewka, Liu & Kostiwa, 2007; Venkatesh et al., 2003).

In contrast, Alrawashdah (2011), Dadayan and Ferro (2005) and Nanayakkara (2007) listed some weaknesses of UTAUT models. They argued that the model does not consider the individual factors. In information technology and user's acceptance models, many constructs have been used to measure the individual factors like; anxiety, self-efficacy and user attitude. The Unified theory acceptance and use technology (UTAUT) model does not include these constructs. Interestingly, the Unified theory acceptance and use technology (UTAUT) has been applied as a framework in many areas. Marchewka et al. (2007) adopted UTAUT to test students' acceptance of blackboard technology. They found that UTAUT is not a strong predictor of this technology. Dadayan and Ferro (2005) used some constructs of UTAUT to examine the acceptance of technology in the public and private sectors. Anderson and Schwager (2004) also applied UTAUT to examine the acceptance of wireless network by employees in business organizations. Table 2.1 shows the UTAUT constructs and their extensions.

Table 2.1
UTAUT Constructs from other Combination Models

UTAUT constructs	Combination from other models	
	Construct	Model
Performance expectancy	Perceived usefulness	TAM
	Relative advantage	DOI
	Extrinsic Motivation	MM
	Job fit	MPCU
	Outcomes expectations	SCT
Effort expectancy	Complexity	DOI
	Complexity	MPCU
	Ease of use	TAM
Social influence	Subjective norms	TAM2 and TRA
	Social factors	MPCU
	Image	DOI
Facilitating condition	Perceived Behaviour control	TPB
	Facilitating conditions	MPCU
	Compatibility	DOI

Note. IDT = innovation diffusion theory; TRA = theory of reasoned action; TAM = technology acceptance model; TPB = theory of planned behavior; C-TAM-TPB = model combining the technology acceptance model and theory of planned behavior; MPCU = model of PC utilization; MM = motivational model; SCT = social cognitive theory; TAM2 = extended technology acceptance model.

Source: Tan (2013).

2.2.12 Unified Theory Acceptance and Use Technology 2 (UTAUT 2) Underpinning Theory

Venkatesh, Thong and Xu (2012) upgraded the Unified Theory of Acceptance and Use Technology (UTAUT) to UTAUT 2 by identifying key additional constructs and relationships to be integrated into UTAUT and thus, tailoring it to a consumer use context. They added four other constructs. Therefore, UTAUT 2 consists of seven constructs to predict user's behavioural intention and behaviour of use, which are, performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value and habit (Venkatesh et al., 2012). Aside the alterations on the UTAUT conceptualization, Venkatesh et al. (2012) dropped voluntariness as one of the

moderators. They introduced a connection between facilitating conditions (moderated by age, gender, and experience) and behavioural intention.

On the three new constructs, a moderated relationship of age, gender, and experience was introduced to the main UTAUT model by Venkatesh et al. (2012). While reviewing additional literature, Venkatesh et al. (2003) developed the UTAUT (with its four key constructs) as an all-inclusive combination of previous technology acceptance studies. However, Venkatesh et al. (2012) introduced the UTAUT into the consumer technology acceptance and use context. The definitions are as follows; performance expectancy is used to denote the extent to which the use of a technology provide benefits to consumers undertaking certain activities. Effort expectancy denotes the extent of ease related with how consumers use technology. Social influence is used to denote the extent to which consumers perceive that important others, such as family and friends believe they should use a particular technology.

Facilitating conditions is defined as consumers' perceptions of the resources and support available to perform a behaviour (Venkatesh et al., 2003; Brown & Venkatesh 2005). Hedonic motivation refers to the derivable fun or pleasure when a certain technology is used. Interestingly, it is noted to be a critical factor in determining technology acceptance and use (Brown & Venkatesh, 2005). In accordance to this particular definition, this variable is not included in this study because of the nature of EHRs is considered as a work of demand to accomplish it. Price value is defined as consumers' cognitive trade-off between the perceived benefits of the applications and the financial implication of

using such applications (Dodds, Monroe, & Grewal, 1991). However, this construct is not included in this study because the end user are nurses that are not obligated to negotiate or pay to use this system.

Furthermore, habit is used to denote people's propensity to perform a certain behaviour which is predicated upon learning (Limayem, Hirt, & Cheung, 2007). Notably, habit has been equated with automaticity (Kim, Malhotra, & Narasimhan, 2005). Following UTAUT, performance expectancy, effort expectancy, social influence, and facilitating conditions are hypothesized to influence behavioural intention to use technology, while continuance behavioural intention determine technology use. Also, categorical variables such as age, gender, and experience (note that voluntariness is not included in this study, which is part of the original UTAUT) are hypothesized to moderate various UTAUT relationships.

Actual use of technology behaviour results from the direct intention to use it, because people normally act as they intend to base on the notion that they can control their actions. The attitudes toward using the system, one after another, depend on the intention to use technology. Following the logic of TRA framework, users' belief depends on their attitudes toward the ICT system and about continuance use (Igbaria, Guimaraes & Davis, 1995). The Unified Theory of Acceptance and Use of Technology adopts TRA's concept of beliefs in the form of two variables: performance expectancy and effort expectancy. These two beliefs are considered the major determinants of innovation usage such as EHRs (Venkatesh, Thong, & Xu, 2012).

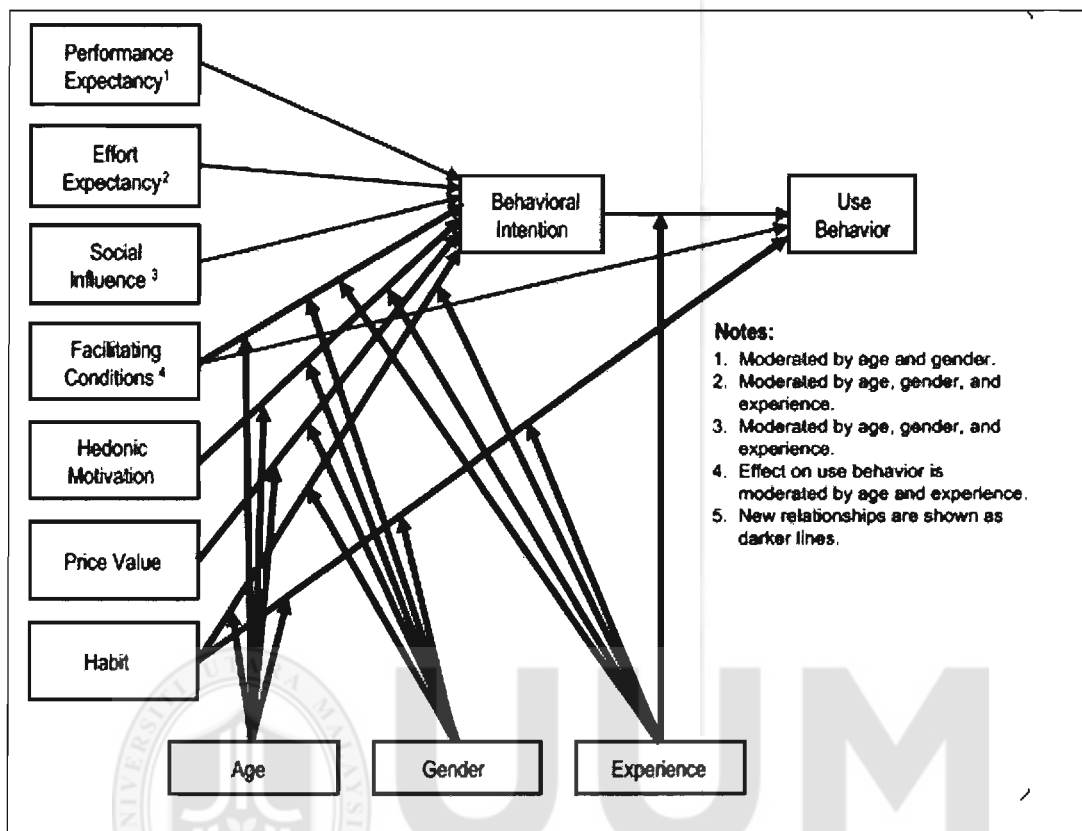


Figure 2.11
UTAUT 2

Source: Venkatesh, et al. (2012)

Based on the past expansions on the UTAUT, the reason for upgrading is based on the requisite attention needed for respond to the consumer's context on the development process of the UTAUT2. (Venkatesh *et al.*, 2012). They also noted that the UTAUT is made up of three comprehensive types of allowances/integrations. Characteristically, the extensions/ integrations have been hierarchically studied in new settings such as new technologies - collaborative technology, health information systems (Chang, Hwang, Hung & Li, 2007), new user populations - healthcare professionals, consumers (Mun, Jackson, Park & Probst, 2006) and new cultural settings like - China, India (Gupta,

Dasgupta, & Gupta 2008). The researcher thus posits that this type of UTAUT is appropriate for this research. On a related note, the second type is the inclusion of new constructs so as to enlarge the scope of the endogenous theoretical mechanisms outlined in UTAUT (Chan, Gong & Thong 2008; Sun, Bhattacharjee & Ma, 2009). The third type is the insertion of exogenous predictors of the UTAUT variables (Neufeld, Dong & Higgins 2007; Mun *et al.*, 2006).

UTAUT serves as a baseline model and has been used to explain studies on a myriad of technology-related studies in organizational and non-organizational settings. Hence, in spite of the fact that the UTAUT has been so greatly used and various theoretical positions have been taken, the need for a further methodical study within the scope of consumer technology usage will be worthwhile. Furthermore, and in line with the position of Johns (2006) and Alvesson and Kärreman (2007), examining the above positions will bring afore several theoretical positions to confirm already existing theories and for explaining new relationships. Each change revealed the breakdown of theories that result in the creation of new knowledge (Alvesson & Kärreman, 2007).

In addition, Faaeq *et al.* (2013) in a meta-analytic assessment of previous studies on the UTAUT submitted that it is important to include several theories in measuring the uneven circumstantial effects on users in the Middle-East and related regions. They recommended that future empirical endeavours should focus on services that connects government to the citizens, such as the different types of E-S initiatives (government to government, government to employee and government to business). Basically, the present

study focuses on the government to employee initiative. Interestingly, specific electronic initiatives or programs that can be measured here include, e-health record, e-banking, e-commerce, e-learning, e-system, e-ticket, key card, Q card, smart card, e-payment channels, computer/iPad adoption, mobile government (M-G) and tele-centre adoption. These can be done under varying contexts in developing and developed countries (Faaeq *et al.*, 2013). Hence, the application of the theory behind this study (continuance intention to use EHR) among nurses in public sector in Jordan has become critical.

In a meta-analytic review by Williams, Rana, & Dwivedi (2015), it was reported that a load of studies and empirical endeavours have been done on the UTAUT across a myriad of socio-demographic settings and especially in the USA. It has therefore become imperative for researchers from other regions to embark on original studies of culture and context-related UTAUT research. The gaps so identified further emphasizes the need for additional studies owing to the fact that the studies so reviewed were overly focused on specific subjects and tasks, limited sample sizes in, and a lack of longitudinal work. Opportunities for further studies are thus emphasized. Self-reported usage, use of student samples, and a lack of consideration of moderating variables also suggest areas where additional work can be done. Also, the results of their weight analysis suggest that the cumulative predictive power of each individual independent variable was not consistent at different levels of abstraction, with only two variables (performance expectancy and behavioural intention) meeting the benchmark of Jeyaraj, Rottman and Lacity (2006) and qualifying for best predictor category. Further investigation into the performance of the relationships within the model would therefore be appropriate.

In evaluating acceptance and continued use of technology, a number of models have been suggested. Unfortunately, none is tailored towards the healthcare industry, neither does aspects of users' personality is therein noted. Hence, this study is important in that it is a combination of the five-factor model (FFM) of personality to determine attitudes, perceptions, and behaviours. Interestingly too, the FFM has not been successfully incorporated into a technology acceptance model (Devaraj, Easley, & Crant, 2008). Hence, a novel model of technology acceptance and continued use for healthcare professions is proposed in this study.

2.2.13 Expectation-Confirmation Theory

According to Oliver (1980), the ECT has been greatly used to investigate consumer satisfaction and post-purchase behaviour in the marketing research field. The ECT proposes that consumers initially anticipate a product or service before purchasing. Upon deciding to purchase and eventually use a product or service over a period of time, consumers then have a mind-set of the quality of the product or service. Subsequently, a comparative analysis is done on consumers' perceived performance with their initial expectations, then a decision is made based on established expectations. This eventually leads to how consumers decide on whether or not to purchase that product or service again (Venkatesh, Thong, Chan, Hu, & Brown, 2011).

The concept of IS users' continuance decisions can be compared to the repurchase decisions of consumers. Interestingly, these decisions are predicated upon an initial decision which is influenced by usage experience, and can possibly lead to ex-post

reversal of the earlier decision (Bhattacharjee, 2001). The application of the ECT in addressing diverse problems related to IS, and more specifically IS continuance, changes in users' belief system and attendant attitude (Bhattacharjee, 2001; Bhattacharjee & Premkumar, 2004), post-usage contentment with application service providers (Susarla, Barua & Whinston, 2003) and extended use of complex IS (Hsieh & Wang, 2007). It is on the basis of previous information systems related studies that the ECT was proposed by Bhattacharjee (2001), where it was suggested that user satisfaction and post-acceptance usefulness perceptions influenced continuance intention vis-à-vis confirmation of expectations from prior use and perceived usefulness.

2.3 Five Factor Model (FFM)

2.3.1 History

There has been so much change in empirical endeavours focusing on personality traits since the late 1980s. Unfortunately, even as the Big Five personality dimensions seems well-known, it was virtually unheard of (Pervin & John, 1999). Consequently, empiricists and industry experts are left with the choice of selecting from the myriad of personality scales and they are also left with the challenge of the non-availability of supporting theoretical frameworks and underpinning theories alike to support their choice (Pervin & John, 1999). More worrisome is the fact that some of the identified scales had measures that defined more than one construct. Specifically put, there were issues of multicollinearity. While it is important to note the individual strengths of each of these personality constructs, various measurement challenges have made it challenging for

scholars to agree on outcomes, idiosyncratic differences and possible areas of future research (Pervin & John, 1999).

When considering analyzing concepts related to technology acceptance, personality is seldom considered a key factor. In support of the above notion, Huber (1983), Robey (1983) and Zmund (1979) all noted that personality which is a key component of cognitive styles is not taken into cognizance when designing support systems. Though a lot of work has been done in the area of organizational and social psychology with specific focus on personality, controversies still abound as to measurements and there is a general consensus on disparities in findings especially that these studies were done in varying socio-demographic contexts and work settings. The above position is somewhat supported by Allport (1958) where it was noted under the need for a taxonomy of personality psychology, that “each assessor has his own pet units and uses a pet battery of diagnostic devices” (p. 258).

Consequent upon the above, methodological issues that have arisen made findings and conclusions from such specific studies conflicting and sometimes in disarray. However, in the last two decades, studies in the socio-organisational field have come to a consensus on how to categorize the personality traits which is often and generally known as the “Big Five” personality factors. Rather than showcasing these traits based on their individual merits, and based on a distinct point of theory, these factors were plagiaristic of analyses of the natural- language terms people use to label themselves and others (John &

Srivastava, 1999). The Big Five taxonomy does not in any way take the place of other theoretical viewpoints, but rather combines personality descriptions.

Allport and Odbert (1936) led earlier studies on the Big Five theory which is a compilation of terminologies related to personality in an unabridged English dictionary. They brought afore almost 18,000 terms to “distinguish the behaviour of one human being from that of another” (Allport & Odbert, 1936, p. 24). On a relational note, Cattell (1943, 1945a, b) brought down the 18,000 term list to 4,500 trait terms. Owing to analytical limitations of that time, the list was further down-reviewed to 35 variables, accounting for almost 99percent elimination of terms (John & Srivastava, 1999). Eventually, 12 personality factors, which formed part of his 16 Personality Factors Questionnaire were identified and is commonly referred to as the 16PF (Cattell, Eber, & Tatsuoka, 1970).

In view of the structural change process that has taken place with the aim of identifying the most important traits of the Big Five, a common theme has emerged that has been noted to be all-encompassing based on Cattell’s works. The emergence of the themes came from the work of Fiske (1949) who shortened 22 of Cattell’s variables which were mainly extracted from self-ratings, ratings by peers, and ratings by psychological staffers. Furthermore, Tupes and Christal (1961) used Fiske’s work and found five factors that were somewhat strong and recurrent. These five factors so identified has been replicated in a myriad of studies. Seminal amongst these studies is the one by Norman (1963) who originally branded the factors as follows, extraversion or surgency (talkative, assertive, and energetic), agreeableness (good- natured, cooperative, trustful), conscientiousness

(orderly, responsible, dependable), emotional stability versus neuroticism (calm, not neurotic, not easily upset), and culture (intellectual, polished, independent-minded).

Based on an examination of relevant literature, it is noted that the existing FFM is made up of five all-encompassing dimensions of personality. Currently, the named labelled dimensions are extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience. Extraversion is usually used to describe a state of being sociable, vociferous and go-getting. Agreeableness is when a person has a compassion for interacting. Conscientiousness has to do with the extent of organization, persistence, and motivation in a goal-driven behavior. On a related note, neuroticism denotes emotional instability characteristic of insecurity, anxiousness, and hostility. Lastly, openness to experience is the ability to be malleable in thinking and tolerating novel thoughts. These are thought to include most, if not all, personality traits (Digman, 1996). However, Barrick and Mount (1991) argued that openness to experience and extraversion critically determines training expertise standard in diverse work-settings. It is thus proper to posit that job performance may have a statistically significant link to personality.

Other developments with respect to the above were empirical endeavours by McCrae and Costa (2004) who developed the NEO-Five Factor Inventory (NEO-FFI) with 60 items, with 12 per factor as an abridged version of their Revised NEO Personality Inventory, or NEO PI-R. Subsequently, John, Donahue and Kentle (1991) developed the Big Five Inventory (BFI) which is a somewhat shorter version of the NEO-FFI with only 44 questions and has been validated in multiple languages.

2.3.2 The Revised NEO Personality Inventory

Costa and McCrae (1985) developed the initial NEO Personality Inventory which is made up of items measuring the six theoretically derivative dimensions for neuroticism, extraversion, and openness. However, the items they developed did not include facet scales for the recently introduced agreeableness and conscientiousness. Consequently, Costa and McCrae (1992a) published the 240-item NEO Personality Inventory—Revised (NEO-PI-R) which allows different and segmented measurements of each of the Big Five factors in terms of six more specific facets per factor (Costa & McCrae, 1995).

Contrastingly, most of the etymological studies focusing on college student samples, the NEO-PI-R was developed in samples of middle-age and older adults, using both factor-analytic and multi method validation processes of test construction. The scales so used therefrom showed considerable internal consistency, sequential stability, and convergent and discriminate validity against spouse and peer ratings (Costa & McCrae, 1992a; McCrae & Costa, 2003).

Based on the above, so many researchers are of the opinion that the NEO-PI-R is relatively long. In response to this complaint, a smaller measure was eventually developed by Costa and McCrae (1989, 1992a) which is made up of 60-items of NEO-FFI which is an abridged version based on an item- level factor analysis of the 1985 version of the NEO PI (Costa & McCrae, 1985). The 12-item scales of the FFI are made up of items that loaded greatly on one of the five factors. The item content of the scales was adjusted somewhat to make sure of adequate content coverage of the dimensions.

However, the scales are a representation of the main elements of each Big Five factor as defined on the NEO PI and so do not represent equally each of the six facets as they define each factor. For instance, the agreeableness scale includes five items from the altruism facet, three from compliance, two from trust, one from tender-mindedness, one from straightforwardness, and none from modesty. The reliabilities (Costa & McCrae, 1992a) are adequate, with a mean value of 0.78, and the NEO-FFI scales are significantly correlated with the NEO-PI-R scales.

2.3.3 Personality and Technology Acceptance

Analyzing the theoretical underpinnings of the UTAUT is best determined by the specific function of personality in technology acceptance models. Since the UTAUT adopts TRA's concept of beliefs in the form of two variables: performance expectancy and social influence, the literature suggests that it is a discovery of how personality might influence the UTAUT relationships. The TRA treats personality as a peripheral variable that can solely affect behaviour in an indirect manner (Ajzen & Fishbein, 1980). The term "external" as used by Ajzen and Fishbein (1980) suggest the chances that there are other exogenous or external variables that might possibly affect the established TRA relationships between beliefs, attitudes, intentions, and behaviour. Personality is an exemplary exogenous variable in a model connecting external variables to behaviour.

Theoretically, personality leads to beliefs related to behaviour. In the course of developing their theory, Ajzen and Fishbein (1980) used extraversion and neuroticism which are two constituents of the big five factors of personality traits to show the role they may play in deciding whether or not to behave in a certain manner. In linking the

above position to the UTAUT, theoretical arguments based on the TRA suggested that personality factors might be related to specific beliefs about the performance expectancy of a particular technology and to social influence.

Sequel to the above, it is also speculated that personality traits are associated with subjective norms (SN) which characteristically refers to how a person's perception that most people that are important thinks the performance of certain behaviours should be based on certain conditions (Fishbein & Ajzen, 1975). The TRA suggests that behavioral intentions are determined by SN (Srite & Karahanna, 2006). Therefore, SN is being considered in this study as social influence which is further considered as a predictor of intention while attempting to explore the strength of the relationship between personality traits and SI in this relationship.

It is the belief of some personality psychologists that personality as a social-behavioural construct is connected to actual behavior by way of cognitive processes that determine one's motivation to act in certain ways (Barrick, Stewart & Piotrowski, 2002). One of such cognitions is subjective norms which represents a person's perception of social pressure to or not to perform a behavior under contemplation. People will generally want to act a behavior when they are positively inclined to it and when they believe that important individuals think they should do so (Ajzen, 1988). Nevertheless, the TRA further suggests that attitudes and subjective norms are swayed by more distal factors such as personality traits (Ajzen 1988, Connor & Abraham, 2001).

In the study by Hampson, Andrews, Barckley and Severson (2006), they noted a relationship between personality traits and intention to use alcohol. Their research is one that actually studied interactions between these constructs within the scope of the big five personality factors. On a related note, it was submitted that conscientiousness determined intentions to protect one's health and was mediated by the proximal cognitions represented in the TRA (Conner & Abraham, 2001).

To this end therefore and in view of the present study, the five-factor model that will be used to represent the personality traits as suggested by Costa and McCrae (1992a) in their NEO-FFI Big five personality factors which are conscientiousness, extraversion, neuroticism, openness to experience, and agreeableness. In light of the above FFM constructs in the present study will be greatly discussed in the following sections hereunder.

2.4 The Government Role in Developing Health Information Technology in Public Sector in Jordan

Today, the Jordanian healthcare industry is noted as being among the best in the world best (Khammash, 2012). In 2010, the World Bank ranked Jordan as the leading medical tourism destination in the Middle East and fifth-ranked centre in the world. The reputation of this ranking owes its success to several accredited hospitals in Jordan at both the local and international levels and the high quality of medical services offered in Jordanian hospitals (Khammash, 2012). Additionally, a considerable number of the country's highly trained healthcare practitioners have gained expertise and skills from global healthcare

service leaders like the United Kingdom, Germany and the United States. Furthermore, the quality of training received by its nurses and the therapeutic natural resources is high (Ma'in Springs and the Dead Sea) (Khammash, 2012).

The Jordanian healthcare industry has been striving hard to remain competitive in the global sphere by delivering quality healthcare services. Currently, the industry is witnessing a convergence of care suppliers, payer sources, providers, and consumers (Rawabdeh, 2007). With this emerging interdependence comes the heightened need for everywhere access to information and services. Such access helps industry members confront universal challenges, including pressures to reduce costs, intensive competition, the complexities of managing information as people and companies integrate, and an ongoing need to gain and retain a competitive advantage through growth and diversification (Rawabdeh, 2007).

Consistent with the worldwide interest in Health Information Systems (HIS), Jordan has begun relying on HIS to improve the Jordanian healthcare sector and to meet the challenges that global competitiveness poses (EHS, 2016b). This new direction was grounded in the government's belief that HIS has the potential to augment the service quality and productivity of the healthcare sector and increase competitiveness by reducing costs and growing the effectiveness and efficiency of health services (EHS, 2016b).

In view of these multiple benefits, the Jordanian government has implemented several initiatives to reform IT infrastructure and the healthcare sector environment to increase

IT usage among and between both healthcare organizations and healthcare providers during the last decade. For example, in October 2009, Jordan launched the E-health program dubbed “Hakeem” by the Electronic Health Solutions company (EHS).

The essence of this initiative was to ensure the efficiency of the Electronic Health Record system in terms of making it available on a real-time and up-to-date basis in the public healthcare system. Specifically, Hakeem was designed to ensure that healthcare practitioners can access a patients’ comprehensive health record, which should contain patient’s medical history, examinations, surgical reports, allergies, presently consumed medications, and in- and out-patient clinic visiting notes. In addition, the program was designed to provide online information pertaining to a patient’s lab test results, radiology, ECG and examinations, endoscopic biopsies and the videos of echocardiograms and angiograms. However, the implementation and continuance usage of the initiative has not been optimal (Electronic Health Solutions, 2016a).

Implementing the EHRs in all public hospitals and medical centres in Jordan has been a long-term goal of the Jordanian government (EHS, 2016b). However, across the board, efforts directed at accomplishing this goal have been rather slow amidst the obstacles that have affected the full implementation and usage of EHR systems.

Unfortunately, despite the announced benefits of the program, only 11 of the 35 public hospitals across the nation have implemented the program. Though the program has been implemented in several healthcare organizations, the number of empirical endeavours that have been conducted to measure the success of the program remains scant. The absence

of studies of the continuance intention of users including all healthcare providers but especially including nurses utilizing the system is quite worrisome.

Like healthcare systems in other countries, the Jordanian healthcare system has encountered many challenges and problems related to accessibility, limited quality improvement programs, inefficient use of available resources, poor management and inappropriate health information systems (Ajlouni, Dawan, & Diab, 2015; Ajlouni, 2010). Because these problems have become critical for the Jordanian government and its agencies, overcoming these challenges through investing in information will play a critical role in the Jordanian healthcare industry. This role is especially vital in expediting unit-level and organizational-level access to up-to-date information on patients, reducing clinical and medical practice-related errors, making operational improvements in the healthcare system and improving general decision-making processes (Daim, Behkami, Basoglu, Kök, & Hogaboam, 2016; Gilani et al., 2016; Ayanso et al., 2015; Boswell, 2011, 2013).

In addition, one issue to be considered by healthcare industry leaders is that the Jordanian economy is not so robust, and this might affect the ability of government to commit resources for future health projects. The deficit of the state budget has grown continually, and, according to indicators of the draft budget of 2015, approximately 1.82 JOD billion which is 22.4% of the total budget value, and 6.5% of the state's GDP, is noted as a deficit. These indicators attest to the fact that external aids and grants are relied upon for funding the state's budget. The above figures are bound to rise

considerably should the deficit of the budgets of independent public institutions be added. Thus, this situation eventually leads to an upsurge of the state's public debt profile, which now is valued at an unprecedented value level of JOD 23 billion, representing approximately 90% of the GDP. This situation is cause for concern as the growing deficit is a threat to the state's socio-economic stability (Awad, 2015).

Therefore, these serious challenges for the Jordanian economy make it imperative for officials in the healthcare system to improve the performance of the Ministry of Health to work efficiently effectively through implementing new technologies. These new technologies can decrease health services costs and save money so that funds saved can be reallocated to health projects that can reflect in positive way on Jordanian citizens and enhance the quality of health services. EHR systems can increase productivity while reducing costs, and improve efficiency (Daim et al., 2016; Gilani et al., 2016; Ayanso et al., 2015; Boswell, 2013). Therefore, continuance intention to use EHR system and success remains crucial and significant.

2.5 Dependent variable

2.5.1 Continuance Intention

Behavioral Intention (BI) is viewed as "the degree to which a person has formulated conscious plans to perform or not perform some specified future behavior" (Davis et al., 1989, p. 991). Ajzen and Fishbein (1980) explained that behavioural intent is positively correlated with actual behavior. Behavior intention, according to Venkatesh et al. (2003), predict usage of information system. One can intend to behave a certain way regardless

of whether the technology is available. Limited previous studies have distinguished between the intention to use before implementing an innovation and named it pre-adoption (intention to use) and after implementing an innovation and named it post-adoption (continued intention to use) (Karahanna, Straub, & Chervany, 1999; Bhattacharjee, 2001; Bhattacharjee & Premkumar, 2004; Venkatesh, Thong, Chan, Hu & Brown, 2011).

Karahanna et al. (1999) conducted research combining theories related to attitude and innovation diffusion in a single conceptual framework to determine the dissimilarities in the attitude beliefs before and after adoption. The study argued that this disparity is essential in appreciating and following up with an activity over the entire process. He further mentioned that investigating windows technology in one organization shows that customers and potential users of information technology will be different in terms of the factors of behavioural intention, attitude, and subjective norm. The intention by a specific potential user to implement could be arrived at by means of normative pressures, while on the other hand, the intention of users is ascertained by means of attitude. Furthermore, users who will likely adopt usually base their attitude on a more elaborate set of innovation characteristics than those actually making use. While the attitude before adoption is centred on the usefulness perception, simplicity of use, demonstration of result, visibility, and trial-ability, the attitude after adoption is centred on instrumentality, beliefs of usefulness and the image enhancement's perception.

The concept of continuance intention (CI) is built around the theory of expectation-confirmation that has been used in several consumer behavior studies to determine the satisfaction of the customers after purchase behaviour and the service market (Oliver 1981, Tse & Wilton 1988; Oliver 1993; Anderson & Sullivan, 1993; Patterson, Johnson & Spreng, 1996; Dabholkar, Shepherd, & Thorpe, 2000; Venkatesh, Thong, Chan, Hu, & Brown, 2011). Repurchase intentions are developed in Expectation-Confirmation Theory (ECT) briefly by the following: 1) prior to purchase, customers show their impression of a particular product or service, 2) accept and make use of the product or service, 3) test to see how well it performs in comparison to the original expectation to see if their expectation was correct, and 4) form satisfaction or affect based on their confirmation (Oliver, 1980). If a customer is satisfied they will make a repurchase intention. Consumers who are dissatisfied will stop using the product.

The innovation decision stages following up to the institutionalization of usage are defined as a temporal arrangement of the processes a customer will follow from a first-hand view of an innovative process, to expressing a positive or negative attitude toward it, leading to the verdict to either accept or refuse the process, to putting the innovation into proper usage, and to eventually seek buttressing in the decision process (Rogers, 1983). Key variables in this innovative stage are the perceived attributes of the innovation, the attitude and beliefs of the individual, and signals the individual receives from the society about the innovative process.

Prior studies examining end-user beliefs and attitudes (Christensen 1987; Davis 1989; Mathieson 1991; Moore & Benbasat 1996; Pavri 1988; Taylor & Todd 1995a, b; Thompson, Higgins & Howell, 1991) have examined users' beliefs about specific IT after they have already adopted it and are using the IT. Consequently, the results of the above studies identify the ideas that users require for the continuance use of IT. These may not be what lead to initial adoption. Even though adoption is necessary for usage, the determinants of adoption may reflect the opposite effect on the later decisions to continue using the innovation (Tornatzky, Eveland, Boylan, Hetzner, Johnson, Roitman, & Schneider, 1983). Bringing to notice these criteria before adoption criteria and the similarities to the after-adoption criteria remains a critical issue that require answers to be provided in IS research.

Arguments for distinctions in the concepts of adoption and usage are highlighted in consumer behavior studies (Howard & Jagdish, 1969) and cognitive dissonance theory (Cummings & Venkatesan 1976; Festinger, 1957). According to these theories, actual product use in some cases alters individual perceptions, attitudes, and desires regarding the product's use. As a result, opinions obtained after using the product will differ from those obtained prior to the adoption. In innovation diffusion literature, Klonglan and Coward (1970) corroborate this notion by suggesting that sociological constructs are more relevant in the discussion of the mental acceptability of innovation, while economic constructs may be more important in providing explanations about its use. In addition, Triandis (1971) suggests that social norms and affect will have a more pronounced effect

in determining behavior when the behavior is new (as in adoption). Their influence on behavior will decrease as users become more experienced.

The IS implementation literature also provides some evidence for differences in the antecedents of adoption and usage. For instance, Davis et al. (1989) found that, while users ease will explain the desire to use after IT has been used for more than an hour, it is also not significant after IT has been used for 14 weeks. In addition, Thompson et al. (1994) found that the effect of societal norms and effect on use were more severe for users not so experienced than with experienced users. Further, the ease of usage also had a larger influence on utilization for the inexperienced users, corroborating the results of Davis et al. Note, however, that in both studies the focus was usage behavior for both experienced and inexperienced users, rather than adoption behavior. Further, Cooper and Zmud (1990) and Laudon (1985) argued that "rational" task-technology fit better explains adoption, and that later implementation stages such as more socio-political and "learning" approaches better explain infusion such as bureaucratic self-interest.

A first step in attaining IS success is the acceptability of IS, but long-run sustainability of an IS and its subsequent attainment will be contingent on its continuance usage as against first-time usage. This situation arises because of its relevance in everyday business processes; however, intermittent, unsuitable, and ineffectual long-run use of IS could induce organisation collapse (Lyytinen & Hirschheim 1987).

Understanding continuance use or "continuance" (as against first use or "acceptance") is the focus of this current research. IS continuance from the point of view of the consumer

is crucial for the sustainability of firms using electronic commerce, such as Internet service providers (ISPs), online retailers, banks, brokerages, travel agencies, all of which are operating on an online platform (Bhattacharjee, 2001), and health information systems (Hadji & Degoulet, 2016; Ayanso et al., 2015; Bhattacharjee & Lin, 2015; Lehto & Oinas-Kukkonen, 2015; Spil, LeRouge, Trimmer, & Wiggins, 2010). However, a scarcity of studies related to IS continuance exist in health information technology field and most existing research focuses on the pre-adoption behavior of physicians and other stakeholders within healthcare (Ayanso et al., 2015; Spil, LeRouge, Trimmer & Wiggins, 2010).

The IS continuance intention was originally derived by adapting two items from the scale of Mathieson's (1991) that captured behavioural intention to accept IS. The third item was intended to measure discontinuance intention of OBD. Roca, Chiu, and Martínez (2006), examined the associations between EDT and TAM constructs within the same model. Their study focused on the use of an e-learning system vis-à-vis their continuance intention to use the IS. They discovered that CI utilization is result of users' satisfaction. In their study, satisfaction was jointly arrived at by taking into consideration perceived usefulness, the quality of information, confirmation, quality of service, system quality, perception of users and cognitive absorption. This study expands the literature by being the first to incorporate Continues Intention, EDT and TAM into a combined model. Figure 2.12 shows Bhattacharjee's (2001) Post-Acceptance Model of IS Continuance.

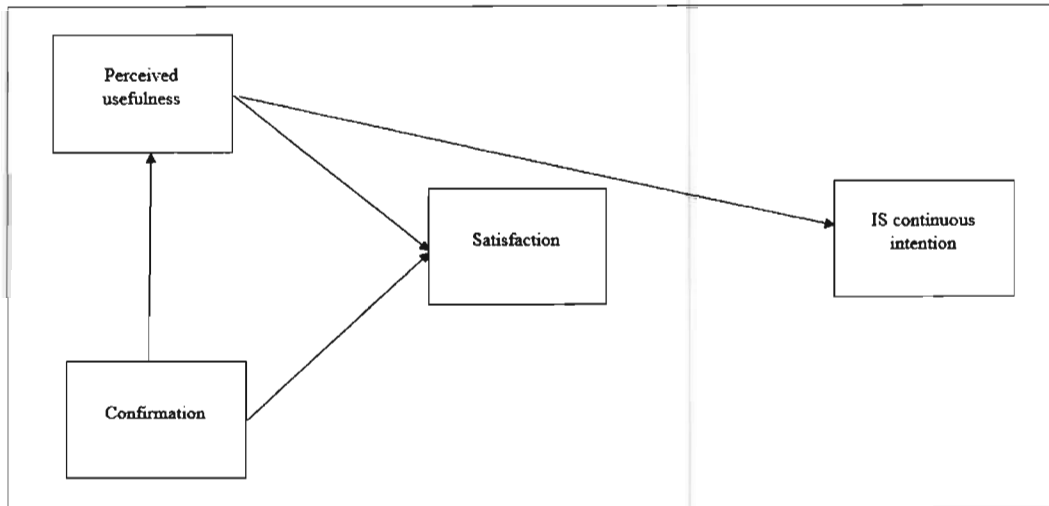


Figure 2.12
Post acceptance model of IS continuance
 Source: Bhattacharjee (2001)

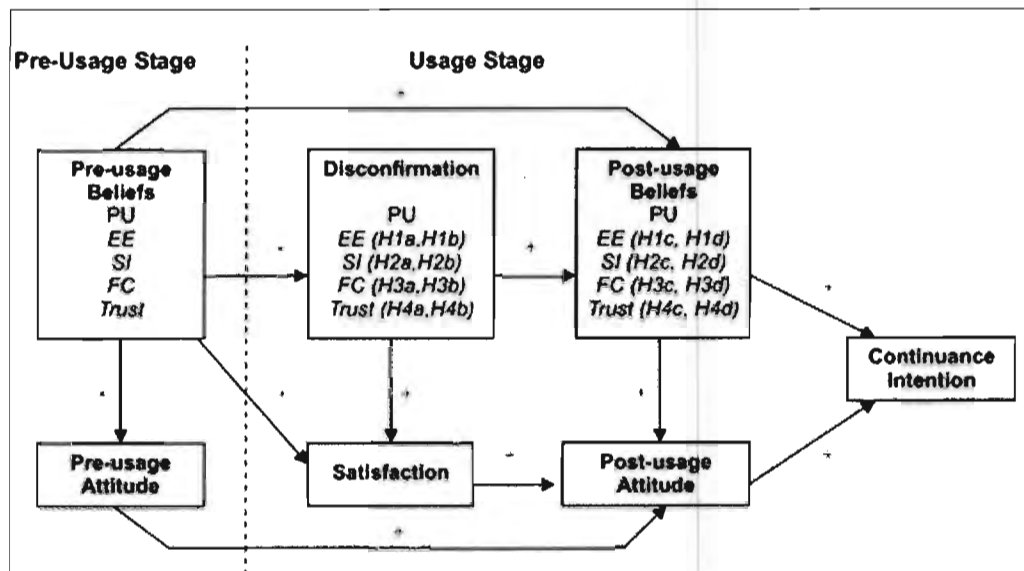
The issue of continuance has been studied in IS research. Prior research on IS implementation have examined it as "implementation" (Zmud 1982), "incorporation" (Kwon & Zmud, 1987), and "routinization" (Cooper & Zmud, 1990). The research recognizes a stage after the acceptance has occurred when the usage of IS exceeds conscious behavior and is normalized as a part of the individual's routine. Similarly, the theory of innovation diffusion based on its adoption decision process (comprising knowledge, persuasion, decision, implementation, and confirmation phases) opines that adopters will reconsider their prior acceptance decision at the final "confirmation" stage and decide on continuation of the innovative process or disengaging from such (Rogers, 1995).

Nevertheless, the studies view the concept of continuance as an addition to acceptance behaviours (i.e., they engage the same pre-acceptance constructs to describe both the continuance decisions and acceptance decisions), which simply means that continuance co-varies with acceptance (Davis, Bagozzi, & Warshaw, 1989; Karahanna, Straub & Chervany, 1999), and as a result cannot explain why a number of users would end up discontinuing IS after they had previously accepted it (the "acceptance-discontinuance anomaly"). Furthermore, previous study also fails to provide a convincing explanation for the psychological motivations of users "emerging" subsequent to their initial acceptance, which eventually alters the continuance decisions of the users as against their previous acceptance decisions. In some cases, the present acceptance model provides a narrow justification of, and may often dispute, the visible continuance behaviours (Bhattacharjee, 2001).

Therefore, information technology acceptance and continuance are conceptually and temporally distinct behaviours, in that continuance can occur only after acceptance (first-time use) (Bhattacharjee & Lin, 2015). However, information technology continuance research has largely followed the same theoretical trajectory as that of information technology acceptance (Ortiz de Guinea & Markus, 2009). A common underlying premise in these studies is that continued information technology use is fundamentally an intentional or purposeful behaviour that is based on users' conscious or planned decisions to act in a certain way (Bhattacharjee & Lin, 2015).

In addition, an alternative theory has been presented to explain technology adoption and usage. This is referred to as the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). Although both theoretical viewpoints help explain IS usage, no organized effort has been made to integrate them to develop a more wide-ranging view of the occurrence (Venkatesh, Thong, Chan, Hu, & Brown, 2011), based on empirical underpinnings (Greenwood, 1974; Gioia & Pitre, 1990).

Venkatesh, Thong, Chan, Hu, & Brown (2011) expanded the two-stage ECT work by Bhattacharjee and Premkumar's (2004) bringing in three determinants from the UTAUT (effort expectancy, facilitating conditions and social influence), and trust to examine the improved IS continuance model. They did this in their examination of two e-government technological systems that allow the general public to make use of the government services. However, Venkatesh et al. (2011) further contended that integration UTAUT with ECT can be extended to enhance our understanding of the post-adoption phenomenon. The prospects of an individual about using a product or a system are not primarily tied to performance. For example, although the expected performance of a system has been found to be important for influencing technology acceptance across a wide range of technologies and user populations (Thong, 1999; Venkatesh et al., 2003), expected performance is not always the sturdiest predictor (Venkatesh, 1999; Hong, Thong, & Tam 2006; Thong, Hong, & Tam, 2006). What this means is that user expectations about a system can be discerned from a myriad of aspects together with ease of use (Venkatesh, 1999). User expectations about the various aspects of a system, like performance-specific expectations, are subject to change after usage experience.



(i) The constructs added in (Venkatesh et al., 2011) work are italicised. (ii) PU, perceived usefulness; EE, effort expectancy; SI, social influence; FC, facilitating conditions.

Figure 2.13
An expanded two-stage model of IS continuance
Source: Venkatesh et al., (2011)

The findings show that additional UTAUT variables outside observed usefulness (performance expectancy) will be highly relevant in justifying the intervening constructs – i.e., disconfirmation (attitude and satisfaction – and eventually, the intention of IS continuance). The findings highlight that the fundamental function of trust on the before- and after-usage attitudes of individuals in the context of IS usage where broadcast of delicate and personal information is necessary. Lastly, the study findings show proof of the insistent effect of perceived usefulness and the function of the evolving variable of disconfirmation and satisfaction in forging the beliefs and attitude, thus justifying the study of Bhattacharjee and Premkumar (2004). Such a duplication motivated by theory

and expanded is highly relevant as it shows whether such a theoretical model predicted in one context will be equally as effective in another (Johns, 2006).

Later, Tao Zhou (2011) conducted research investigating the determinants of mobile Internet continuance. The research had as its main focus examining mobile Internet continuance from the extrinsic and intrinsic motivational perspectives. The theoretical framework was centred on the UTAUT and Flow Theory. The research employed survey data that were analysed using structural equation modelling. The findings reveal that the flow factors, which comprise perceived enjoyment and attention focus, strongly influence the satisfaction of users, which also influences the continuance of usage. Furthermore, performance expectancy, social influence and facilitating conditions also influence continuance usage. The findings show that mobile service providers focus on both dimensions of user performance and experience to enhance usage of mobile Internet continuance.

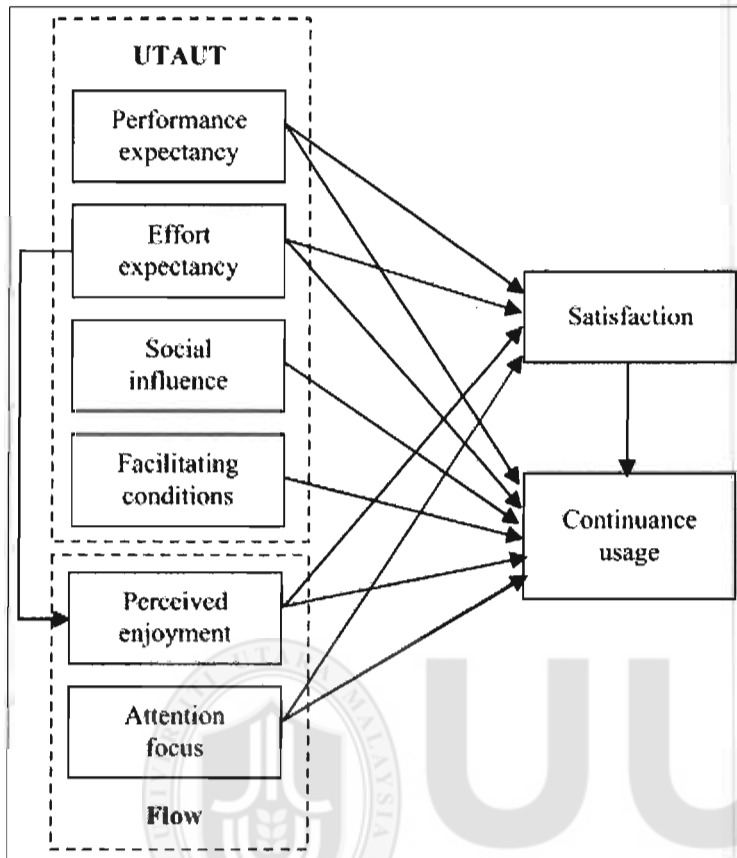


Figure 2.14
The Unified Theory of Acceptance and Use of Technology and Flow Theory
 Source: Tao Zhou (2011)

Although several theories have attempted to explain the intention to embrace new technologies, the review of the literature suggests that the UTAUT has emerged as a popular theory to explain technology adoption. Moreover, many recent studies of technology adoption have used the UTAUT for the prediction of technology as the basis for their analysis framework (Alalwan, Dwivedi, & Rana, 2017; Ho, Yang, & Chen, 2017; Zawaideh, 2017(a, b); Williams, Rana, & Dwivedi, 2015; Alazzam, Basari, Sibghatullah, Doheir, Enaizan, and Mamra, 2015); Al-adwan & Berger. 2013; Venkatesh, Sykes, & Zhang, 2011; Holtz & Krein, 2011; Jeng & Tzeng, 2012; Ifinedo, 2012; Al-nassar,

Abdullah, Rozaini, & Osman (2011a, b); Baharom, Khorma, Mohd, & Al-Bashayreh, 2011; AbuShanab, Pearson, & Setterstrom, 2010; AbuShanab & Pearson, (2009, 2007)).

Other have studied IT usages in virtual communities (VC) and e-learning environments. Ho, Yang, and Chen, (2017) conducted a study used a cosmetic VC as the research context and the UTAUT model as the theoretical structure aim to explore factors affecting the pre-usage intentions of VC members. Results showed that only performance expectancy and social influence significantly affecting re-usage intentions. Moreover, Zawaideh (2017b) also conducted a study aimed at identifying factors that can explain the usage of e-learning environments by higher education students at Al-Madinah International University in Malaysia. The results showed that performance expectancy, effort expectancy, social influence and facilitating conditions significantly affected the intent of students to use e- learning.

More and above, De Veer, Flueren, Bekkema, and Francke (2011) investigated the factors responsible for adopting healthcare technologies employed in nursing care such as telecare technologies and electronic recording of patient records. Their findings reveal that the specifics of the technology along with the intervening attributes of the nurses and the organization's political environment were the major determinants predicting technology adoption.

UTAUT and its modified variants have been used to study the medical field. Venkatesh, Sykes, and Zhang (2011) modified the UTAUT model in the context of EMR adopted by

doctors. Questionnaires were distributed to 202 doctors working full time in a private hospital. The result indicated that the UTAUT helped to explain the intention of doctors to accept EMR and that age appeared to moderate the intention to use with a variation of 44%. Holtz and Krein (2011) attempted to explain the perception of nurses towards the setting up of a new EMR. The study employed qualitative and quantitative methods for a group of licensed and registered nursing practitioners. The study found that 92% of those who responded to the survey were women and that performance expectancy was found to be significant. The influence of effort expectancy was not a significant determinant as Venkatesh et al. (2003) had opined.

Meanwhile, Jeng and Tzeng (2012) investigated influencing factors determining the behavioural intention of medical practitioners towards making use of a new Clinical Decision Support System (CDSS). They employed the fuzzy Decision-Making Trial and Evaluation Laboratory (DEMATEL) technique to determine the pattern of relationships linking the UTAUT variables. The result clearly shows no association between social influence and users' intention towards CDSS, while that of performance expectancy and this intention had a significant relationship. Moreover, Ifinedo (2012) expanded the UTAUT model by incorporating compatibility to examine the acceptability of technology by providers of healthcare in Canada excluding physicians. The study found out that the level of technology acceptance can be explained by effort expectancy, social influence, and facilitating condition.

In the Jordanian context, a few studies have employed UTAUT to investigate technology acceptance in general and specifically continuance intention. Scholars have investigated many contexts through employing UTAUT, namely, e-learning, (Zawaideh, 2017b; Jaradat & Banikhaled, 2013; Alrawashdeh, Muhairat, & Alqatawnah, 2012), e-banking, (Alalwan, Dwivedi & Rana, 2017; AbuShanab & Pearson, 2007; AbuShanab, Pearson, & Setterstrom, 2010; Al Mashaqba & Nassar, 2012). e-commerce, Jaradat & Rababaa (2013). e-government (Zawaideh, 2017a), and e-health (Alazzam, Basari, Sibghatullah, Doheir, Enaizan & Mamra, 2015).

Due to scarcity of studies investigating EHRs in the Jordanian context studies employing TAM to investigate healthcare providers intention to use EHRs are also reported (Baharom, Khorma, Mohd, & Al-Bashayreh, 2011; Al-adwan & Berger, 2013; Al-nassar, Abdullah, Rozaini, & Osman, 2011a; Al-nassar, Abdullah, Rozaini, & Osman, 2011b).

Several studies have examined factors IT usage in Jordanian contexts such as banking and e-government. Alalwan, Dwivedi, and Rana (2017) conducted a study to investigate the factors influencing behavioural intention and adoption of mobile banking by customers of Jordanian banks. The results mainly showed that behavioural intention is significantly and positively influenced by performance expectancy, effort expectancy, hedonic motivation, price value and trust. Al Mashaqba and Nassar (2012) carried out a study investigating the use of mobile banking services in Jordan by employing UTAUT. The result revealed that performance expectancy and social intention significantly

influenced behavioural intentions. However, the results showed that effort expectancy had no significant effect on behavioural intention.

Others have studied Internet banking in Jordan. AbuShanab and Pearson (2007) investigated the key determinants influencing adoption of Internet banking in Jordan. The results of the study revealed that performance expectancy, effort expectancy, and social influence are significantly associated with customer's intention to adopt Internet banking. Then in 2010, AbuShanab, Pearson, and Setterstrom conducted a study to investigate a counter bank customer's intention to make use of Internet banking. The results revealed a significant and positive association between PE and BI Effort, EE and BI, and SI and BI. The results indicated that the effect of the facilitating conditions perceived failed to predict behavioural intention. In addition, Jaradat and Rababaa (2013) conducted a study to investigate key determinants influencing the decision to make use of mobile commerce (M-commerce) among Jordanians. The result revealed that performance expectancy, effort expectancy, and social influence have a significant influence on behavioural intention to use m-commerce services in Jordan. Facilitating conditions has no significant influence on the behavioural intention to use m-commerce services in Jordan.

Zawaideh (2017a) examined the acceptance possibility of e-government and the major factors impacting the application of e-government in the context of Jordan citizens. The results show that performance expectancy, effort expectancy, social influence and facilitating conditions significantly affected the intent of citizen in employing electronic government.

With respect to education, Jaradat and Banikhaled (2013) investigated determinants of undergraduate student's willingness to adopt website-service, utilising UTAUT in the Jordanian environment. The result revealed that effort and performance expectancy influenced behavioural intentions. The findings indicated that social influence, facilitating conditions and website quality had no effect on behavioural intention to use.

Meanwhile, Alrawashdeh et al. (2012) conducted research aimed at expanding UTAUT employing variables such as web based training system flexibility, interactivity between system and system enjoyment, to provide an explanation on the intention of employees towards using web-based training system. The study used public sector employees in Jordan. The findings of the study show that effort expectancy, performance expectancy, facilitating conditions and social influence have significant relationship with the intention of employees to make use of web based training system.

Other have studied the used of IT in the Jordanian healthcare system. Alazzam et al. (2015) conducted a survey focussing on Jordanian hospitals, examining the determinants of EHRs acceptance by Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) model. The study also tested Hedonic motivation and price in investigating the intention of end users to utilize EHR. Hedonic motivation is viewed as fun or pleasure derived from using a technology. It has been perceived to be highly relevant in influencing technology acceptance and its use (Brown & Venkatesh, 2005). In accordance to this particular definition, this variable should not be included in this study because of the

nature of EHRs is considered as a work of demand to accomplish it; price value is viewed as consumers' cognitive trade-off between the perceived benefits of the applications and the monetary cost for using them (Dodds, Monroe, & Grewal 1991), and likewise, this construct should not include in this study because the end user are employees that are not obligated to negotiate or pay to use this program. The study did not provide any empirical results.

Next, Al-adwan and Berger (2013) also conducted a pilot study examining EHR acceptance and utilization by physicians in Jordan. The research developed an improved version of the revised technology acceptance model (TAM). Their paper describes the theoretical basis behind the development of a research model that will be employed later to empirically validate the model using substantial quantitative and qualitative data. Though reaching no conclusions, this work develops a thoroughly constructed research model to extend the technology acceptance research into the health sector

Baharom, Khorma, Mohd, and Al-Bashayreh (2011) conducted a pilot study to develop a model to explain the acceptance of Electronic Medical Records (EMR) by doctors in a privately-run hospital in Jordan. The study expands the technology acceptance model (TAM) exploring determinants of Individual Capabilities; Self-Efficacy (SE) and Perceived Behavioral Control (PBC). The initial findings propose further determinants in addition to the original determinants in TAM making Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and Behavioral Intention to use (BI), SE, and PBC working in cooperation. However, the researchers did not provide any final results.

Based on the review of relevant literature, an obvious scarcity exists in research that employed UTUAT to study CI in healthcare industry and among healthcare providers in general and specially among nurses in Jordan; also, the previous studies did not highlight on pre-post adoption issue. The current research will use UTAUT 2 to study CI in Jordanian public health sector among nurses, and highlight on post-adoption issues in Jordan that were not covered before.



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Table 2.2
Selected literature review of continuous intention

Source	Country	Setting	Result
Ho, Yang & Chen (2017)	Taiwan	Through an online survey, cosmetic virtual community (VC) as the research context	Results show that only performance expectancy and social influence significantly affecting re-usage intentions.
Alalwan, Dwivedi & Rana (2017).	Jordan	Banks	The results mainly showed that Behavioural intention is significantly and positively influenced by performance expectancy, effort expectancy, hedonic motivation, price value and trust.
Zawaideh (2017a)	Jordan	E-Government, context of Jordan citizens	The results show performance expectancy, effort expectancy, social influence and facilitating conditions' significantly affecting the intent of citizen in employing electronic government.
Zawaideh (2017b)	Malaysia	E-learning, high education students Al-Madinah International University.	The results show Performance expectancy, effort expectancy, social influence and facilitating conditions' significantly affecting the intent of students to use e- learning.
Kohnke, Cole, & Bush, (2014)	USA	patients and clinicians who use the Telehealth equipment at Henry Ford at Home e-Home Care	Performance expectancy and social influence are significant in predicting behavioral intent and the validation that as effort expectancy raises.
Liu, Miguel Cruz, Rios Rincon, Buttar, Ranson & Goertzen, (2014)	Canada	Examined factors that affect the acceptance behavior and use of new technologies among rehabilitation therapists at a large rehabilitation hospital	Performance expectancy greatly influenced behavioural intention to use new technologies among the respondents, however, neither effort expectancy nor social influence significantly influenced constructs for

Table 2.2 (continued)
Selected literature review of continuous intention

			behavioural intention to use new technologies; also, facilitating conditions and behavioural intention to use new technologies were prominent constructs for current use of new technologies in rehabilitation, with facilitating conditions being the strongest.
Jaradat & Banikhaled, (2013)	Jordan	E- Learning, University, Undergrads students	The result revealed that performance expectancy and effort expectancy significantly predicted behavioural intention. Also, social influence, website quality, and facilitating conditions did not affect behavioural intention to use.
Jaradat & Rababaa, (2013)	Jordan	E-Commerce, University, undergraduate university students	The result revealed performance expectancy, effort expectancy, and social influence have a significant relationship with behavioural intention to use m-commerce services in Jordan. Facilitating conditions have no significant effect on behavioural intention to use m-commerce services in Jordan.
Al Mashaqba & Nassar (2012)	Jordan	E-Banking, Banks, Bank clients	The result revealed performance expectancy and social influence significantly affect behavioural intention. Also, the results show that effort expectancy has no significant effect on behavioural intention to use.
Alrawashdeh, Muhairat, & Alqatawnah, (2012)	Jordan	E- Learning, University, employees	Revelations from the study indicated that effort expectancy, performance expectancy, facilitating

Table 2.2 (continued)
Selected literature review of continuouse intention

			conditions, social influence have significant relationship with employees' intention to use web based training system.
Jeng & Tzeng, (2012)	Taiwan	Hospitals- doctors	Social influence does not matter in the behavioural intention to use the CDSS for medical professionals, while Effort expectancy and performance expectancy have significant effect on behavioural intention.
Ifinedo, (2012)	Canada	Some healthcare professional associations (http://www.crnns.ca and http://www.cotns.ca) and individual professionals whose contacts we obtained from publicly available directories in Nova Scotia, Canada.	Effort expectancy, social influence, and facilitating conditions significantly predicted healthcare professionals' technology acceptance.
Venkatesh, Thong, Chan, Hu, & Brown, (2011)	Hong Kong	Longitudinal research among 3159 Hong Kong citizens on two electronic government (e-government) technologies that enable citizens' access government services.	Evidence from the study showed that additional UTAUT constructs outside perceived usefulness (performance expectancy) are important in explaining the intervening variables – i.e. disconfirmation, attitude and satisfaction – and eventually, IS continuance intention.
Tao Zhou (2011)	China	Two universities located in an eastern China city	Findings suggest that mobile service providers need to focus on both perspectives of user performance and experience to facilitate mobile Internet continuance usage.
Venkatesh, Sykes & Zhang, (2011)	USA	One hospital, doctors.	The UTAUT did significantly explain doctors' intention to adopt EMR,

Table 2.2 (continued)
Selected literature review of continouse intention

Abushanab, Pearson, & Setterstrom, (2010)	Jordan	E-Banking, Banks, Bank clients	The results revealed a significant positive relationship between PE and BI Effort, EE and BI, and SI and BI. Also, influence of perceived facilitating conditions was not significant in predicting behavioral intention.
Wills, El-Gayar & Bennett (2008)	USA	EMRs, hospitals, registered nurses', certified nurse practitioners and physician assistants	The findings indicate that Social Influence has the most direct influence on intention to use, followed by performance expectancy, and effort expectancy.

2.6 Independent Variables

2.6.1 Effort Expectancy (EE)

Effort expectancy can be viewed as the user’s perceptions of the technology’s simplicity in terms of its usage (Holtz & Krein, 2011). The constructs are, complexity in Diffusion of Innovations Theory (DOI), complexity in MPCU and ease of use in TAM (Hung et al., 2007; Venkatesh et al., 2003). Venkatesh et al. (2003) asserted that the behavioural intention of a particular operator to use information technology is predicted by the effort expectancy.

Furthermore, Faaeq, Ismail, Sheik Osman, Al-Swidi and Faieq (2014) opined in their study that effort expectancy could provide a plausible explanation on user friendliness towards engaging in an innovation. Also of note, in information systems, such as information kiosks and mobile setting, effort expectancy fails to explain the intention of

users to engage in a new technology (Wu & Tao, 2007; Adulwahab & Dahalin, 2011). This is also highlighted in the work of Aggelidis and Chatzoglou (2009) that asserted effort expectancy explained just about 42% of the intention variance. Similarly, Chang et al. (2007) reported effort expectancy predict 22% of the intention variance. In addition, Bhattacharjee and Himet (2007) reported that effort expectancy could explain 29% of the intention variance.

In respect to CI, prior studies have opined that the more complex the innovation, the less will be the cases of adoption amongst the consumers (Venkatesh & Brown, 2001; Brown & Venkatesh, 2005). As the degree of effort expectancy poses a challenge to the extent of technology use, different views of the effort expectancy will only come into use after a practical involvement (Venkatesh & Davis, 1996). Venkatesh (2000) mentioned that, prior to the practical experience, the perception of the users about simplicity in usage will be tailored towards the user's previous knowledge about using a computer. In the event of practical experience, the user's opinion regarding the simplicity of use will then be reflected in the reality of the experience. For example, consumers may perceive simplicity in using a website in a particular way prior to usage. In the event of actual usage of that website, consumers could pass judgement on its design and subsequently confirm or refute their preconceived beliefs.

Also, worthy of note is the scarcity in studies making use of UTAUT to investigate continuance intention to use, as only two studies can be found in the literature as mentioned before in previous section. Venkatesh et al. (2011) extended the work of

Bhattacharjee and Premkumar's (2004) two-stage ECT model by bringing in three highly predicting determinants from UTAUT model, namely, the expectancy of effort, facilitating conditions, social influence, contextual belief, and trust to examine the extended IS continuance model. They carried out a longitudinal survey, distributing questionnaires to 3,159 nationals spread across Hong Kong electronic government (e-government) platforms that would allow the consumers access to the services of government. The findings reveal that effort expectancy influences continuance intention. Also, Tao Zhou (2011) examined mobile Internet continuance in China from the extrinsic and intrinsic motivation perspective using UTAUT as well as flow theory. The findings show that effort expectancy was not relevant in predicting continuance Intention.

Further examining the relevance of UTAUT, several studies have adopted the theory as the basis for their research frameworks on technology adoption, as the theory helps in providing justifications to predictors of technology (see for example, Ho, Yang & Chen, 2017; Zawaideh, 2017b; Liu, Miguel Cruz, Rios Rincon, Buttar, Ranson, & Goertzen, 2015; Kohnke, Cole, & Bush, 2014; Bennani & Oumlil, 2014; Jeng & Tzeng, 2012; Ifinedo, 2012; Venkatesh, Sykes, & Zhang, 2011; Holtz & Krein, 2011; Aggelidis & Chatzoglou, 2009; Steele, Lo, Secombe, & Wong, 2009; Wills, El-Gayar, and Bennett, 2008; Duyck, Pynoo, Devolder, Voet, Adan, & Vercruysse, 2008, 2008b; Chang, Hwang, Hung, & Li, 2007; Schaper & Pervan, 2007).

Some have studied effort expectancy and usages. Ho, Yang, and Chen, (2017) conducted a study using a cosmetic virtual community (VC) as the research context and the UTAUT

model as the theoretical structure aimed to explore factors affecting the re-usage intentions of VC members. Results show that effort expectancy was not significantly affecting re-usage intentions. Moreover, Zawaideh (2017b) also conducted a study aimed at identifying factors that can explain the usage of e-learning environments by higher education students at Al-Madinah International University in Malaysia. The results show that effort expectancy' significantly affecting the intent of students to use e- learning. Also, Liu, Miguel Cruz, Rios Rincon, Buttar, Ranson and Goertzen (2015) conducted a study to determine the factors that influence the accepted behavior towards using newly developed technologies for rehabilitating patients by therapists at a big Canadian hospital. The results show that effort expectancy was positively associated with behavioural intention to use new technologies.

Kohnke, Cole, and Bush (2014) utilized UTAUT in predicting the behavioural intention of patients and clinicians who use the Telehealth equipment at Henry Ford at Home e-Home Care, striving towards technology adoption. The findings reveal that effort expectancy significantly predicting the behavioural intent.

Further Ifinedo (2012) made a minor modification in the UTAUT. The study investigated the determinants of IS acceptance among providers of healthcare in Canada. The study surveyed 227 healthcare professionals. As in the case of the earlier research reviewed, this study also asserts that their decision to use IS and usage behaviours were highly associated with effort expectancy.

Also, Jeng and Tzeng (2012) investigating factors influencing the behaviour of medical professionals regarding their decision to make use of a new Clinical Decision Support System (CDSS). The study utilized the fuzzy Decision-Making Trial and Evaluation Laboratory (DEMATEL) technique to investigate the causal associations amongst the UTAUT variables. The results clearly show association between effort expectancy and the intention to use the CDSS.

The UTAUT has also been used to study EMR. Venkatesh, Sykes, and Zhang (2011) employed UTAUT and adapted the theory in studying EMR usage by doctors. They tested their model over a 7-month period longitudinal period in a hospital that had just implemented a new system of EMR. The results reveal that effort expectancy had a significant relationship with the decision to use among physicians. Further, Chang, Hwang, Hung and Li (2007) examined the acceptability of Clinical Decision Support System (CDSS) by doctors. Also, Schaper and Pervan (2007) investigated IT acceptance and utilization by occupational therapists in Australia. The found effort expectancy had a significant impact on a physician's intention to use CDSS and on an occupational therapist's intention to use IT

Similarly, Wills, El-Gayar and Bennett (2008) focused on a group of registered nurses (nurses with certification and physician assistants). The study examined their views on EMR's as a way of predicting and defining enhanced use. The research also made use of the UTAUT as its conceptual model, and the findings reveal and provide support for the potency of UTAUT in providing a reasonable explanation on the unanimous decision of

the healthcare professionals in accepting EMR's and effort expectancy on the intention of nurses to use IT.

Others, on the contrary, have found the opposite results. Bennani and Oumlil, (2014) in a study investigating the acceptability of Moroccan nurses in utilising EMR in public and private hospitals; revealed that effort expectancy did not have influence on Moroccan nurses. Furthermore, Holtz and Krein (2011) also relied on the UTAUT model to try if nurses in a particular hospital would embrace the setting up of a new electronic medical record (EMR) system. The results of the survey show that effort expectancy was not significant with the intention to use the EMR. On a final note, examining UTAUT in the context of EMR, Duyck, Pynoo, Devolder, Voet, Adang and Vercruysse (2008b) investigated individual staff at the radiology department of the Ghent University Hospital, an IT compliant department on the acceptability of PACS. The study result reveals that effort expectancy played no significant role on intention.

In the Jordanian context, several studies have also utilized UTAUT to investigate the acceptance of technology in general but did not address continuance intention. The studies made use of UTAUT in investigating e-learning (Jaradat & Banikhaled, 2013; Alrawashdeh, Muhairat, & Alqatawnah, 2012), e-banking, (Alalwan, Dwivedi, & Rana 2017; AbuShanab & Pearson 2007; AbuShanab, Pearson, & Setterstrom 2010; Al Mashaqba & Nassar, 2012), e-commerce (Jaradat & Rababaa, 2013), e-government (Zawaideh, 2017a) and e-health (Alazzam, Basari, Sibghatullah, Doheir, Enaizan & Mamra, 2015).

Studies have examined the relationship of effort expectancy with behavioural intention in the Jordanian contexts in mobile banking, e-government, and mobile commerce. Alalwan, Dwivedi, and Rana (2017) conducted a study to investigate the factors influencing behavioural intention and the adoption of mobile banking by customers of Jordanian banks. The results mainly showed that effort expectancy significantly and positively influenced behavioural intention. Zawaideh (2017a) also conducted a study to examine the acceptance possibility of e-government and the major factors impacting the application of e-government in the context of Jordan citizens. The results show effort expectancy significantly affecting the intent of citizen in employing electronic government. Moreover, Jaradat and Rababaa (2013) conducted a study to examine influencing factors that serve as a basis for passing judgement on the willingness to use mobile commerce (m-commerce) among consumers in Jordan. The result revealed effort expectancy had a significant relationship with the behavioural intention to make use of m-commerce services in Jordan.

Others have studied behavioural intentions in an educational context. Jaradat and Banikhaled (2013), in an investigation of undergraduate students, looked at specific factors influencing their intention to adopt website-services and applied UTAUT in Jordan. The result revealed that behavioural intentions had a relationship with effort expectancy. Similarly, Alrawashdeh et al. (2012) extends UTAUT making use of influencing factors such as the ease of use of the online training system, system interactivity and system enjoyment aimed at explaining the decisions by employees to

employ web-based training system in course of their daily work. Using responses from 500 public-sector employees, the findings of the study provide strong support for the claim that effort expectancy has a significant association with the intention of the employees to use a web based system in training.

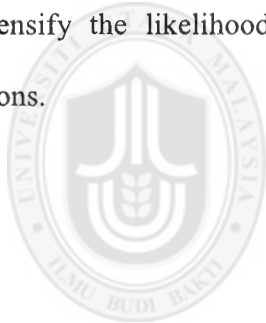
AbuShanab, Pearson, and Setterstrom (2010) investigated the intention to use Internet banking services by bank customers. The results again highlight a positive association between effort expectancy and behavioural intention. Also, AbuShanab and Pearson (2007) explored factors influencing the usage of Internet banking services in the Jordanian environment. The results of the study show that effort expectancy was fundamental in determining consumer's decision to adopt Internet banking.

On the other side of the argument, Al Mashaqba and Nassar (2012) provide a contrary view. Their study attempts to determine the usage of mobile banking services in Jordan by employing UTAUT. The results show that effort expectancy has no significant effect on behavioural intention to use.

With reference to prior research as evident in the literature review, clearly a paucity of studies exist that have utilized UTUAT to examine CI in the healthcare sector and amongst providers of healthcare generally and specifically between nurses in Jordan, Furthermore varying views exists in findings among researchers on the influence of effort expectancy on intention to use (Kohnke et, al. 2014; Liu et, al. 2014; Ifinedo, 2012) emphasized that effort expectancy influences the intention to use among healthcare

specialists that perceive IT as improving their performance as well as their productivity when they make use of such systems during their work. On the other hand, other scholars have found effort expectancy not to be a useful tool in predicting the intentions of healthcare professionals (Bennani & Oumlil, 2014; Duyck et al., 2008; Holtz & Krein, 2011).

This contradictory evidence also brings forth the need for more studies to examine the reasons behind differences in findings and to examine the results to develop useful model for leaders in the healthcare system and assist them in understanding their environment and intensify the likelihood of their implementing first-hand innovations in their institutions.



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Table 2.3

Selected literature review of effort expectancy.

Sources	Country	Setting	Result
Alalwan, Dwivedi & Rana (2017).	Jordan	Banks, customers of Jordanian banks.	The results mainly showed that Effort expectancy significantly and positively influences intention
Zawaideh (2017a)	Jordan	E-Government, context of Jordan citizens	The results show, effort expectancy significantly affecting the intent of citizen in employing electronic government.
Zawaideh (2017b)	Malaysia	E-learning, high education students Al-Madinah International University.	The results show effort expectancy' significantly affecting the intent of students to use e-learning.
Ho, Yang & Chen (2017)	Taiwan	Through an online survey, cosmetic virtual community (VC) as the research context.	Results show that only effort expectancy was not significantly affecting re-usage intentions.
Bennani & Oumlil (2014)	Moroco	EMR, Nurses, Hospitals	Effort expectancy did not have influence on Moroccans nurse's intention to use EMR.
Kohnke, Cole, & Bush (2014)	USA	patients and clinicians who use the Telehealth equipment at Henry Ford at Home e-Home Care	Effort expectancy significantly predicting the behavioural intent.
Liu, Miguel Cruz, Rios Rincon, Buttar, Ranson & Goertzen (2014)	Canada	Examined factors that affect the acceptance behavior and use of new technologies among rehabilitation therapists at a large rehabilitation hospital	Effort expectancy was positively associated with the behavioural intention to use new technologies.
Jaradat & Rababaa (2013)	Jordan	E-Commerce, University, undergraduate university students	The result revealed effort expectancy has a significant relationship with the behavioural intention to make use of M-commerce services in Jordan.

Table 2.3 (continued)
Selected literature review of effort expectancy.

Alrawashdeh, Muhairat, & Alqatawnah (2012)	Jordan	E- Learning, University, employees	Effort expectancy has a significant association with the intention of the employees to use a web based system in training.
Al Mashaqba & Nassar (2012)	Jordan	E-Banking, Banks, Bank clients	The results show that effort expectancy has no significant effect on behavioural intention to use.
Jeng & Tzeng (2012)	Taiwan	Hospitals, doctors	The results clearly show association between effort expectancy and the intention to use the CDSS.
Ifinedo (2012)	Canada	Some healthcare professional associations (http://www.crnns.ca and http://www.cotns.ca) and individual professionals whose contacts we obtained from publicly available directories in Nova Scotia, Canada.	Decision to use IS and usage behaviours were highly associated with effort expectancy.
Tao Zhou (2011)	China	Two universities located in an eastern China city	Effort expectancy was not relevant in predicting continuance intention.
Venkatesh, Sykes & Zhang (2011)	USA	EMR, One hospital, doctors.	Effort expectancy has a significant relationship with the decision to use among physicians.
Holtz and Krein (2011)	USA	Hospital located in a rural area of Michigan, nurses	Effort expectancy was not significant with the intention to use the EMR.
Abu Shanab, Pearson, & Setterstrom (2010)	Jordan	E-Banking, Banks, Bank clients	The results revealed a significant positive relationship between Effort Expectancy and behavioural intention to use.
Wills, El-Gayar & Bennett (2008)	USA	EMRs, hospitals, registered nurses', certified nurse practitioners and physician assistants	Effort expectancy had significantly impacting on registered nurses', certified nurse practitioners and physician assistant's intention to use EMR.
Chang, Hwang, Hung & Li (2007)	Taiwan	Clinical decision support system (CDSS), hospitals, physicians	Effort expectancy had significantly impacting

Table 2.3 (continued)
Selected literature review of effort expectancy.

				on physician's intention to use CDSS.
Abu-Shanab & Pearson (2007)	Jordan	E-Banking, banks, bank clients		The results of the study show that effort expectancy was fundamental in determining consumer's decision to adopt Internet banking.

2.6.2 Performance Expectancy (PE)

Performance expectancy is viewed as the notion that some individual holds with respect to perception that technology will aid their job performance (Holtz & Krein, 2011). Venkatesh et al. (2003) determined that performance expectancy was based on five constructs from prior information technology acceptance models as follows: outcomes expectations in SCT, perceived usefulness in TAM, relative advantage in DOI, extrinsic motivation in MM, and job fit in MPCU (Hung et al., 2007; Venkatesh et al., 2003). Furthermore, according to Venkatesh et al. (2003), performance expectancy strongly determines behavioural intention in cases of voluntary and mandatory settings with respect to information technology. Some studies have provided evidence of performance expectancy positively influencing intention behaviour (Aggelidis & Chatzoglou, 2009; Duyck et al., 2008; Hennington, Janz, Amis, & Nichols, 2009; Holtz, & Krein, 2011; Jeng & Tzeng, 2011; Kijsanayotin, Pannarunothai, & Speedie, 2009; Wills et al., 2008).

Regarding CI, Bhattacharjee (2001) urged that, although the related usefulness (performance expectancy)-intention initially originated from an acceptance context, the likelihood was it would be also exist in continuance contexts because the push for humans

towards instrumental behaviours or targeting rewards are independent of the time of occurrence or stage of the particular behaviours. The researcher noticed a scarcity in studies employing UTAUT to investigate continuance intention to use, as only two studies can be found as mentioned before in previous section. Therefore, the researcher reported studies employed UTAUT to investigate intention to use in healthcare sector later.

Venkatesh et al. (2011) expanded the work of Bhattacharjee and Premkumar's (2004) two-stage ECT by bringing in three key determinants from UTAUT, namely, effort expectancy, facilitating conditions and social influence and a key contextual belief to predict the enhanced IS continuance model. They carried out research investigating 3,159 Hong Kong nationals with respect to two e-government technologies that allow citizens to benefit from government services. The result show that performance expectancy significantly influences continuance intention. Also, Tao Zhou (2011) conducted a study utilizing UTAUT and Flow Theory to explore the nature of mobile Internet continuance from both intrinsic and extrinsic motivation angles. The findings show performance expectancy is significant in predicting continuance intention.

Furthermore, Ho, Yang, and Chen, (2017) conducted a study using a cosmetic virtual community (VC) as the research context and the UTAUT model as the theoretical structure aimed at exploring factors affecting the re-usage intentions of VC members. Results show that performance expectancy significantly affected re-usage intentions.

Moreover, Zawaideh (2017b) also conducted a study aimed at identifying factors that can explain the usage of e-learning environments by higher education students at Al-Madinah International University in Malaysia. The results showed that performance expectancy significantly affected the intention of students to use e-learning.

In the healthcare sector, many recent studies of technology adoption have used the UTAUT for the prediction of technology as the basis for their analysis framework (Ho, Yang & Chen, 2017; Kohnke, Cole, & Bush, 2014; Liu, Miguel Cruz, Rios Rincon, Buttar, Ranson, & Goertzen, 2014; Bennani & Oumlil, 2014; Maillet, Mathieu, & Sicotte, 2014; Jeng & Tzeng, 2012; Ifinedo, 2012; Venkatesh, Sykes, & Zhang, 2011; Holtz & Krein, 2011; Aggelidis & Chatzoglou, 2009; Steele, Lo, Secombe, & Wong, 2009; Wills, El-Gayar, and Bennett, 2008; Duyck, Pynoo, Devolder, Voet, Adang & Vercruysse, 2008 a&b; Chang, Hwang, Hung and Li, 2007; Schaper & Pervan, 2007).

In addition, Kohnke et al. (2014) utilized UTAUT to predict the behavioural intention of patients and clinicians who use the Telehealth equipment at Henry Ford at Home e-Home Care to increase adoption of the technology. The findings showed that performance expectancy was significant in predicting behavioural intent. Liu et al. (2014) conducted a similar study aimed at examining the influential factors predicting the acceptance behaviour and utilization of novel technologies by therapists for rehabilitating patients in a hospital in Canada. The results showed that performance expectancy appeared to be the most influential construct predicting behavioural intention to the utilization of new technologies in rehabilitating patients.

Jeng and Tzeng (2012) investigated the determinants of medical professionals' behavioural intention in the use of a new Clinical Decision Support System (CDSS). The study utilised the fuzzy decision-making trial and evaluation laboratory (DEMATEL) procedure to investigate the association between the UTAUT variables. The findings revealed no association between performance expectancy and the intention to use the CDSS.

Ifinedo, (2012) used UTAUT following a slight modification to investigate the determinants of IS acceptance among professionals in the healthcare sector in Canada. The study developed a model and tested it using data from a survey. Questionnaires were distributed to 227 healthcare professionals. The data revealed that performance expectancy did not produce any significant associations. Holtz and Krein (2011) further examined the UTAUT model to explain how hospital nurses would react to the implementation of a new electronic medical record (EMR) system. The result survey responses indicated that performance expectancy was an influencing factor in system adoption.

Venkatesh, Sykes, and Zhang (2011) employed UTAUT as the theoretical basis in the context of EMR system usage and adoption by doctors. They tested their model using longitudinal data, having distributed the questionnaire over a 7-month period in a hospital that had recently adopted a new EMR system. The results show performance expectancy has a significant relationship with intention to use among physicians. Aggelidis and

Chatzoglou (2009) examined the acceptability of HIS by Greek hospital personnel based on UTAUT constructs and uncovered that performance expectancy was significantly affecting behavioural intention. While in 2008, Duyck et al. investigated individuals working in the department of radiology in Ghent University Hospital on their acceptance of PACS. Results showed that performance expectancy appeared to be a dominant factor predicting behavioural intention.

Wills, El-Gayar, and Benett (2008) investigated the acceptability to EMR of registered nurses, certified nurse practitioners and physician assistants to determine its usage. The study made use of UTAUT as its theoretical framework, and the results implied that UTAUT could provide a plausible explanation on the assessment of acceptability of EMR by healthcare professional. The result showed that performance expectancy predicts the intention to use. Also, Chang, Hwang, Hung, and Li (2007) attempted to predict the acceptability of physicians for a Clinical Decision Support System (CDSS). The result showed that performance expectancy influenced the intention to use CDSS of physicians.

In contrast, Bennani¹ and Oumlil (2014) conducted a study to investigate acceptance among Moroccan nurses to use EMR in public and private hospitals in Morocco. The results revealed that intention was not influenced by performance expectancy. Also, Steele et al. (2009) investigated the determinants of the acceptability and viewpoints of WSN-based of the elderly with respect to health monitoring systems. Their results showed that performance expectancy appeared not to be the most imperative determinant on intention.

In the Jordanian environment, a few studies have employed UTAUT to investigate technology acceptance in general but did not address the continuance intention. The scholars investigated many contexts through employing UTAUT, namely, e- Learning (Jaradat & Banikhaled, 2013; Alrawashdeh, Muhairat, & Alqatawnah, 2012), e-banking, (Alalwan, Dwivedi, & Rana 2017; AbuShanab & Pearson 2007; AbuShanab, Pearson, & Setterstrom, 2010; Al Mashaqba & Nassar, 2012), e- dommerce, (Jaradat & Rababaa 2013), e- government (Zawaideh, 2017a) and e-health (Alazzam, Basari, Sibghatullah, Doheir, Enaizan, and Mamra, 2015).

Alalwan, Dwivedi, and Rana (2017) conducted a study to investigate the factors influencing behavioural intention and the adoption of mobile banking by customers of Jordanian banks. The results mainly showed that performance expectancy significantly and positively influence behavioural intention.

Zawaideh (2017a) also conducted a study to examine the acceptance possibility of e-government and the major factors impacting the application of e-government in the context of Jordan citizens. The results showed that performance expectancy significantly affected the intent of citizens in employing electronic government.

AbuShanab and Pearson (2007) investigated the main explanatory variables influencing Internet banking adoption in Jordan. The results of this study showed that performance expectancy has a significant association with a customer's intention to utilize the services of Internet banking. Also, AbuShanab, Pearson, and Setterstrom (2010) conducted

research to examine the intention of “counter bank customers” to use Internet banking. The findings showed a significant positive association in the PE, BI relationship.

In addition, Al Mashaqba and Nassar (2012) also conducted research investigating the usage of mobile banking services in Jordan by employing UTAUT. The result revealed that behavioural intentions were influenced by performance expectancy. Jaradat and Banikhalel (2013) conducted a study investigating the determinants of student’s use of website services by applying the UTAUT in Jordan. The result again revealed that performance expectancy influenced behavioural intentions.

Meanwhile, Alrawashdeh et al. (2012) conducted a study expanding the use of UTAUT employing determinants such as the ease of manipulation of the web training system, system dialogue and system appreciation to provide reasons why employees would or would not use web-based training system. The findings of the study revealed that performance expectancy influenced the intention of employees to use a web-based training system. Then, Jaradat and Rababaa (2013) conducted a study investigating determinants of acceptability and usage of mobile commerce (M-commerce) among consumers in Jordan. The result revealed that performance expectancy was associated with behavioural intention to use M-commerce services in Jordan.

Referring to this research and following an examination of the previous literature, an obvious scarcity exists in research that has employed UTAUT to study CI in the healthcare industry and among healthcare providers in general and especially among

nurses in Jordan. Also, a sharp contrast exists in results among scholars who have examined PE influencing intention to use (Jeng & Tzeng, 2012; Kohnke et al., 2014; Liu et al., 2014; Maillet et al., 2014). These studies also noted that PE influences the intention to use among healthcare professionals who perceive that IT will improve their performance and increase their productivity when they carry out their work utilising such systems.

However, some have revealed that PE may not be a good predictor of professionals' intentions towards healthcare (Bennani & Oumlil, 2014; Neo et al., 2012; Steele et al., 2009; Schaper & Pervan, 2007) and this highlights the need for more investigation to know the reasons behind this variance in results and explore the results in the Jordanian context. Also, it develops a useful model for the healthcare system leaders helping them to understand the environment and increase their chances in implementing new innovations in their institutions. The current research will use UTAUT to study CI in Jordanian public health sector among nurses and highlight the pre-post adoption issue in Jordan, which has not been studied before.

Table 2.4
Selected literature review of performance expectancy

Source	Country	Setting	Result
Alalwan, Dwivedi & Rana (2017).	Jordan	Banks	The results mainly showed that Performance expectancy significantly and positively influences intention.
Zawaideh (2017a).	Jordan	E-Government, context of Jordan citizens	The results show performance expectancy, significantly affecting the intent of citizen in employing electronic government.
Zawaideh (2017b).	Malaysia	E-learning, high education students Al-Madinah International University.	The results show performance expectancy' significantly affecting the intent of students to use e- learning.
Ho, Yang & Chen (2017).	Taiwan	Through an online survey, cosmetic virtual community (VC) as the research context	Results show that performance expectancy significantly affecting re-usage intentions.
Bennani & Oumlil (2014).	Morocco	EMR, nurses, hospitals	Performance expectancy did not have influence on Moroccans nurses.
Kohnke, Cole, & Bush (2014).	USA	Patients and clinicians who use the Telehealth equipment at Henry Ford at Home e-Home Care	The findings show performance expectancy are significant in predicting behavioural intent.
Liu, Miguel Cruz, Rios Rincon, Buttar, Ranson & Goertzen (2014).	Canada	Examined factors that affect the acceptance behavior and use of new technologies among rehabilitation therapists at a large rehabilitation hospital	The results show that performance expectancy appeared to be the most influential construct predicting behavioural intention to the utilization of new technologies in rehabilitating patients.
Jaradat & Banikhalel (2013).	Jordan	E- Learning, University, Undergrads students	The result revealed behavioural intentions had a relationship with performance expectancy.
Jaradat & Rababaa (2013).	Jordan	E-Commerce, University, undergraduate university students	The result revealed performance expectancy has a significant relationship with the

Table 2.4 (continued)
Selected literature review of performance expectancy

			behavioural intention to make use of m-commerce services in Jordan.
Jeng & Tzeng (2012).	Taiwan	Hospitals- doctors	Performance expectancy has a significant impact on behavior intention.
Ifinedo (2012).	Canada	Some healthcare professional associations (http://www.crnns.ca and http://www.cotns.ca) and individual professionals whose contacts we obtained from publicly available directories in Nova Scotia, Canada.	The results revealed that performance expectancy did not have any significant associations with intention to use.
Alrawashdeh, Muhairat, & Alqatawnah (2012).	Jordan	E- Learning, University, employees	Performance expectancy has a significant association with the intention of the employees to use a web based system in training.
Al Mashaqba & Nassar (2012).	Jordan	E-Banking, Banks, Bank clients	The result revealed that behavioural intentions, were influenced by performance expectancy.
Venkatesh, Thong, Chan, Hu, & Brown (2011).	Hong Kong	Longitudinal research among 3159 Hong Kong citizens on two electronic government (e-government) technologies that enable citizens' access government services.	The result show that performance expectancy significantly influences continuance intention.
Tao Zhou (2011).	China	Two universities located in an eastern Chinese cities.	The findings show performance expectancy is significant in predicting continuance intention.
Venkatesh, Sykes, & Zhang (2011).	USA	EMR, One hospital, doctors.	Performance expectancy has a significant relationship with the decision to use among physicians.
Holtz & Krein (2011).	USA	Hospital located in a rural area of Michigan, nurses	Performance expectancy was significant with the intention to use the EMR.
AbuShanab, Pearson, & Setterstrom (2010).	Jordan	E-Banking, Banks, Bank clients	The results revealed a significant positive relationship between performance expectancy

Table 2.4 (continued)
Selected literature review of performance expectancy

			and behavioural intention to use.
Aggelidis & Chatzoglou (2009).	Greek	HIS, Hospital, medical, nursing and administrative personnel.	Performance expectancy has significantly influence on behavioural intention.
Wills, El-Gayar & Bennett (2008).	USA	EMRs, hospitals, registered nurses', certified nurse practitioners and physician assistants	Performance expectancy had significantly impacting on registered nurses, certified nurse practitioners and physician assistant's intention to use EMR.
Chang, Hwang, Hung & Li (2007).	Taiwan	Clinical decision support system (CDSS), hospitals, physicians	Performance expectancy had significantly impacting on physician's intention to use CDSS.
Abu-Shanab & Pearson (2007).	Jordan	E-Banking, banks, bank clients	Performance expectancy has a significant association with customer's intention to utilize the services of internet banking.

2.6.3 Social Influence (SI)

Social influence is the extent to which a person feels social pressures to utilize a certain technology (Holtz & Krein, 2011). It measures the extent to which an individual perceives that other people who are important to him or her believe that he or she must utilize the new technology (Venkatesh et al., 2003). In the decision making of an individual about performing a given behaviour, what people plays a vital role important to the individual think. People tend to take up behaviour that important people agree upon, even if these behaviours or the consequences are not favourable to them. Previous research suggests that in shaping up the intention to use new technology of an individual, social influence is critical (Kijasanayotin, Pannarunothai, & Speedie, 2009; Thompson, Higgins, & Howell,

1991). This supports Aggelidis and Chatzoglou (2009) who reported that 17% of social influence described intention variance. This concept relates to 1) subjective norms in TAM2 and TRA, 3) social factors in MPCU, and 3) image in DOI.

With respect to CI across assorted studies, differences exist on the significance of how social influence impacts the intention to use IS (Venkatesh & Davis, 2000). On one hand, from the viewpoint of TPB, it is anticipated that a direct influence on intention is expected from social influence. During system use, an individual's pre-usage social influence perceptions may be adjusted due to how they observe others act with respect to his or her behaviour, how available new information is and how opinions of peers and friends change. From ECT reasoning, the assumption is that a positive relationship exists between positive disconfirmation of social influence and post usage social influence (Bhattacharjee, 2001). In addition, from prior relevant studies, post usage social influence positively influences continuance intention, in addition to its indirect effect via post-usage attitude. (Venkatesh et al., 2011; Venkatesh et al., 2003).

A paucity of research exists that employs UTAUT to examine continuance intention to use, only two studies were found. As a result, the current research reported studies that made use of UTAUT to examine intention to use within the healthcare sector. In the longitudinal study of Venkatesh et al. (2011), which was an extension of Bhattacharjee and Premkumar's (2004) two-stage ECT, they added three important predictors from UTAUT, which were social influence, facilitating conditions and effort expectancy. They also added the key contextual belief of trust to test the expanded IS continuance model

among 3159 Hong Kong citizens across two e-government technologies that allowed citizens to access services of government. Results revealed that social influence had no effect on continuance intention. In contrast, findings from Tao Zhou (2011) revealed that social influence was significant in predicting continuance intention, in a study drawing on UTAUT and Flow Theory to examine mobile Internet continuance from the view of both intrinsic and extrinsic motivation.

Further examining the relevance of UTAUT, several studies have adopted the theory as the basis for their research frameworks on technology adoption, as the theory helps in providing justifications to predictors of technology. Ho, Yang, and Chen (2017) conducted a study used a cosmetic virtual community (VC) as the research context and the UTAUT model as the theoretical structure aim to explore factors affecting there-usage intentions of VC members. The results showed that social influence significantly affected re-usage intentions. Moreover, Zawaideh (2017b) also conducted a study aimed at identifying factors that can explain the usage of e-learning environments by higher education students at Al-Madinah International University in Malaysia. The results showed that social influence significantly affected the intent of students to use e- learning.

In addition, several recent studies of technology adoption have made use of UTAUT as the basis for their analysis in the healthcare sector to increase adoption of technology. Kohnke, Cole, and Bush (2014) used UTAUT in predicting the behavioural intention of clinicians and patients who utilize Telehealth equipment at Henry Ford e-Home Care in Michigan in the United States. They found social influence to be significant in predicting

behavioural intention and validation as effort expectancy increases. Further findings from Venkatesh, Sykes and Zhang (2011) utilizing UTAUT as its theoretical basis also identified significant influence on intention to use by social influence among doctors

Outside of the United States several other studies have also been done. Liu et al. (2014) conducted a study to investigate factors that influence the acceptance behavior and new use of technologies in rehabilitation by therapists in a Canadian hospital. They found that social influence was a prominent construct in predicting behavioural intention to utilize new technologies. Still utilizing UTAUT, Ifinedo (2012) examined the factors that influence the acceptance of IS among Canadian healthcare professionals using a survey to collect data from respondents. The results indicated that social influence significantly influenced their intention to use an information system and usage behaviours. Similarly, Holtz and Krein (2011) found social influence to predict nurses' intention to use EMR after using UTAUT model to fathom how new electronic medical record (EMR) implementation system was perceived hospital nurses. Giving credence to the influence of social influence on intention to use, Wills et al. (2008) evaluated certified and registered nurse's practitioners as well as physician assistants' acceptance of EMR's as a means of predicting, defining as well as enhancing use. The research employed UTAUT as its theoretical model, findings showed that UTAUT provides reasonable assessment of healthcare professionals' acceptance of EMR's with social influence a noteworthy determining factor of intention and use.

A study conducted by Steele et al. (2009) in Australia examined factors that promoted acceptance and perception of wireless sensor network (WSN) health monitoring system of elderly persons, results indicated that social influence was significantly related to intention to use wireless sensor network (WSN).

Additionally, Aggelidis and Chatzoglou (2009) found social influence to have significantly influenced behavioural intention of Greek hospital personnel after examining HIS acceptance of hospital personnel based on UTAUT.

In another study done within private and public hospitals in Morocco to examine the acceptance among nurses to use EMR, Bennani and Oumlil (2014) found acceptance to have been significantly influenced by social influence.

Other studies have indicated opposite views on social influence on behavioural intention to use. For instance, Jeng and Tzeng (2012) examined the predictive factors for behavioural intention among medical experts to make use of new Clinical Decision Support System (CDSS) in Taiwan. They utilized the fuzzy Decision-Making Trial and Evaluation Laboratory (DEMATEL) method to examine relationship between variables of UTAUT. Findings revealed that the relationship between social influence and intention of using the CDSS was insignificant. Similarly, insignificant results of social influence on intention was also found by Duyck et al. (2008b) who investigated acceptance of PACS by users among staff of department of radiology in a University teaching hospital in Belgium. Another study which found social influence to be insignificantly related to

intention was Schaper and Pervan (2007) after examining acceptance of IT and utilization by occupational therapists in Australia. Furthermore, Chang, Hwang, Hung, and Li (2007) carried out a study in Taiwan to predict acceptance of CDSS by doctors. The findings indicated that social influence had a less significant influence on behavioural intention.

Meanwhile, a few studies have been conducted within the Jordanian context that employed UTAUT to examine the acceptance of technology generally but did not address continuance intention. The researchers examined several perspectives by employing UTAUT including e-learning, e-banking, e-commerce, and e-health. For example, Zawaideh (2017a) conducted a study to examine the acceptance possibility of e-government and the major factors impacting the application of e-government in the context of Jordan citizens. The results showed that social influence significantly affected the intention of citizens to employ electronic government. In addition, Jaradat and Rababaa (2013) carried out a study among Jordanian consumers to investigate crucial elements that influenced the intention to accept and use mobile commerce (m-commerce). The findings showed that social influence was significantly related with behavioural intention to use m-commerce services. Also, AbuShanab and Pearson (2007) carried out a study in Jordan to examine determining factors of Internet banking adoption. Results indicated that the relationship between social influence and the intentions of customers to adopt Internet banking was significant. Al Mashaqba and Nassar (2012) found behavioural intentions to be significantly influenced by social influence in a study conducted to investigate “counter bank customers” intention to examine mobile banking services usage in Jordan, though using UTAUT. Additionally, AbuShanab, Pearson, and

Setterstrom (2010) also found positive significant relationship between social influence and behavioural intention in a study conducted to investigate “counter bank customers” intention to use Internet banking. Applying the same model of UTAUT, Alrawashdeh et al. (2012) found social influence to significantly influence the intention of employees to use training systems that were web based in a study aimed at explaining the intention of employees to use web-based training system.

Other studies conducted within the Jordanian context, however, found an insignificant relationship between social influence and behavioural intention. For instance. Alalwan, Dwived and Rana (2017) conducted a study to investigate the factors influencing behavioural intention and the adoption of mobile banking by customers of Jordanian banks. The results mainly showed that effort expectancy did not significantly influence behavioural intention. Also, Jaradat and Banikhaled (2013) carried out a study of factors that influence the adoption of websites services by undergraduate student utilizing UTAUT. The findings from the study revealed that social influence, had no direct significant influence on behavioural intention to use.

As evident in the literature review, a paucity in studies exist that have utilized UTUAT to examine CI in the healthcare sector and amongst providers of healthcare generally and specifically between nurses in Jordan, furthermore varying views exist in findings among researchers of social influence with respect to usage. (Kohnke et. al. (2014), Liu et al. (2014) and Bennani1 and Oumlil (2014) emphasized that social influence influences the intention to use among healthcare specialists that perceive IT as being able improve their

performance as well as their productivity when they make use of such systems during their work. On the other hand, other scholars have found social influence not to be a useful tool in predicting healthcare professionals’ intentions (Jeng & Tzeng, 2012; Duyck et al., 2008; Schaper & Pervan, 2007; Chang et al., 2007).

These conflicting results bring out the need for more studies to examine the reasons behind these differences in findings and examine the results in Jordan to proffer a useful model for leaders in the healthcare system and assisting them in understanding their environment and increasing the likelihood of successfully implementing first-hand innovations in their institutions. The current research will employ UTAUT 2 to study CI in public health sector within the Jordanian context among nurses and stresses pre-post adoption issues in Jordan, which have not been covered before.

Table 2.5
Selected literature review of social influence

Source	Country	Setting	Result
Alalwan, Dwivedi, & Rana (2017).	Jordan	Banks.	The results mainly showed that social influence did not significantly influence behavioural intention.
Zawaideh (2017a).	Jordan	E-Government, context of Jordan citizens.	The results show social significantly affecting the intent of citizen in employing electronic government.

Table 2.5 (continued)
Selected literature review of social influence

Zawaideh (2017b).	Malaysia	E-learning, high education students Al-Madinah International University.	The results show social influence' significantly affecting the intent of students to use e-learning.
Ho, Yang, & Chen (2017).	Taiwan	Through an online survey, cosmetic virtual community (VC) as the research context.	Results show that social influence significantly affecting re-usage intentions.
Kohnke, Cole, & Bush, (2014).	USA	Patients and clinicians who use the Telehealth equipment at Henry Ford at Home e-Home Care.	The findings show social influence are significant in predicting behavioural intent.
Liu, Miguel Cruz, Rios Rincon, Buttar, Ranson, & Goertzen (2014).	Canada	Examined factors that affect the acceptance behavior and use of new technologies among rehabilitation therapists at a large rehabilitation hospital.	The results show that social influence predicting behavioural intention to the utilization of new technologies in rehabilitating patients.
Bennani & Oumlil, (2014).	Morocco	EMR, nurses, hospitals	Social influence has a significant effect on Moroccans nurse's intention to use EMR.
Jaradat & Banikhaled, (2013)	Jordan	E- Learning, university, undergraduate students	The result revealed behavioural intentions did not have a relationship with social influence.
Jaradat & Rababaa (2013).	Jordan	E-Commerce, university, undergraduate university students	The result revealed social influence has a significant relationship with the behavioural intention to make use of m-commerce services in Jordan.
Jeng & Tzeng, (2012)	Taiwan	Hospitals- doctors	Social influence to have a significant impact on behavior intention.

Table 2.5 (continued)
Selected literature review of social influence

Ifinedo, (2012).	Canada	Some healthcare professional associations (http://www.crnns.ca and http://www.cotns.ca) and individual professionals whose contacts were obtained from publicly available directories in Nova Scotia, Canada.	The results revealed that social influence have a significant association with intention to use.
Alrawashdeh, Muhairat, & Alqatawnah, (2012).	Jordan	E- Learning, university, employees	Social influence has a significant association with the intention of the employees to use a web based system in training.
Al Mashaqba & Nassar (2012).	Jordan	E-Banking, banks, bank clients	The result revealed that behavioural intentions, were influenced by social influence.
Venkatesh, Thong, Chan, Hu, & Brown (2011).	Hong Kong	Longitudinal research among 3159 Hong Kong citizens on two electronic government (e-government) technologies that enable citizens' access government services.	The result show that social influence did not significantly influence continuance intention.
Tao Zhou (2011).	China	Two universities located in an eastern China city	The findings show social influence is significant in predicting continuance intention.
Venkatesh, Sykes & Zhang, (2011).	USA	EMR, one hospital, doctors.	Social influence has a significant relationship with the decision to use among physicians.
Holtz & Krein, (2011).	USA	Hospital located in a rural area of Michigan, nurses	Social influence was significant with the intention to use the EMR.
AbuShanab, Pearson, & Setterstrom, (2010).	Jordan	E-Banking, banks, bank clients	The results revealed a significant positive relationship between social influence and behavioral intention to use.

Table 2.5 (continued)
 Selected literature review of social influence

Aggelidis & Chatzoglou (2009).	Greece	HIS, Hospital, medical, nursing and administrative personnel.	social influence has significantly influenced behavioral intention.
Wills, El-Gayar & Bennett (2008).	USA	EMRs, hospitals, registered nurses', certified nurse practitioners and physician assistants	Social influence had significantly impacting on registered nurses', certified nurse practitioners and physician assistant's intention to use EMR.
Chang, Hwang, Hung & Li (2007).	Taiwan	Clinical decision support system (CDSS), hospitals, physicians	Social influence had significantly impacting on physician's intention to use CDSS.
Abu-Shanab & Pearson (2007).	Jordan	E-Banking, Banks, Bank clients	Social influence has a significant association with customer's intention to utilize the services of Internet banking.

2.6.4 Facilitating Condition (FC)

A facilitating condition is the extent to which an individual believes that an organization provides and supports the required resources for technology implementation (Holtz & Krein, 2011). In other models, the concept is captured from three constructs, namely, 1) perceived behavior control in TPB, 2) facilitating conditions in MPCU, and 3) compatibility in DOI (Hung et al., 2007; Venkatesh et al., 2003). Venkatesh et al. (2003) pointed out that the facilitating conditions concept is a worthy predictor of information technology use.

In 2012, Venkatesh et al. made a change to tailor UTAUT to the consumer technology use context with the addition of a direct relationship from facilitating conditions to behavioural intention over and above the existing relationship between facilitating conditions and technology use. This construct addresses an individual's perception of their internal (i.e., self-confidence in their ability to operate the equipment) and external (i.e., the availability of technical support should they need help) constraints on the behavioural intention to accept and use a technology (Ajzen, 1991; Taylor & Todd, 1995; Venkatesh et al., 2003).

With respect to CI, facilitating conditions are considered as beliefs that are related to someone's control over IS use. Like social influence, facilitating conditions are sometimes conceived to directly affect intention and IS use (Venkatesh et al., 2003). With sufficient resources, individuals are likely to form positive as few reasons exist as to why not to be involved in the behavior. The adequacy of resources can be assessed by users (i.e., important assistance and knowledge) when they utilize IS, as a result their pre-usage beliefs linked with facilitating conditions may be disconfirmed. For instance, if access to assistance and resources by users is more (e.g., better availability of service terminals and online help) than expected during the stage of usage, a positive disconfirmation of facilitating conditions will be experienced. This, in turn, results in better satisfaction and post-usage facilitating conditions, as well as post-usage attitudes and prolonged intentions (Venkatesh et al., 2011). From reasoning deduced from ECT by Bhattacharjee (2001), a positive relationship exists between positive disconfirmation of facilitating conditions and post-usage facilitating conditions. In addition, based on previous studies (Venkatesh

et al., 2003), post-usage facilitating conditions should positively influence continuance intention, in addition to its indirect effect via post-usage attitudes.

A dearth of empirical endeavours have employed UTAUT to examine continuance intention to use. As stated earlier, only two studies were found, and the current research reported studies that used UTAUT to study intention to use in the healthcare sector later. In an extension of Bhattacharjee and Premkumar's (2004) two-stage ECT, Venkatesh et al. (2011) incorporated three significant predictors from UTAUT, which are social influence, effort expectancy and facilitating conditions, as well as trust to test the IS continuance model. They carried out a longitudinal study of 3159 citizens in Hong Kong across two electronic government (e-government) technologies, and the results revealed that continuance intention was impacted by facilitating condition.

Additionally, drawing from UTAUT and Flow Theory, Tao Zhou (2011) carried out a study to investigate mobile Internet continuance from viewpoints of intrinsic and extrinsic motivation, and the results revealed that facilitating conditions significantly predicted continuance intention.

Furthermore, still utilizing UTAUT, Zawaideh (2017b) also conducted a study aimed at identifying factors that can explain the usage of e-learning environments by higher education students at Al-Madinah International University in Malaysia. The results show that facilitating conditions significantly affected the intent of students to use e-learning.

Also, Kohnke, Cole, and Bush (2014) predicted that behavioural intention of clinicians and patients that make use of Telehealth equipment at Henry Ford at Home e-Home Care in Michigan would increase adoption of the technology. Results revealed that facilitating conditions predicted behavioural intention.

Wolfenden (2012) explored factors that might predict behavioural intention of oncology care providers to implement clinical decision support systems, and the findings revealed that facilitating conditions were vital predictors of behavioural intention. Further findings from Venkatesh, Sykes and Zhang (2011) utilizing UTAUT as its theoretical basis also identified the significant influence on intention to use by facilitating conditions among doctors.

Venkatesh, Thong, and Xu (2012) extended UTAUT to study the use and acceptance of technology within a consumer context. The findings revealed that the influence of facilitating conditions on behavioural intention was supported. In addition, Aggelidis and Chatzoglou (2009) studied HIS acceptance based on UTAUT constructs among Greek hospital personnel. Findings showed that facilitating condition significantly affected the behavioural intentions of hospital personnel.

Furthermore, Duyck et al. (2008) investigated user acceptance by individual of PACS among staff of department of radiology at Ghent University Hospital in Belgium. Findings from their study revealed that facilitating conditions strongly predicted behavioural intention.

Contrastingly, (Liu et al., 2014) carried out a study aimed at examining factors which influences acceptance behavior and the use of new technologies for rehabilitation by therapists in a Canadian rehabilitation hospital. Findings revealed that the facilitating condition construct had an insignificant effect on the behavioural intention to use technologies.

Few studies have been found within the Jordanian context that also employed UTAUT to examine the acceptance of technology generally and most especially continuance intention. The researchers examined several perspectives by employing UTAUT, namely, e-learning, e-banking, e-commerce, and e-health. For example, AbuShanab and Pearson (2007) carried out a study in Jordan to examine the factors determining Internet banking adoption. They employed UTAUT 1. There is no hypothesis between facilitating condition and intention to use. In a similar study to conducted to examine mobile banking services usage in Jordan, though using UTAUT. They used UTAUT 1, from UTAUT 1, no hypothesis exists between Facilitating condition and intention to use.

Alalwan, Dwivedi & Rana (2017) conducted a study to investigate the factors influencing behavioural intention and adoption of mobile banking by customers of Jordanian banks. The results showed that behavioural intention was significantly and positively influenced by facilitating conditions.

Zawaideh (2017a) also conduct a study to examine the acceptance possibility of e-government and the major factors impacting the application of E-Government in the

context of Jordan citizens. The results show facilitating conditions significantly affected the intent of citizens to employ electronic government.

Applying the same model of UTAUT, Alrawashdeh et al. (2012) found that facilitating conditions had significantly influenced the intention of employees to use training systems that were web-based. Contrastingly, AbuShanab, Pearson and Setterstrom (2010) examined intention to use Internet banking by “counter bank customers”. The findings showed that influence of facilitating conditions insignificantly predicted behavioural intention.

Jaradat and Banikhaled (2013) carried out a study to present factors that affect undergraduate student’s adoption of website-service by applying UTAUT in Jordan, No hypothesis between facilitating conditions and intention to use was posited. In addition, Jaradat and Rababaa (2013) carried out a study among Jordanian consumers to investigate crucial elements that influence the intention to accept and use mobile commerce Findings showed that facilitating conditions were not significantly related to behavioural intention to use.

As evident in the literature review, very few studies that have utilized UTUAT 2 to examine how FC influences CI in the healthcare sector, specifically among nurses in Jordan. Furthermore, varying findings exists among researchers on the influencing of facilitating conditions on usage. Kohnke et al. (2014) and Alrawashdeh et al. (2012) emphasized that FC influences the intention to use among healthcare specialists that

perceive support from their organization and which offer the resources for technology implementation.

Nonetheless, other examiners discovered that FC is insignificant in predicting healthcare professionals intentions (AbuShanab et al., 2010; Liu et al., 2014) This brings forth the need for more studies to examine the reasons behind these difference in findings and to examine the results in Jordan so as to provide a useful model for leaders in the healthcare system and assist them in understanding their environment and increase the likelihood in implementing innovations in their institutions.

Table 2.6
Selected literature review of facilitating condition

Source	Country	Setting	Result
Alalwan, Dwivedi & Rana (2017).	Jordan	Banks	The results mainly showed that behavioural intention was significantly influenced by facilitating condition.
Zawaideh (2017a).	Jordan	E-Government, context of Jordan citizens	The results show facilitating conditions' significantly affecting the intent of citizen in employing electronic government.
Zawaideh (2017b).	Malaysia	E-learning, high education students Al-Madinah International University.	The results show that facilitating conditions significantly affected the intent of students to use e-learning.
Kohnke, Cole, & Bush, (2014).	USA	Patients and clinicians who use the Telehealth equipment at Henry Ford at Home e-Home Care	The findings show that facilitating conditions were significant in predicting behavioural intent.
Liu, Miguel Cruz, Rios Rincon,	Canada	Examined factors that affect the acceptance behavior and use of new	Findings revealed that facilitating conditions had an insignificant

Table 2.6 (continued)
Selected literature review of facilitating condition

Buttar, Ranson & Goertzen (2014).		technologies among rehabilitation therapists at a large rehabilitation hospital	effect on the behavioural intention to use technologies.
Bennani & Oumlil, (2014).	Morocco	EMR, Nurses, Hospitals	There was no hypothesis between facilitating conditions and intention to use.
Jaradat & Banikhaled, (2013).	Jordan	E- Learning, University, Undergrads students	There was no hypothesis between facilitating conditions and intention to use.
Jaradat & Rababaa (2013).	Jordan	E-Commerce, University, undergraduate university students	Findings showed that facilitating conditions was not significantly related to behavioural intention to use.
Jeng & Tzeng, (2012).	Taiwan	Hospitals- doctors	There was no hypothesis between facilitating conditions and intention to use
Ifinedo, (2012).	Canada	Some healthcare professional associations (http://www.crnns.ca and http://www.cotns.ca) and individual professionals whose contacts we obtained from publicly available directories in Nova Scotia, Canada.	There was no hypothesis between facilitating conditions and intention to use
Alrawashdeh, Muhairat, & Alqatawnah, (2012).	Jordan	E- Learning, university, employees	Facilitating condition has a significant association with the intention of the employees to use a web based system in training.
Al Mashaqba & Nassar (2012).	Jordan	E-Banking, banks, bank clients	There was no hypothesis between facilitating conditions and intention to use.
Wolfenden (2012).	USA	Clinical decision support system, hospitals, oncology care providers.	Finding revealed that facilitating conditions were vital predictors of behavioural intention.
Venkatesh, Thong, & Xu (2012).	Hong Kong	Mobile Internet, resident in Hong Kong.	The result show that facilitating condition significantly influences intention.
Venkatesh, Thong, Chan, Hu, & Brown (2011).	Hong Kong	Longitudinal research among 3159 Hong Kong citizens on two electronic	The result show that facilitating condition

Table 2.6 (continued)
Selected literature review of facilitating condition

		government (e-government) technologies that enable citizens' access government services.	significantly influences continuance intention.
Tao Zhou (2011).	China	Two universities located in an eastern China city	The findings show facilitating conditions is significant in predicting continuance intention.
Venkatesh, Sykes & Zhang, (2011).	USA	EMR, one hospital, doctors.	Facilitating condition has a significant relationship with the decision to use among physicians.
Holtz & Krein, (2011).	USA	Hospital located in a rural area of Michigan, nurses	There is no hypothesis between facilitating condition and intention to use
AbuShanab, Pearson, & Setterstrom, (2010).	Jordan	E-Banking, Banks, Bank clients	The results revealed facilitating conditions not affecting behavioural intention to use.
Aggelidis & Chatzoglou (2009).	Greece	HIS, Hospital, medical, nursing and administrative personnel.	Findings showed that facilitating condition significantly affected behavioural intention of hospital personnel.
Wills, El-Gayar & Bennett (2008).	USA	EMRs, hospitals, registered nurses', certified nurse practitioners and physician assistants	There was no hypothesis between facilitating conditions and intention to use.
Duyck et al. (2008).	Belgium	PACS, staff of department of radiology, Ghent University Hospital	Facilitating conditions strongly predicted behavioural intention.
Chang, Hwang, Hung & Li (2007).	Taiwan	clinical decision support system (CDSS), Hospitals, physicians	There is no hypothesis between facilitating condition and intention to use.
Abu-Shanab & Pearson (2007).	Jordan	E-Banking, Banks, Bank clients	There was no hypothesis between facilitating condition and intention to use.

2.6.5 Top Management Support (TMS)

Researchers in IS have investigated the influence of an extensive array of factors on successful adoption. Management support has been recognized as a crucial factor in successful adoption (Jarvenpaa & Ives, 1991; Kwon & Xud, 1987; Leonard-Barton & Deschamps, 1988; Low, Chen, & Wu, 2011; Purvis, Sambamurthy, & Zmud, 2001; Yigitbasioglu, 2015).

This study looks at the work of Orlikowski (Orlikowski, Yates, Okamura, & Fujimoto 1995; Orlikowski, 1992) as a guide. On the foundation of structuration theory by Giddens (1984), Orlikowski et al. (1995) suggested that prominent individuals involved in the assimilation of technology (e.g., “champions, trainers, and local experts,” p. 437) engage in “metastructuring” actions in to reform their institutional contexts. These metastructuring behaviours or actions are aimed at impacting the structuring activities of individual users, which denotes choices individuals make on what facets of technology to use or not use. So institutional context impacts the ability and motivations of end-users to use and adopt IS innovations successfully; also institutional context can be fashioned in techniques that enable successful implementation (Sharma & Yetton, 2003).

Due to the resource intensiveness of IS innovations implementation, TMS is critical. Managerial resources and considerable material are needed not only to develop IS infrastructures and applications, but also to support end users. (Jarvenpaa & Ives, 1991; Kwon & Xud, 1987; Leonard-Barton & Deschamps, 1988; Purvis et al., 2001; Sharma & Yetton, 2003; Yigitbasioglu, 2015). Furthermore, the symbolic actions of managers’

support adds to successful implementation. IS innovations are legitimized by these actions, signalling the commitment of management to successful implementation, this helps to persuade end users to develop the effort needed to take up innovations (Leonard-Barton & Deschamps, 1988; Purvis et al., 2001).

Lastly, supervision and support of end users during implementation contributes was well to successful implementation (Bhattacharjee, 1996). Managers must work together with end users to negotiate, mandate, motivate, support and persuade them to adopt IS innovations. Management support is also thought to be crucial for re-conceptualizing processes of work and for altering current processes and routines that are essential for the implementation success (Purvis et al., 2001).

Several previous studies have given definitions to TMS. For instance, Slevin and Pinto (1987) defined TMS as the desire of top management to offer resources that are essential and the authority or power for the success of a project. On the other hand, Ragu-Nathan, Apigian, Ragu-Nathan, and Tu (2004) stated that TMS is “the degree to which top management understands the importance of the information system functions and the extent to which it is involved in information system activities” (p. 3). However, Gambatese and Hallowell (2011) looked at TMS as a clear commitment and allocation of resources that are sufficient to the innovation and, if required, active participation in managing the adoption and change with respect to an innovation. Numerous scholars made attempts to explain and define TMS but prior studies have adopted either a behavioural and attitudinal interpretation of TMS (Jarvenpaa & Ives, 1991).

TMS is viewed in attitudinal interpretations as a group of attitudes that are favourable and manifested in ways that are “active and enthusiastically approved” (Sultan & Chan, 2000), participation. The CEO’s psychological state depicts the extent of relevance that chief executive vests in information technology) (Jarvenpaa & Ives, 1991; Liang, Saraf, Hu, and Xue, 2007), commitment (Keil, 1995), and “desires or opinions” (Fishbein & Ajzen, 1975; Teo & King, 1997; Leonard-Barton & Deschamps, 1988; Zmud, 1984). On the contrary, behavioural interpretation refers to TMS as groups of direct behaviours of managers like rendering technical aid to assist in solving soft and hardware problems (Compeau & Higgins, 1995), taking part in “activities or functional personal interventions” (Jarvenpaa & Ives, 1991), embracing “a project sponsorship” (Wixom and Watson, 2001), as well as “enabling assimilation of ERP” (Liang, Saraf, Hu, & Xue, 2007).

Two clearly defined fundamental views on roles to be played by top managers are reflected by these interpretations. One is the “back-seat driver” view is promoted by an attitudinal interpretation (Jarvenpaa & Ives, 1991) wherein upper managers allows other people to be involved in making decisions but are not involved themselves; however, they concentrate on forming a supportive climate. Alternatively, the behavioural interpretation, supports a view of “active participation” (Jarvenpaa & Ives, 1991; Markus & Mao, 2004) wherein upper managers influence directly the adaptation between the organization and technology (Leonard-Barton & Deschamps, 1988).

Dong, Neufeld, and Higgins (2009) reviewed the literature on top management support and noted, that despite the over-all agreement concerning the crucial role of upper management in the implementation process of information systems (IS), a compelling and clear understanding of TMS concept has not yet been provided by the literature. Conceptual definitions and construct measures of TMS are under-specified and are inconsistent and contradictory outcomes have been reported as a result. In addition, limited sets of support actions are presented in the literature, and research has failed to establish how TMS actions impact outcomes. This current study builds on Dong et al. (2009) and added the latest literature related technology acceptance models. The literature review in this current study found only three studies employed UTAUT to study the effect of TMS on intention to use. These were those of Sargent, Hyland and Sawang (2012) and Al-Hadban, Hashim, and Yusof (2016) but no study was found on the effect of TMS on continuance intention.

Numerous theories have been suggested and utilized to examine the concept of TMS. These include the theory of reasoned action, the technology acceptance model, social cognitive theory, the theory of planned behaviour, Roger's theory of IT innovation adoption and diffusion and UTAUT (Igbaria, 1990; Igbaria, Zinatelli, Cragg, & Cavaye, 1997; Teo & Ang, 2001; Lewis, Agarwal, & Sambamurthy, 2003; Ragu-Nathan et al., 2004; Lee, Lee, & Kwon, 2005; Lu, Xiao Y, Sears, & Jacko, 2005; Al-Hadban, Hashim, & Yusof, 2016; Nofal & Yusof, 2016; Yang, Sun, Zhang, & Wang, 2015 ; Gangwar, Date, & Ramaswamy, 2015; Son, Lee, & Kim, 2015; Yigitbasioglu, 2015 ; Chen &

Hsiao, 2012; Sargent, Hyland, & Sawang, 2012; Randell & Dowding, 2010; Lammintakanen, Saranto, and Kivinen, 2010).

Al-Hadban, Hashim and Yusof, (2016) studied TMS effect on healthcare staff adoption for health information system in public sector in Iraq, based on the UTAUT framework. They mentioned the level of support shown will certainly influence the adoption of health information system by healthcare staff. Without the management's key role in motivating and convincing individuals within organization about the potentials of HIS, the adoption and use of those systems might become a challenging issue. The findings showed that top management support has a significant influence on behavioural intention.

Nofal and Yusof (2016) published a conceptual framework about business intelligence (BI) systems and enterprise resource planning (ERP) usage. The researchers investigated the relationship between top management support and ERP behavioural intention to use through the theory of CSF, the organization theory of contingency, and the theory of expectancy, which are reinforced by BI model and ERP research work. Also, Yang, Sun, Zhang, and Wang (2015) studied the effect of TMS effect organizational readiness, based on the TOE framework. They proposed a tripod model of software as a service (SAAS) Readiness. It postulated that for users in organizations to adopt SAAS, it is a prerequisite that they must be ready from perspective of organizational, technological and environmental characteristics.

The findings showed that top management support seems to be particularly important. Furthermore, Gangwar, Date, and Ramaswamy (2015) conducted a study to integrate the TAM model and the TOE framework for cloud computing adoption at the organizational level. They studied the effect of TMS on perceived usefulness (PU) and perceived ease of use (PEOU). The results revealed that TMS was an important variable for affecting cloud computing adoption using perceived usefulness (PU) and perceived ease of use (PEOU) as mediating variables. In another study, Son, Lee, and Kim (2015) extended TAM to conduct a study aimed at examining factors that can enable BMI adoption by architects. They studied the effect of TMS on perceived usefulness. The results revealed that TMS was a critical factor influencing the behavioural intentions of architects to adopt BIM. In addition, Yigitbasioglu (2015) carried out a study aimed at exploring institutional factors role in decision of top management teams to adopt cloud computing services. Institutional theory was used as the theoretical framework as were elements of TOE. The findings from this study revealed that the beliefs of top management teams drive their participation, which consecutively influences the intention to increase the adoption of cloud computing solutions.

Similarly, Lee, Lee and Kwon (2005) examined the moderating role of TMS. Applying TAM, they considered the technology adoption phenomenon of front line service and pinpointed possible factors supporting positive intentions towards use of technology. The findings revealed that front-line service employees can be motivated to make use of the technology not only through technological characteristics but through the incentives of market suppliers and the support of external management.

Lewis, Agarwal, and Sambamurthy (2003) studied the effect of TMS on usefulness, and they found that beliefs about the usage of technology can be impacted by the commitment of upper management to new technology and individual factors of self-efficacy and personal innovativeness. Teo and Ang (2001) discovered that most organizations that difficulties in the development, planning and usage of information systems ascribed the hitches to “failure in getting top management support.” Also, Ragu-Nathan et al. (2004) utilized a two-tier framework to illustrate the relationship between TMS, the function of information systems and the performance of information systems. The findings offered support for direct and indirect links between TMS and information systems performance.

Igbaria, Zinatelli, Cragg, and Cavaye (1997) investigated the moderating effect of TMS by using TAM as the theoretical foundation and practical findings for a logical explanation of key features that affected personal computing acceptance in 358 small firms located in New Zealand. The results showed that support by management influenced both perceived usefulness and the perceived ease of use. Moreover, Igbaria et al. (1997) carried out a study on personal computing factors in small firm and the results revealed that support by management positively influenced the perceived ease of use and perceived usefulness. These studies provided an indication of the influence of upper management support on satisfaction of end-user computing including perceived effectiveness and system usage.

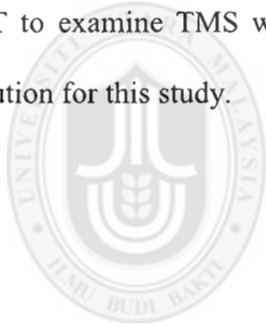
Several empirical undertakings within the healthcare sector have investigated the role played by management support as vital in acceptance use. For instance, Chen and Hsiao

(2012) carried out a study to determine the factors that influenced technology acceptance by healthcare experts. They targeted doctors in the selected case hospital for investigating factors influencing the acceptance of doctors of hospital's information systems. The findings revealed that TMS had a substantial influence on perceived usefulness.

Also within the same sector, Randell and Dowding (2010) explored nurse's perceptions as well as trust managers working in National Health Services organisations in England on the features of the organisation that facilitate the successful use as well as the introduction of CDSS. The findings revealed that provision of a supportive environment as part of management or support from organization could influence positively the use of clinical support system by nurses. Lammintakanen, Saranto, and Kivinen (2010) conducted a qualitative study to describe the perception of nurse managers with respect to using electronic information systems in their everyday work. The findings revealed the significance of management support in impacting use of a new system by employees. On a related note, Lu, Xiao Y, Sears, and Jacko (2005) in their study on personal digital assistance (PDAs) adoption within healthcare as well as barriers to adoption of PDA revealed that one obstacles for PDA adoption among healthcare experts was the non-existence of institutional support.

A scarcity of studies exist that examine the impact of TMS on CI or intention to use by using UTAUT. Only two studies employing UTAUT to investigate the effect of TMS on intention to use were found. The first study was by Al-Hadban et al. (2016) to empirically investigated the opinions of healthcare staff regarding the adoption of a Health

Information System within public hospitals of Iraq. The results revealed that TMS has a significant effect on intention to use Health Information Systems among healthcare staff within public hospitals of Iraq. While Sargent, Hyland, and Sawang (2012) investigated the factors that can impact the intentions of individuals to use technology can aid managers in implementing strategies to improve and increase technology uptake and improve the process of innovation adoption. The findings indicate that the intention of individuals to use information technology is influenced by top management. Also, in Jordan, limited study has examined the TMS concept with respect technology acceptance models; no articles were found that used technology acceptance models specifically UTAUT to examine TMS with CI, which is considered a theoretical and contextual contribution for this study.



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Table 2.7

Selected literature review for top management support

Paper/context	Concept/definition	Key findings	Theoretical basis
Al-Hadban et al. (2016) Public hospitals (Iraq)	Top Management Commitment (TMC): is one of the organizational factors and it refers to the level of support, commitment and active engagement the top management shows regarding the planning and the implementation of technological systems within the organization which assures the adoption of those systems by the staff (Thong et al., 1996). Top Management Innovativeness (TMV) can be defined as the senior managers' innovativeness and their degree of willingness to embrace innovative ideas and approaches to solve the organization's problems and to improve its performance (Thong & Yap, 1995).	Top Management Commitment (TMC) and Top Management Innovativeness (TMV) have significant effect on intention to use Health Information System among healthcare staff within public hospitals of Iraq.	UTAUT 2

Table 2.7 (continued)

Selected literature review for top management support

Paper/context	Concept/definition	Key findings	Theoretical basis
Nofal & Yusof (2016) Organizations in a developing country (Malaysia)	Top management support is generally priority support by top managers or leaders, and the engagement in and sustaining of actions that help others arrive at some set goal (Martin, 1982, p. 184).	The conceptual model provides a foundation for more research in the future. The expected results of the study will improve the business outcome and help design strategies based on an investigation between ERPBI usage and organisational performance.	contingency theory of organisation, and expectancy theory
Yang, Sun, Zhang, & Wang, (2015) China, organizations especially small and medium-sized enterprises, begin to accept SaaS as a viable IT solution.	Nil	The results show top management support seems to be particularly important.	TOE and TAM
Gangwar, Date, & Ramaswamy (2015) 280 companies in IT, manufacturing and finance sectors in India	Nil	The results revealed TMS as important variables for affecting cloud computing adoption using perceived ease of use (PEOU) and perceived usefulness (PU) as mediating variables.	TAM model and TOE
Son, Lee, & Kim, (2015) architects at Korean design organizations that actively use BIM.	“The degree to which top management understands the importance of the IS function and the extent to which it is involved in IS activities” (Ragu-Nathan, Apigian, Ragu-Nathan & Tu, 2004). (p. 94).	The results revealed that top management support, is a critical factor affecting architects' behavioural intentions to adopt BIM.	TAM

Table 2.7 (continued)

Selected literature review for top management support

Paper/context	Concept/definition	Key findings	Theoretical basis
Yigitbasioglu (2015) 1,170 Australian firms in manufacturing and service industries	Top management through their leadership role ensure sufficient resources are allocated to IT initiatives and act as change agents by motivating employees (Lucas, 1981, p.584).	The results also show that TMT's beliefs drive TMT's participation, which in turn affects the intention to increase the adoption of cloud computing solutions.	Drawn on institutional theory, as well as elements of TOE
Chen & Hsiao (2012) physicians in the selected case hospital	Top management support refers to the extent of top management support for developing ISs as well as attitude toward user satisfaction and resistance to using such systems, whereas project team competency represents technical capabilities and the communication skills and their awareness of user needs (Wixom & Watson, 2001, p. 813).	Top management support had a significant impact on perceived usefulness.	TAM and Yusof, Kuljis, Papazafeiropoulou & Stergioulas, (2008) framework
Sargent, Hyland, & Sawang (2012) Construction employees, case study of privately run Australian civil engineering and building construction company with specialism in project management, infrastructure, engineering, building, mining services and precast	Nil	The findings indicate top management influence individuals' intention to use information technology.	UTAUT 2

Table 2.7 (continued)

Selected literature review for top management support

Paper/context	Concept/definition	Key findings	Theoretical basis
Randell & Dowding (2010). A study of four case sites where nurses were using CDSS. Data included 124 observations of nurse/patient consultations, 36 patient interviews, 55 nurse interviews and 18 interviews with clinical unit or NHS Trust managers.	Nil	the results show that providing a supporting environment as part of management/organization support could have positive impact on nurses' use of clinical support system.	Qualitative study
Lammintakanen, Saranto, & Kivinen (2010) first-line and middle- level nurse managers from primary and specialized healthcare units.	Nil	This study shows the importance of support from the management in influencing employees use of a new system.	Qualitative study
Liang et al. (2007) – 77 managers assessed top management attitudes and actions	Top management belief (attitudes): “a subjective psychological state regarding the potential of ERP” (p. 5). Top management participation (action): “behavior and actions performed in facilitating ERP assimilation” (p. 5). Top management participation (action): “behavior and actions performed in facilitating ERP assimilation” (p. 5)	Top management participation significantly affects enterprise system assimilation	Institutional theory
Bruque-Cámara, Vargas-Sánchez, & Hernández-Ortiz (2004) organizational determinants of IT adoption – 16 executives, 14 IT directors, 6 users	Top management support (behavior) “explicit and active support of the top management towards the introduction and development of new information technology” (p. 138)	Top management support positively affected IT adoption	IS innovation adoption (Rogers, 1983)

Table 2.7 (continued)

Selected literature review for top management support

Paper/context	Concept/definition	Key findings	Theoretical basis
Lewis et al. (2003) – 161 full-time faculty members from one university assessed support from top managers and local managers	Top (local) management commitment – no definition given	Top management commitment affects perceived usefulness, not ease of use. Local management commitment impacts ease of use, not perceived usefulness	Institutional theory. Technology acceptance model.
Purvis et al. (2001) – 176 respondents including data administrators and system designers	Management championship (behavior) “the extent to which an organization’s senior management advocates the use of a technological innovation” (p. 123)	Management champion significantly affected the current methodology, use and knowledge embeddedness	Institutional theory Theory of technology assimilation
Wixom & Watson (2001) – data warehousing success – 111 pairs of data warehousing managers and data suppliers	Management support (behavior): “widespread sponsorship for a project across the management team” (p. 29)	Top management support significantly affected data warehouse success	IS implementation literature Data warehousing literature IS success literature
Sultan & Chan (2000) – object-oriented technology adoption – Software and systems engineers, IS managers, system support, and other managers; ‘the in-house person who is administratively responsible for the IS implementation’ (p. 256)	Top management support (attitude): “The continual active and enthusiastic approval of senior executives for a proposed innovation” (p. 111)	TMS significantly affected adoption of object-oriented computing	IS adoption (Rogers, 1983)

Table 2.7 (continued)

Selected literature review for top management support

Paper/context	Concept/definition	Key findings	Theoretical basis
Gottschal (1999) – IT strategy implementation matrix – 471 CIOs	Management support – no definition given	Management support did not affect the pace of IT strategy implementation	Theory of strategic information planning (Lederer & Salmela, 1996)
Igbaria et al. (1997) – personal computing acceptance factors in small firms – 358 respondents (51 top managers, 186 middle managers, 121 non-supervisory staff)	Management support (behavior) “refers to the perceived level of general support offered by top management” (p. 289)	Management support is positively associated with perceived usefulness and perceived ease of use	TAM (Davis, 1989)
Guimaraes and Igbaria (1997) – client/server system success – 148 IS managers and end-user department managers	Management support (behavior) ‘includes top management encouragement and allocation of resources’ (p. 859)	Management support is positively associated with system usage and CSS impact on user’s jobs, but not significantly associated with user satisfaction	DeLone and McLean’s (1992) IS success model
Thong et al. (1996) – IS implementation in small business – 114 managers responsible for the IS implementation	Top management support (behavior) Active involvement of top managers in various aspects of IS implementation	Support was not related to user satisfaction	Theory of innovation diffusion (Attewell, 1992)
Compeau & Higgins (1995) – computer usage – 919 subscribers of a Canadian business periodical	Support (behavior): “The extent to which assistance was available in terms of equipment selection, hardware difficulties, software difficulties, and specialized instruction” (p. 197)	Support did not affect computer efficacy	Social cognitive theory (Bandura, 1977)

Table 2.7 (continued)

Selected literature review for top management support

Paper/context	Concept/definition	Key findings	Theoretical basis
Keil (1995) – a longitudinal case study	Escalation (attitude): “Continued commitment in the face of negative information about prior resource allocation” (p. 422)	Top managers contributed to project failures by continuing to provide resources to doomed projects. Top managers turned around troubled projects by adjusting the level of resource provision and leadership.	Escalation (Staw & Ross, 1987)
Ramamurthy & Premkumar (1995) – determinants and outcomes of electronic data interchange diffusion – 201 IS leaders and functional managers	Top management support (behavior) refer to “active involvement and support of top managers” (p. 337)	TMS significantly influenced external EDI diffusion, but not internal EDI diffusion	IT innovation adoption and diffusion (Rogers, 1983)
Bardi, Raghunathan, & Bagchi (1994) – personal computer adoption and use – 112 managers and 26 presidents.	Top management support (attitude) “top management awareness and support for LIS” (p. 76)	Strong top management support was associated with effective application of LIS	IS innovation adoption and diffusion (Rogers, 1983)
Jarvenpaa and Ives (1991) – executive involvement and participation – 83 senior IT managers assessed their “CEO’s involvement with IT” (p. 213)	Executive involvement (attitude) “is concerned with the psychological state of the CEO, reflecting the degree of importance placed on information technology by the chief executive” (p. 206) Executive participation (behavior) refers to “the CEO’s activities or substantive personal interventions in the management of IT” (p. 206)	Executive involvement was more strongly associated with the firm’s progressive use of IT than executive participation. Top management involvement was associated with more successful usage in small firms	Participation and involvement (Barki & Hartwick, 1989)

Table 2.7 (continued)

Selected literature review for top management support

Paper/context	Concept/definition	Key findings	Theoretical basis
Leonard-Barton & Deschamps (1988) – 93 salespeople reported managerial influence of their sales unit manager	Perceived management support (attitude): “Perceived opinions or desires of powerful sources” (p. 1254)	Perceived management support did not significantly affect use	Innovation literature
Sanders & Courtney (1985) – organizational factors influencing DSS success – 378 DSS users including 18 senior managers	Top management support (attitude)	Top management support was associated with DSS success	NA
Zmud (1984) – 47 software development managers	Management attitude (attitude): Attitudes of “power elite” towards an IT innovation (p. 729)	Management’s favourable attitudes towards an innovation significantly affected implementation success	Push–pull theory (Fisher, 1980)

2.6.6 Personality Domains

In this section, the five factor model domains were defined and their connections with technology information system were clarified, then were illustrated with the latest literature review and the theoretical contributions in relationship to FFM with UTAUT were discussed.

2.6.6.1 Neuroticism

Neuroticism (N) signifies the contrast between adjustment or emotional stability and maladjustment (Costa & McCrae, 1992a). In addition, Costa and McCrae (1992a) mentioned Individuals who are low in neuroticism are stable emotionally and well-adjusted. On the other hand, individuals who are high in neuroticism are paranoid, self-conscious anxious, and are susceptible to negative emotions as well as negative reactions towards stimuli that are work-related. Empirical studies have put forward that neuroticism is negatively linked to numerous constructive components of related work behavior, like job performance (Barrick & Mount, 2000), job satisfaction (Smith, Organ, & Near, 1983), perceived career success (Judge, Higgins, Thoresen, & Barrick 1999; Seibert & Kraimer, 2001) and voice behaviour also referred to as the propensity to provide practical change-oriented communication aimed at improving a condition (LePine & Van Dyne, 2001). Ajzen and Fishbein's (1980) in their TRA model acknowledged that neuroticism is a personality variable that affects beliefs about certain behaviours.

Neuroticism is seen in negative reactions to work circumstances and life; this then generalizes to beliefs on performance expectancy of technology. Devaraj et al. (2008) mentioned that neurotic individuals possibly view advances in technology within their

work as stressful and threatening, and, in general, they have thought processes that are negative when considering it. Particularly, because the use of technology at work draws attention to oneself and provides the prospect for other persons to monitor work or gather information about habits of work, neurotics will form negative beliefs about the technology. Additionally, both neuroticism predicts positive and negative effects. Therefore, individuals with high neuroticism are anticipated to react negatively constantly to stimuli and also evaluate stimulus negatively, whereas persons who are less neurotic have the tendency to react and classify the same stimulus in a rather positive manner (Devaraj et al., 2008).

2.6.6.2 Extraversion

Next, the extraversion (E) scale gauges the extrovert/introversion tendency in individuals. Extroverts are prototypically assertive, active, and talkative. However, introverted individuals are more challenging to define. Introverts are considered as those who lack extraversion in their personalities (Costa & McCrae, 1992a).

The Theory of Reasoned Action clearly recognizes extraversion as a type of personality trait that affects a person's beliefs about a specific behavior. Individuals who have characteristics of high extraversion are outgoing, dynamic, social, and place great value on close and warm interpersonal relationships (Watson & Clark, 1997). In a meta-analysis, Barrick and Mount (1991) found that individuals with characteristics of extraversion mostly perform highly in jobs related to social lifestyles, such as, sales and management, Extraversion is also linked with team settings effectiveness and with

superior training ability (Barrick, Mount, & Judge 2001). The craving to achieve social status is an essential factor that motivates individuals to decide on innovations to adopt (Rogers, 1983).

Venkatesh and Davis (2000) suggested that, when members who are important in an individual's social network have confidence in performing a behaviour, they are motivated to establish a positive social image. In addition, enhanced influence and power arising from performing behaviours, which are seen as needed by one's social network, will result in better job performance indirectly because of image improvement. Persons who are high in extraversion are as disposed to care about their image and other social penalties of behaviours, and thus are expected to form intentions to act based upon their perceptions of the opinions of significant others.

2.6.6.3 Openness to Experience

Meanwhile, openness to experience (O) personality individuals have an active imagination and are aesthetic and sensitive, have preferences for variety, are intellectual curious, and are attentiveness to inner feelings and independence of judgment (Costa & McCrae, 1992a). High openness individuals lead experientially richer lives, entertain unconventional ideas, and experience emotions stronger than the lower openness individuals. Low openness or closed individuals have a narrower scope and less intense interests. According to Costa and McCrae (1992a), both open and closed individuals play important roles in society and neither should be considered to be a negative aspect of self.

Persons deemed to have high openness-to-experience dimensions of their personality like trying different and new things. They keenly search for varied and new capabilities, and value change (McCrae & Costa, 1997). Because speedy change and diversity are now standard in business organizations, openness to experience is key in explaining behaviours that are work-related (Hough & Furnham, 2003). Results from meta-analysis prove that openness is persistently related with proficiency in training as well as taking part in learning experiences (Barrick et al. 2001).

Devaraj et al. (2008) stated that person's low on this dimension prefer stability and the existing state of affairs and are uncomfortable with change. Therefore, those high in openness are expected to have cognitions and positive attitudes to accept technology that are job-related due to their tendency to embrace new work patterns. They are not too swayed by the adoption occasioned by changes in technology. The urge to do diverse things that are the basic aspects of openness to experience will impact their verdict about the utility of technology. The theory of behavioural decision indicates that individuals tend to weigh and seek much information that is compatible with their desires and beliefs while discounting information that is not consistent with their choices, a concept known as confirmatory bias (Bazerman, 1994). Thus, individuals who are more open will weigh arguments that align with their inborn fondness to use the new technology.

2.6.6.4 Agreeableness

The agreeableness (A) factor is associated with interpersonal tendencies. High agreeableness individuals are altruistic, sympathetic, and eager to help, while low

agreeableness individuals are antagonistic, egocentric, sceptical of others, and competitive (Costa & McCrae, 1992a). Neither of the extremes on this factor was ideal. High agreeableness person would not be suitable in many professions such as law and armed services. A narcissistic, antisocial, paranoid with personality disorder person was usually associated with low agreeableness person.

The agreeable personality is often termed as being helpful, cooperative, likable, considerate, and kind (Graziano & Eisenberg 1997). Results from meta-analysis indicates that agreeableness significantly predicts validity in jobs that involves considerable interpersonal interaction and joint effort, specifically when the interaction has to do with cooperating and helping other people (Barrick et al., 2001). Therefore, agreeableness is largely associated to technology beliefs when a specific technology promotes cooperation, partnership and completion of tasks. Agreeable personalities have the tendency to be cooperative and accommodating when asked to consider a new technology, and to focus on cooperative and positive dimensions of the technology instead of elements that are less facilitative of performance (Devaraj et al., 2008).

Agreeableness is revealed by intentions to use the technology when such use is perceived as prompting the manner in which others sees an individual (Devaraj et al., 2008). Social influence plays a critical role in the process of technology acceptance (Venkatesh & Morris 2000; Malhotra & Galletta, 2005). Cognitions, attitudes, as well as behaviours are impacted by perceptions of how a particular behaviour is evaluated by others. This is a vital theoretical motive behind social influence inclusion in UTAUT (Venkatesh et al., 2003). Interestingly, image, which denotes the degree by which innovations are perceived

in improving individual's status within a social system is another social influence factor (Moore & Bensbasat, 1991; Venkatesh & Davis, 2000).

Both image and social influence are key determining factor of behavioural intentions due to the fact they reflect others influence and the importance of having others think in a positive way about us. The Big Five dimension of agreeableness denotes a person's sensitivity to and consideration toward the opinions and thoughts of others.

2.6.6.5 Conscientiousness

Lastly, conscientiousness (C) individuals are more prone toward planning, organizing, and carrying out tasks. High C scores are indicative of scrupulous, punctual and reliable person. A high C person would exhibit tendencies such as being a workaholic or compulsively neat. Low C persons have lower moral standards and are less exact in goal seeking (Costa & McCrae, 1992a).

People who are conscientious are high performers. They are usually intrinsically motivated to achieve and take actions to develop their job performance. Self-control is the hallmark of a conscientious personality; this is usually reflected in a desire for achievement, persistence and order (Costa, McCrae, & Dye 1991). This trait is a necessary constituent of intrinsic motivation at the workplace and a good level of job performance (Barrick & Mount, 2000). Furthermore, the argument by Barrick and Mount (1991), maintained that it is difficult to conceive of jobs for which traits linked with the dimension of conscientiousness would not add to success (p. 21). Therefore, intrinsic

motivation, as reflected in conscientiousness, is an important requirement for improved job performance Devaraj et al., (2008) stated that people who are conscientious are likely to consider carefully if technologies offer the prospect of further improving their job-related performances.

This tendency of disposition decreases or diminishes the degree to which social influence and performance expectancy leads in intentions to use technology. As Devaraj et al. (2008) noted, individuals who have a highly conscientious personality are likely to cautiously consider ways in which technology use will allow them to become more efficient and perform at a better level during work. If this leads to positive beliefs that technology enables effective job performance, then conscientiousness will intensify those beliefs and increase behavioural intentions. On the other hand, if an individual is concluded that a technology is of no use, conscientiousness will foster those beliefs and reduce behavioural intentions (Devaraj et al., 2008).

In the same way, conscientiousness interacts with social influence to determine intentions. Devaraj et al., (2008) stated that people who are conscientious are motivated intrinsically to succeed. They cautiously consider and weigh ideas of trustworthiness as they consider whether to use a new technology. If people who are conscientious think that significant others believe that technology should be used, they then form stronger intentions to use technology. On the other hand, they also will consider carefully and process social influences that are negative in situations in which trusted others do not

believe new technology should be used. This eventually leads to a low use of technology. Therefore, there is a decrease in the influence of other opinions on behavioural intentions.

2.6.6.6 Previous Studies on Personality and Technology Acceptance Models

Personality differences, which were previously ignored (Agarwal & Prasad, 1999), have received increased scholarly attention within the broad domain of technology use (Sharma & Citurs, 2004; Wang & Yang, 2005; Vishwanath, 2005; Ehrenberg et al., 2008; Hunsinger et al., 2008; Junglas et al., 2008; Korzaan & Boswell, 2008; Lin, 2008; Theotokis et al., 2008; Devaraj et al., 2008; Jacques et al., 2009; Pramadari & Theotokis, 2009; Lin & Ong, 2010; Wilson et al., 2010; Witt et al., 2011; Al-Natour et al., 2011; Bansal, 2011; Zhou & Lu, 2011; Buckner et al., 2012; Devolder et al., 2012; Moore & McElroy, 2012; Koenigstorfer & Groeppel-Klein, 2012; Lane & Manner, 2012; Terzis, Moridis, & Economides, 2012; Punnoose, 2012; Venkatesh & Windeler, 2012; Wang et al., 2012a, b; Jackson et al., 2013; Kober & Neuper, 2013; Liu et al., 2013; Boontarig, Chutimasakul, & Papasratorn, 2013; Venkatesh, Sykes, & Venkatraman, 2014; Barnett, Allison, Pearson, & Kellermanns, 2015; Chiorri, Garbarino, Bracco, & Magnavita, 2015; Lakhal & Khechine, 2017; Sapsani & Tselios, 2017; Rahman, 2017; Lee, You, & Lee, 2016).

Current empirical endeavours relate personality traits to attitudes under the following instances: radio frequency identification (Pramadari & Theotokis, 2009), involvement in online social networking, video game playing, and virtual reality (Wilson et al., 2010; Witt et al., 2011; Venkatesh & Windeler, 2012; Kober & Neuper, 2013), trust in perceived

usefulness and use of mobile technologies (Zhou & Lu, 2011; Koenigstorfer & Groeppel-Klein, 2012; Lane & Manner, 2012), various types of online shopping (Al-Natour et al., 2011; Bansal, 2011; Liu et al., 2013), blogging and instant messaging (Wang et al, 2012a, b), and even the excessive use of technology (Buckner et al., 2012), acceptance intention of the mobile easy payment system (Lee, You, & Lee, 2016), acceptance and use of desktop videoconferencing (Lakhal & Khechine, 2017), undergraduate students' intention to use wiki technology (Sapsani & Tselios, 2017), and patient portal use (Rahman, 2017).

Lakhal and Khechine (2017) conducted a study aimed at enriching the UTAT with personality as defined by the Big Five model and to examine the relationship of the five factors of personality to the important variables regarding the acceptance and use of desktop videoconferencing (DVC) in higher education among students in advance collegiate schools in Canada. The results revealed several things. First, neuroticism had a significant negative effect on performance expectancy, effort expectancy and facilitating conditions. Second, agreeableness positively impacted effort expectancy and negatively impacted social influence, but had an insignificant impact on facilitating conditions. Third, conscientiousness had a significant on effort expectancy but an insignificant effect on performance expectancy. Fourth, extraversion had an insignificant effect on social influence. Fifth, openness had an insignificant effect on performance expectancy.

Moreover, Sapsani and Tselios, (2017) conducted a study investigating undergraduate students' intention to use wiki technology. An extension of the Technology Acceptance Model (TAM) was used taking into account not only the students' perceived utility and usability of a wiki, but also Big Five personality characteristics and two other variables, social norms and facilitating conditions, as proposed in UTAUT. Students' beliefs before (pre-wiki scenario) and after (post-wiki scenario) the actual use of the wiki system was investigated. The results revealed the following. Openness had an insignificant effect on perceived ease of use in pre-and post wiki. Also, conscientiousness had an insignificant effect on perceived ease of use in pre-and post wiki. Furthermore, extraversion had an insignificant effect on perceived ease of use in pre-and post wiki. Moreover, agreeableness had an insignificant effect on the perceived ease of use in the pre-wiki phase while having a significant effect in the post-wiki phase. Furthermore, emotional stability had an insignificant effect on the perceived ease of use in pre-wiki phase while having a significant effect in the post-wiki phase.

Also, Rahman, (2017) empirically tested a conceptual model incorporating individuals' personality traits and health emotional states in the context of patient portal use. The results revealed that conscientiousness had significant effect on intention to use the patient's portal. while neuroticism, agreeableness, extraversion and intellect had insignificant effects on the intention to use patient's portal.

Likewise, Lee, You, and Lee, (2016) conducted a study examine the effects that the personal traits (agreeableness, extroversion, openness to experience) about the acceptance

intention of the mobile easy payment system had on performance expectancy, which is a UTAUT independent variable. The results of the study showed that, among the observed personal traits, openness to experience and agreeableness had effects on the performance expectancy while extraversion had no effect.

Barnett et al. (2015) conducted a study among 382 undergraduates who took interactional psychology-based business classes with the use of the FFM and technology use in the UTAUT. Interestingly, their findings revealed that intention to use had an insignificant mediating effect on the relationship between conscientiousness, openness, neuroticism, extraversion and IT system use. In addition, conscientiousness and agreeableness had significant relationships with the intention to use an IT system. While openness, neuroticism and extraversion had insignificant effects on the intention to use an IT system.

Harle, Gruber and Dewar (2014) conducted a study examining individual medical student characteristics to their perceptions of EHRs' ease of use and usefulness. The study measured and related students' expectations about EHR ease of use and usefulness to their computer self-efficacy, openness to change, personality traits, and demographic characteristics. Findings suggested that medical educators and administrators may consider targeting EHR management strategies based on individual differences. Openness was significantly associated with PEOU and with PU. Also, a conscientious personality was positively and significantly associated with PEOU. No other personality traits were significantly associated with PEOU or PU.

On another note, Venkatesh et al. (2014) conducted a study aimed at investigating the factors that determine electronic government portal use. They sought to develop a model that used a range of individual characteristics variables like demographics and personality, as predictors of e-government portal use. Specifically, they examined gender, age, income and education with respect to the Big Five personality domains, i.e. extraversion, neuroticism, conscientiousness, agreeableness and openness to experience; and personal innovativeness with information technology. From the data collected from of more than 300 heads of household, the results indicated that most of the variables significantly explained 40% of the variance in e-government portal use. Precisely, extraversion, conscientiousness and openness were significantly associated with e-government portal use while neuroticism and agreeableness were insignificantly related with e-government portal use.

Moreover, Boontarig et al. (2013) conducted a study on user adoption of online social networking with specific reference to health information. They found that agreeableness moderates the relationship between performance expectancy and intention to use health information associated with online social networking services for individuals higher in agreeableness. However, agreeableness significantly moderated the relationship between performance expectancy and intention to use a health information system for an individual high in agreeableness. Other variables (effort expectancy, social influence, facilitating conditions) were not significant.

Similarly, Terzis et al. (2012) conducted a study aimed at identifying how personality affects technology acceptance within the context of Computer Based Assessment (CBA). Mainly, the study investigated how the five personality elements affected the most important variables regarding CBA's acceptance among 117 first-year students of informatics course at an European university. Findings from the study suggested that neuroticism had a significant negative effect on perceived usefulness and on goal expectancy, whilst agreeableness determined social influence and perceived ease of use, and conscientiousness defined perceived ease of use, while extroversion and openness explained perceived importance.

Meanwhile, Moore and McElroy (2012) conducted another related study on personality and reported usage among 219 undergraduate students who user Facebook. Results from the study showed that personality explained a more significant amount of the variance than di gender. Their position was measured in terms of their actual number of Facebook friends, the nature of their wall postings and their level of regret for inappropriate Facebook content.

Additionally, Punnoose (2012) conducted a study aimed at determine predominant factors that determine the intention of Master's degree students future use of e-learning programs at a university in Thailand. The study reported the following. First, openness had a significant and positive direct effect on perceived usefulness while having a significant and positive direct effect on behavioural intention. Second, extraversion had a significant and positive direct effect on subjective norms. Third, neuroticism had a significant and

positive direct effect on perceived usefulness. Fourth, agreeableness had a significant and positive direct effect on perceived usefulness while having a significant and positive direct effect on subjective norms. Fifth, conscientiousness had a significant and positive direct effect on perceived usefulness while having a significant and positive direct effect on subjective norms. Similarly, Zhou and Lu (2011) in their study reported that extraversion had a strong effect on trust, whereas neuroticism had significant and negative effects on trust and perceived usefulness, both of which determine user intention to adopt mobile commerce in China.

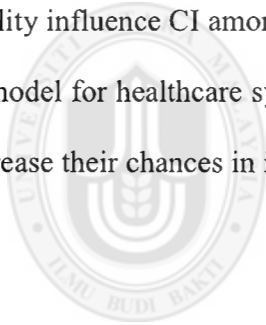
Additionally, Devaraj et al. (2008) found that conscientiousness moderated the relationship between perceived usefulness and the intention to use technology, and the relationship between subjective norms and intention to use technology. It was also reported that extraversion moderated the relationship between subjective norms and intention to use technology. However, neuroticism was negatively related with perceived usefulness. Openness had an insignificant relationship with perceived usefulness, but had a significant relationship with intention. Agreeableness, on the other hand, was positively associated with perceived usefulness and moderated the relationship between subjective norms and the intention to use technology.

In another study, Wang and Yang (2005) used the theory of personality traits and the UTUAT to examine the roles that personality traits play in UTAUT model with specific focus on online stocking. The results included the following. First, performance expectancy had a significant mediating effect on the relationship between extraversion

and intention of adoption online stocking. Second, effort expectancy had a significant mediating effect on the relationship between extraversion and the intention of adopting online stocking. Also, had a significant mediating on the relationship between openness and the intention of adopting online stocking. Third, social influence had a significant mediating effect on the relationship between extraversion, and the intention of adoption online stocking. Fourth, facilitating conditions have a significant mediating effect on the relationship between extraversion, and intention of adoption online stocking. Also, has significant mediating on the relationship between openness and the intention of adopting online stocking. Fifth, openness significantly moderated the relationship between performance expectancy and the intention of adoption online stocking. Sixth, agreeableness significantly moderated the relationship between social influence and the intention of adopting online stocking. Seventh, neuroticism significantly moderated the relationship between facilitating conditions and the intention of adopting online stocking.

In the Jordanian context, a scarcity of previous studies have investigated the relationship between FFM with CI involving EHRs in the healthcare industry. The only recognized study investigated the relationship between personality dimensions (not the FFM) with the intention to use (AbuShanab, Pearson, & Setterstorm, 2010) The authors studied the following personality dimensions: self-efficacy, anxiety, perceived trust, perceived risk, personal innovativeness and the locus of control. The results indicated a significant influence of performance expectancy, social influence, self-efficacy, perceived trust, and the locus of control on the intentions of an individual to use Internet banking.

Also, a scarcity of studies has examined the FFM with UTAUT, specifically in health information technology use (Harle, Gruber, & Dewar, 2014). Also, a need exists for more research on the FFM and technology use within the framework of the TAM or UTAUT (Barnett et al., 2015). The paucity of research indicates a gap that the researcher intends to fill because no known study exists investigating the role of the five-factor model with UTUAT 2 in Jordanian context. Also, studies on the relationship between FFM and CI in the healthcare industry and among healthcare providers in general and specifically among nurses in Jordan is unavailable. Therefore, this study modified the UTAUT 2 to study CI in the Jordanian public health sector among nurses to clarify and explore the roles of how personality influence CI among nurses in the Jordanian context to extend a coherent and useful model for healthcare system leaders helping them to understand the environment and increase their chances in implementing new innovations in their institutions.



Universiti Utara Malaysia

Table 2.8

Selected literature review for Five Factor Model

Author	Context	Theoretical basis	Moderator, mediator effect or direct effect	Key findings
Rahman (2017)	The study did not mention anything about the place of the study (country), sample frame. Only mentioned investigated patient portal use.	Did not have theoretical base	The direct effect of FFM on intention to use patient's portal.	Conscientiousness had significant effect on intention to use patient's portal. while Neuroticism, Agreeableness, Extraversion and Intellect had insignificant effect on intention to use patient's portal.

Table 2.8 (continued)
Selected literature review for Five Factor Model

Author	Context	Theoretical basis	Moderator, mediator effect or direct effect	Key findings
Sapsani & Tselios (2017)	Greece, university, undergraduate students, wiki technology	TAM	The direct effect of FFM on perceived ease of use.	Openness had insignificant effect on perceived ease of use in pre-and post wiki. Conscientiousness had insignificant effect on perceived ease of use in pre-and post wiki. Extraversion had insignificant effect on perceived ease of use in pre-and post wiki. Agreeableness had insignificant effect on perceived ease of use in pre-wiki phase. While had a significant effect in post-wiki phase. Emotional stability had insignificant effect on perceived ease of use in pre-wiki phase. While had a significant effect in post-wiki phase.

Table 2.8 (continued)

Selected literature review for Five Factor Model

Author	Context	Theoretical basis	Moderator, mediator effect or direct effect	Key findings
Lakhal & Khechine (2017)	Canada, Advance Collegiate Schools, students, desktop videoconferencing (DVC).	UTAUT	The direct effect of neuroticism on performance expectancy, effort expectancy and facilitating conditions. The direct effect of Extraversion on social influence. The direct effect of openness on performance expectancy. The direct effect of Agreeableness on effort expectancy, social influence and facilitating conditions. The direct effect of conscientiousness on performance expectancy and effort expectancy.	Neuroticism had a significant negative effect on performance expectancy, effort expectancy and facilitating conditions. Agreeableness positively impacted effort expectancy and negatively impacted social influence. Also, had insignificant impact on facilitating conditions. Conscientiousness had a significant on effort expectancy. Also, insignificant effect on performance expectancy. Extraversion had insignificant effect on social influence. Openness had insignificant effect on performance expectancy.

Table 2.8 (continued)

Selected literature review for Five Factor Model

Author	Context	Theoretical basis	Moderator, mediator effect or direct effect	Key findings
Lee, You, & Lee (2016)	Korea, Citizens, mobile easy payment system.	UTAUT	The effects that the personal traits (agreeableness, extroversion, openness to experience) on behavioural intention to use mobile easy payment system.	First, openness to experience had an effect on performance expectancy in mobile easy payment. Second, agreeableness showed an effect on performance expectancy in mobile easy payment. Third, extraversion did not have relationship with performance expectancy in mobile easy payment.
Barnett et al. (2015)	USA, university, students.	UTAUT	The mediating effect of intention to use on the relationship between FFM and IT system use.	Intention to use has insignificant mediating effect on the relationship between conscientiousness, openness, neuroticism, extraversion and IT system use. Additionally, conscientiousness and agreeableness has a significant relationship with intention to use IT system. While openness, neuroticism and extraversion had insignificant effect on intention to use an IT system.

Table 2.8 (continued)

Selected literature review for Five Factor Model

Author	Context	Theoretical basis	Moderator, mediator effect or direct effect	Key findings
Harle, Gruber, & Dewar (2014)	USA, university, students.	TAM	The direct effect of personality on perceived ease of use (PEOU) and perceived usefulness (PU).	Openness were significantly associated with PEOU and with PU. Also, conscientious personality was positively and significantly associated with PEOU. No other personality traits were significantly associated with PEOU or PU.
Venkatesh et al. (2014)	India, rural village, citizens	UTAUT	The direct effect of personality on e-government portal use.	Extraversion, conscientiousness and openness were significantly associated with e-government portal use. While neuroticism and agreeableness were insignificant with e-government portal use.

Table 2.8 (continued)

Selected literature review for Five Factor Model

Author	Context	Theoretical basis	Moderator, mediator effect or direct effect	Key findings
Boontarig, Chutimasakul, & Papasratorn, (2013)	Thailand, user adoption of online social networking, regarding health information.	UTAUT	The moderating effect of FFM on the relationship between effort expectancy, performance expectancy, social influence, facilitating conditions and intention to use health information system.	Agreeableness significantly moderate the relationship between performance expectancy and intention to use health information system for an individual high in agreeableness. While other variables (effort expectancy, social influence, facilitating conditions) are not significant. The study did not provide the results of moderating effect (extraversion, conscientiousness, neuroticism and openness) on the relationship between effort expectancy, performance expectancy, social influence, facilitating conditions and intention to use health information system.

Table 2.8 (continued)
Selected literature review for Five Factor Model

Author	Context	Theoretical basis	Moderator, mediator effect or direct effect	Key findings
Punnoose (2012)	Thailand, university, master's degree students	TAM	Direct effect of (extraversion, conscientiousness, and neuroticism) on perceived ease of use, perceived usefulness and behavioural intention to engage in e-learning.	First, openness has a significant positive direct effect on perceived usefulness. While has a significant positive direct effect on behavioural intention. Second, extraversion has a significant positive direct effect on subjective norms. Third, neuroticism has a significant positive direct effect on perceived usefulness. Fourth, agreeableness has a significant positive direct effect on perceived usefulness. While has a significant positive direct effect on subjective norms. Fifth, conscientiousness has a significant positive direct effect on perceived usefulness. While has a significant positive direct effect on subjective norms.

Table 2.8 (continued)

Selected literature review for Five Factor Model

Author	Context	Theoretical basis	Moderator, mediator effect or direct effect	Key findings
Devaraj, Easley & Crant, (2008).	USA, university, MBA and EMBA students.	TAM	Direct effect of openness, neuroticism and agreeableness on usefulness and subjective norms. Moderating effect of agreeableness, conscientiousness and extraversion on the relationship between usefulness, Subjective norms and intention to use.	First, conscientiousness significantly moderates relationship between perceived usefulness and intention to use technology. Significantly moderates relationship between subjective norms and intention to use technology. Second, extraversion significantly moderates relationship between subjective norms and intention to use technology. Third, neuroticism is negatively associated with perceived usefulness. Fourth, openness is positively associated with perceived usefulness. Fifth, agreeableness is positively associated with perceived usefulness was significant. Significantly moderates relationship between subjective norms and intention to use technology.

Table 2.8 (continued)
Selected literature review for Five Factor Model

Author	Context	Theoretical basis	Moderator, mediator effect or direct effect	Key findings
Wang & Yang (2005)	Taiwan, investors exercising online stocking,	UTAUT	The multiple mediating effect of performance expectancy, effort expectancy, social influence and facilitating conditions on the relationship between FFM and intention of adoption online stocking. The multiple moderating effect of FFM on the relationship between performance expectancy, effort expectancy, social influence, facilitating conditions and intention of adoption online stocking.	First, performance expectancy has significant mediating effect on the relationship between extraversion and intention of adoption online stocking. Second, effort expectancy has significant mediating effect on the relationship between extraversion, and intention of adoption online stocking. Also, has significant mediating on the relationship between openness, and intention of adoption online stocking Third, social influence has significant mediating effect on the relationship between extraversion, and intention of adoption online stocking. fourth, facilitating condition has significant mediating effect on the relationship between extraversion, and intention of adoption online stocking. Also, has

Table 2.8 (continued)
Selected literature review for Five Factor Model

significant mediating on the relationship between openness, and intention of adoption online stocking. Fifth, openness significantly moderates the relationship between performance expectancy and intention of adoption online stocking. sixth, agreeableness significantly moderates the relationship between social influence and intention of adoption online stocking. seventh, neuroticism significantly moderate the relationship between facilitating condition and intention of adoption online stocking.



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2.7 Research Framework Development

2.7.1 Research Framework Theoretical Bases

Karahanna et al. (1999) combined the innovation diffusion and attitude theories in a theoretical framework that examined the differences in pre-adoption (intention to use) and post-adoption (continuance intention) beliefs and attitudes. They argued that using a unitary set of beliefs to explain diverse phases of the innovation decision process may lead to important relationships being muddled up in the articulating differences in the determinants of adoption and usage. The intention of potential adopters is then exclusively determined by normative pressures, while user intention is an exclusive function of attitude. Furthermore, potential attitude of adopters is predicated upon certain innovation-based characteristics. However, pre-adoption attitudes are a function of usefulness, ease-of-use, result demonstrability, visibility, and trialability. Consequently, Karahann (1999) concludes that our understanding of beliefs, attitudes, and norms leading to IT adoption and how these are modified over time is inadequate.

Similarly, Bhattacharjee (2001) in conducting a study to identify the prominent factors that determine IS continuance intention (post adoption) and to understand the influence of these factors on the dependent variable used Expectation-Confirmation Theory as a primary theory (having been adapted from the consumer behaviour literature and integrated with prior IS studies) to theorize a model of IS continuance. See Figure 2.15. Furthermore, information technology (IT) continuance has emerged as a prominent area of information systems research (Bhattacharjee & Lin, 2015). An IT system cannot be considered successful if its usage is not sustained by users who are expected to benefit

from its usage (Bhattacharjee & Lin, 2015). IT acceptance and continuance are conceptually and temporally distinct behaviours, in that continuance can occur only after acceptance (first-time use) (Bhattacharjee & Lin, 2015).

Prior research (e.g., Sjazna & Scamell, 1993; Venkatesh & Morris, 2000; Venkatesh, Thong, Chan, Hu, & Brown, 2011) provides preliminary empirical evidence that user beliefs and attitudes change over time. Therefore, when predicting a behavior, attitude precedes behavioural intention and actual use of the system and the EHR has already been implemented, so it would be inappropriate to measure user continuance intention to use after their experiences with actual use of the HER without modifying the intention concept that is employed in UTAUT. In this respect, the Expectation-Confirmation Model (Bhattacharjee, 2001) offers an affective conceptualization of user continuance intention to use that is like how attitude toward the system has been measured, but which has not yet been applied with TAM or UTAUT (Maillet et al., 2015).

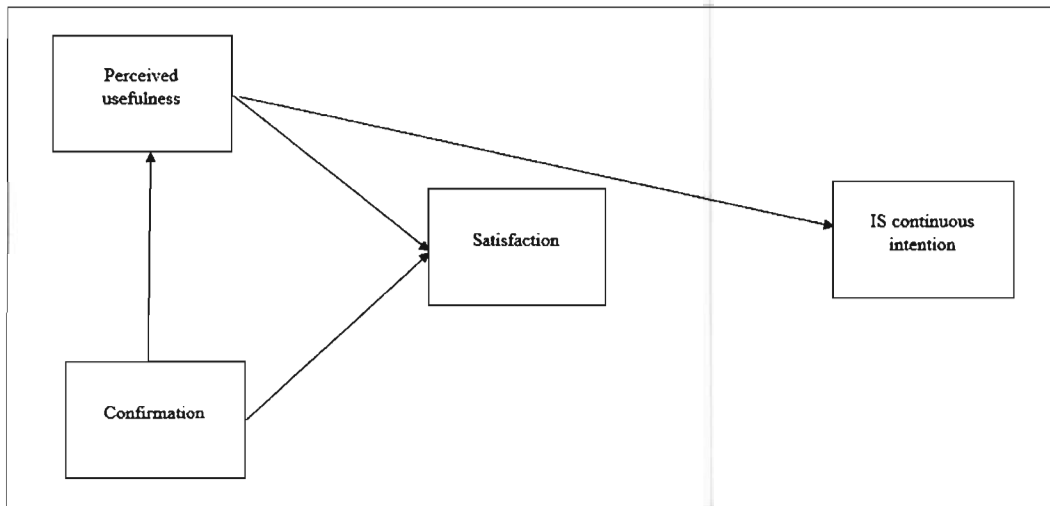
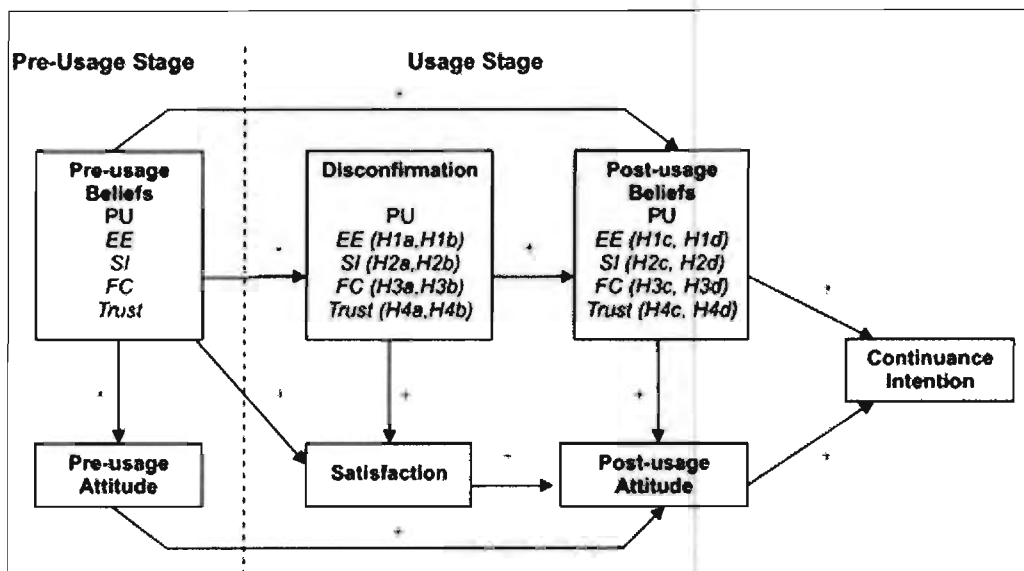


Figure 2.15
Post acceptance model of IS continuance
Source: Bhattacharjee (2001)

stage model of IS continuance (Bhattacharjee & Premkumar, 2004). Interestingly, their model was extended by incorporating the key components of the UTAUT (effort expectancy, social influence and facilitating conditions), in addition to including trust within that context due to its relevance in transmitting private and delicate information in the online environment. They conclusively established the roles of various beliefs in predicting pre-usage and post-usage. See Figure 2.16.



(1) The constructs added in (Venkatesh et al., 2011) work are italicised. (2) PU, perceived usefulness; EE, effort expectancy; SI, social influence; FC, facilitating conditions.

Figure 2.16
An expanded two-stage model of IS continuance
Source: Venkatesh et al., (2011)

On a related note, Tao Zhou (2011) conducted a study to identify the factors affecting mobile Internet continuance. The purpose of this research was to examine mobile Internet continuance from the perspectives of both extrinsic and intrinsic motivation. He mainly adopted UTAUT and Flow Theory as the theoretical bases (see Figure 2.17).

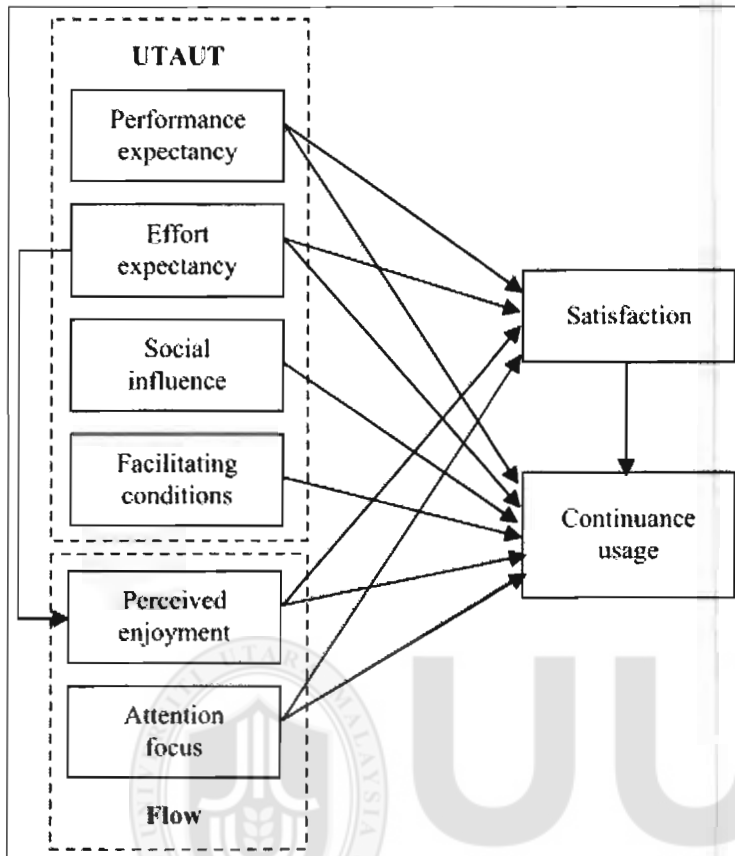


Figure 2.17
The Unified Theory of Acceptance and Use of Technology and flow theory
 Source: Tao Zhou, (2011)

In line with the present study, and in view of the literature so reviewed, the UTUAT was employed in this research to study CI among nurses in Jordan. This study will use UTAUT 2 as underpinning theory because the theory is considered a comprehensive synthesis of prior technology acceptance research by Venkatesh et al. (2003). It was also used because of UTAUT 2's examination of direct effects on intention. Specifically, in their research UTAUT explained 44% of the variance in behavioural intention. However, the addition of interaction items in the UTAUT2 explained 74% of the variance in behavioural intention. Similarly, the direct effects and moderated models of the UTAUT

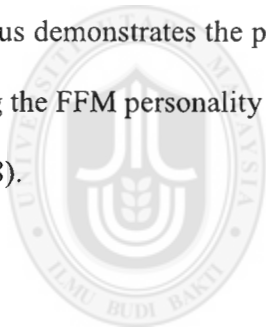
2 explained 35% and 52% of the variance of behavioural intention respectively. The above submissions are an indication of substantial increases in the variance explained in comparison to the baseline/original UTAUT (Venkatesh et al., 2012). Furthermore, according to Venkatesh (2012), this model is fit to predict employee acceptance of information technology in large organizations. Thus, it is appropriate that this theory is used to predict nurse's continuance intention to use EHRs in public Jordanian healthcare system.

Similarly, according to Venkatesh (2012), the theory provides three all-encompassing categories of extensions/integrations. The first type analyses UTAUT based on a new framework of new cultural settings like India and China (Gupta et al., 2008), new user populations like the healthcare specialists and consumers (Yi et al., 2006) and as new technologies like collaborative technology, health information systems (Chang et al., 2007). Similarly, the second type analyses additional new constructs to enhance the scope of the endogenous theoretical mechanisms outlined in UTAUT (Chan et al., 2008; Sun et al., 2009). The insertion of exogenous predictors of the UTAUT variables is the third and last type of its constructs (Yi et al., 2006; Neufeld et al., 2007).

These integrations/extensions, application and extensive replications of UTAUT have been valuable in extending the theoretical boundaries and enhance the understanding towards the acceptance and adoption of new technology. Relating the above to the gamut of this study, all types of extensions and integrations are employed in the research framework, which will provide rich theoretical and contextual contribution to the

Jordanian health sector and provide good illustration about Jordanian nurses continuance intention to use EHR.

In contrast, Alrawashda (2011), Dadayan and Ferro (2005), and Nanayakkara (2005) noted the following weaknesses of the UTAUT models. They claimed that the model does not consider individual factors. In response to this gap, this current study therefore uses the Big Five factors to cover the individual factors of users. The five-factor model (FFM) of personality has been greatly used in management and psychology research to predict attitudes, cognitions, and behaviours, but has largely been ignored in the IS field. This study thus demonstrates the potential utility of incorporating this model into IS research by using the FFM personality factors in the context of technology acceptance (Devaraj et al., 2008).



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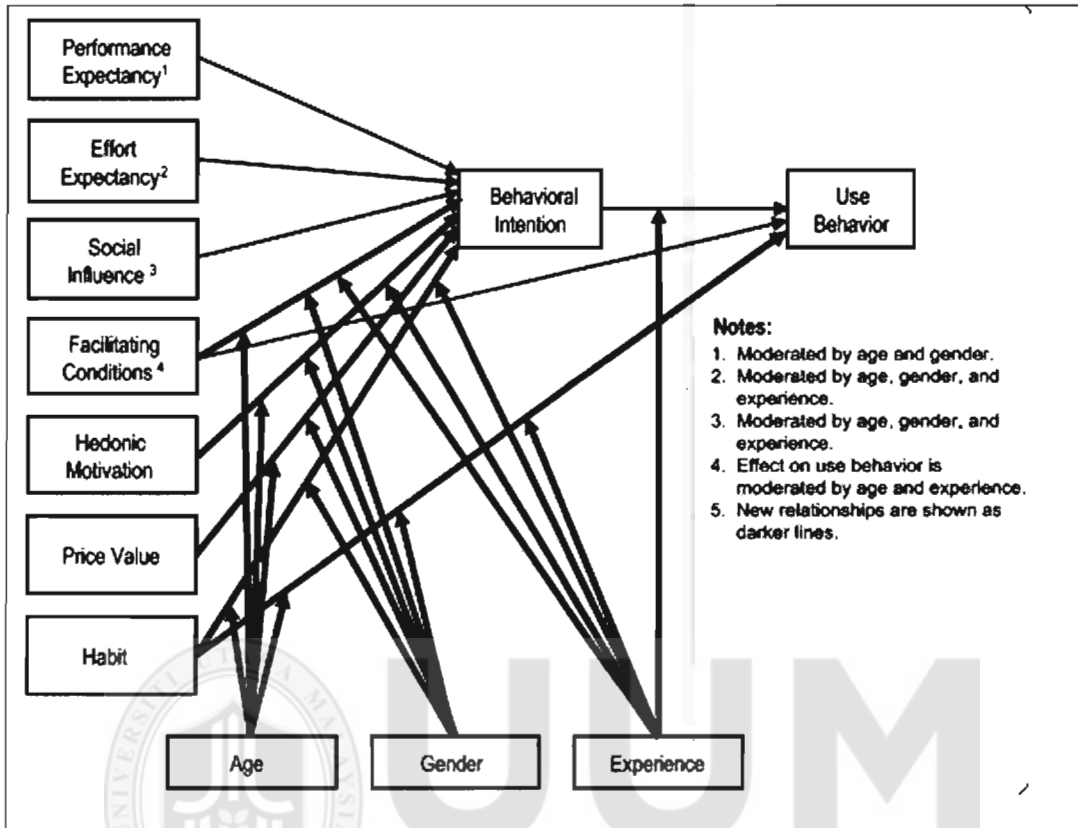


Figure 2.18

UTAUT 2

Source: Venkatesh, Thong & Xu (2012)

Notwithstanding the above, this study also proposes a dispositional perspective to understanding user attitudes and beliefs in examining the effect of user personality. This is conspicuously captured using the FFM's Big Five factors of performance expectancy, effort expectancy, social influence and facilitating condition toward the acceptance and continuance intention to use EHR. The relationship between personality and UTAUT is examined for several reasons. First, the UTAUT is a well-accepted and validated model in the IS literature and has a long history of extensions as succinctly summarized by Venkatesh et al. (2003). Second, the basic concept underlying the user acceptance model focuses on the reactions of people to technology, in which personality is expected to play

a key role. Finally, the Theory of Reasoned Action, which formed the basis of technology acceptance models, clearly incorporates personality as an external factor that can affect the beliefs of individuals.

The last factor introduced to the framework of this study is top management support. Basically, top managers develop “belief structures” to manage concepts and stimuli from the environment and use these beliefs as a basis for inferences (Walsh, 1988). Literature suggests that top managers’ beliefs guide their administrative behaviours. Srivastava (1983) asserted that organizational strategies, decisions, and behaviours are directed by top mental images of top managers of a desired future organizational state. Hambrick and Mason (1984) suggested that the choices of organizations reflect the values and cognitive positions of top management.

Consequently, the positive beliefs of top managers on the usefulness of information systems could result in certain managerial actions intended to assimilate such systems. For example, Chatterjee et al. (2002) indicated that “through their beliefs, top management can offer visions and strategies to managers and business units about the chances and risks in assimilating the Web technologies” (p. 71). Lefebvre, Mason, and Lefebvre (1997) also discovered that top management’s involvement in organizational IT management activities is principally based upon their beliefs and not upon objective reality. In addition to the above, top management personnel are primarily responsible for translating external influences into management decisions that should change organizational structures and the establishment of policies vis-à-vis how their perceptions

and beliefs of institutional practices. Consequently, it is posited that the role of top management in determining the performance of an IT project based on external knowledge and integrating the same into its management processes is critical (Mitchell, 2006).

Previous empirical efforts have posited that it is critical for top management to recognize and assume the responsibility for both technical and organizational changes required to improve performance (Leonard-Barton, 1988). Characteristically, the literature on innovation assimilation fundamentally posits that top management is the sole management structure responsible for reviewing organizational norms, values, and culture. These norms, values and cultures permeate down the administrative structure by way of procedures, rules, routines and regulations, as they guide the behaviours of staff members (Purvis et al., 2001). The implication of this is that organizational members are positioned to adapt to and use the new technology.

Extant theoretical positions attest to the critical role of top management in facilitating the usage of IT in organizations (Reich & Benbasat, 1990). Formal monitoring of progress (Garrity, 1963) and incentives (Bhattacharjee, 1996) by management resulted in increased usage of IT, especially for large scale systems, in which the role of top management is critical in maintaining partnerships among functional area executives (Doll & Vonderembse, 1987). It has also been further posited that top management plays a critical role in the continuance usage of IT in companies (Jarvenpaa & Ives, 1991).

Referring to the UTAUT, and in relationship to this study, scholars posited that a misunderstanding and doubts exist about the relationship between facilitating conditions and top management support; which refers to the degree to which a top management understands the importance of IS function and the content to which it is involved in the activities (Ragu-Nathan, Apigian, Nathan, & Tu, 2004). In terms of the UTAUT model, the facilitating conditions construct does not specifically measure TMS. Organizational facilitation or facilitating conditions are defined as the degree to which an employee perceives that an organizational and technical infrastructure exists to support use of the technology (Seymour, Makanya, & Berrange, 2007; Venkatesh et al., 2003).

According to Neufeld et al. (2007), the TMS construct has not been sufficiently integrated into existing user adoption theories, nor has the literature defined specific top management behaviours that are associated with technology implementation success. As a result, this current study incorporated the TMS variable into the UTAUT due to its significant role in inspiring the adoption of innovations within healthcare organisations (Cresswell & Sheikh, 2013; Escobar-Rodríguez & Romero-Alonso, 2013; Yusof et al., 2008) and his/her information and knowledge about the HIS able to diminish the doubt about those innovations and as a outcome encouragement its implementation by the organization and its adoption by the healthcare practitioners (Abdul Hameed & Counsell, 2012; Thong & Yap, 1995; Thong, 1999). Figure 2.19 illustrates the research framework.

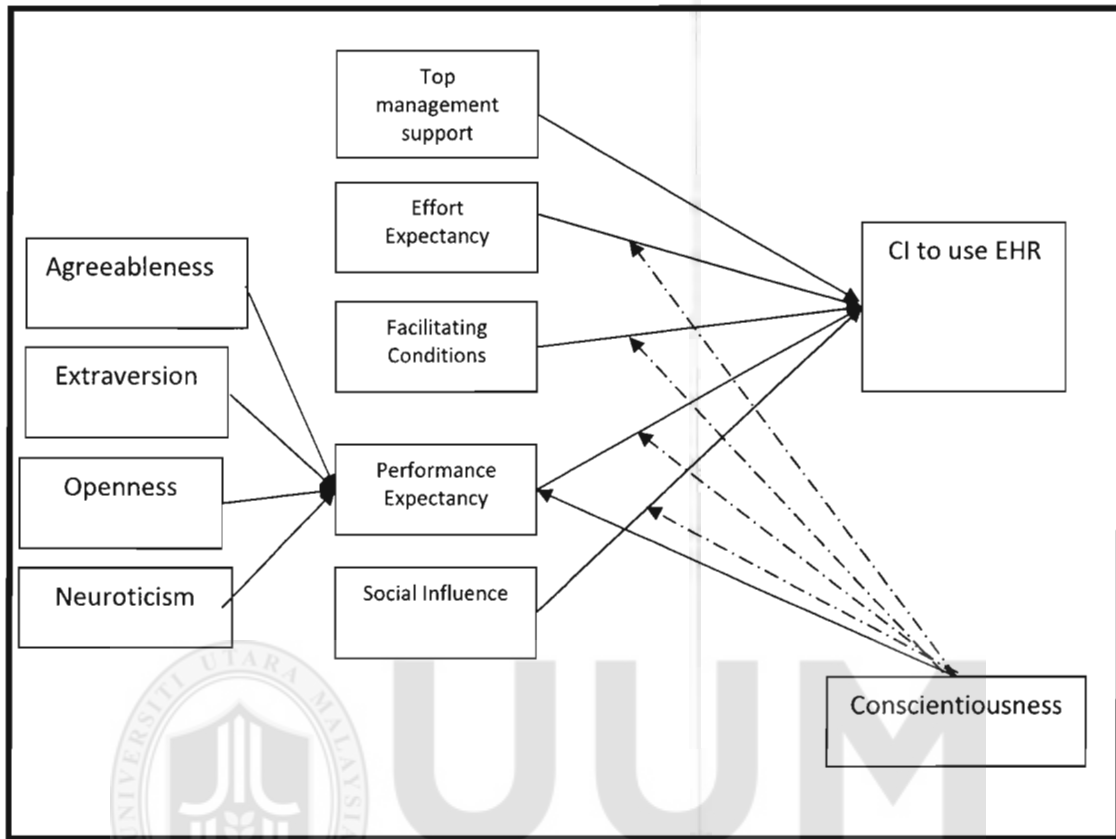


Figure 2.19
Conceptual framework

2.7.2 Research Hypothesis

The following hypotheses has been formulated for addressing the research questions underlying in the current thesis.

2.7.2.1 The Relationship Between Effort Expectancy and Continuance Intention

Effort expectancy denotes the extent of ease related with using an IS (Venkatesh et al., 2003). Fortunately, early studies opined that if an innovation is difficult to use, then its

adoption becomes lowered predominantly amongst consumers (Venkatesh & Brown, 2001; Brown & Venkatesh, 2005). Effort expectancy creates a barrier on the use of technology. However, perceptions of effort expectancy are shaped by on-the-job experiences (Venkatesh & Davis, 1996). Interestingly, Venkatesh (2000) opined that before on-the-job experience, users' perceptions about the ease of use are predicated upon general computer beliefs about computer use. Upon getting direct experience, perceptions about ease of use would be shaped to reflect several facets of the experience. For instance, users may expect some form of user-friendliness from a website. The actual use of a website confirms or disconfirms users' expectations. Furthermore, effort expectancy has been posited to have a positive influence on intention, in addition to its indirect effect via attitude. (Venkatesh et al., 2003). This is likely to hold true in continuance contexts because human tendencies for subconsciously pursuing instrumental behaviours are independent of the timing or stage of such behaviours (Bhattacharjee, 2001). Based on the above literature review, Venkatesh et al. (2011) noted the positive influence of effort expectancy on continuance intention. Thus, this current research postulates:

Hypothesis 1 (H1): Effort expectancy will have impact on the Jordanian nurses' continuance intentions to use EHRs.

2.7.2.2 The Relationship Between Facilitating Conditions and Continuance Intention

This factor denotes the extent to which an individual believes that the existence of organizational and technical infrastructure supports the use of an IS (Venkatesh et al., 2003). It is considered to be a belief associated with the ability of an individual to control

the use of IS. This factor is most times considered to be able to directly affect intention and the use of IS (Venkatesh et al., 2003). With the availability of adequate resources, individuals might be prone to forming positive attitudes even in view of reasons for not engaging in that behaviour. In turn, users can assess the sufficiency of relevant knowledge and needed assistance as they use the IS, although their pre-usage beliefs associated with facilitating conditions may not be confirmed. For instance, if users have access to extra resources and assistance (e.g., better availability of service terminals and online help) than expected in the usage stage, they will experience positive disconfirmation of facilitating conditions, which will, in turn, lead to higher satisfaction and post-usage facilitating conditions and, subsequently, post-usage attitude and continuance intention (Venkatesh, Thong, Chan, Hu, & Brown, 2011).

In view of the line-of-thoughts of the ECT (Bhattacharjee, 2001), positive disconfirmation of facilitating conditions positively relates to post-usage facilitating conditions. Additionally, taking a cue from extant applicable studies (Venkatesh et al., 2003), post-usage facilitating conditions will have a positive influence on continuance intention, in addition to its indirect effect via post-usage attitude. In view of literature review, Tao Zhou (2011) noted the positive influence of the facilitating conditions on continuance intention. Thus, this research postulates:

Hypothesis 2 (H2): Facilitating condition will have impact on the Jordanian nurses' continuance intention to use EHRs.

2.7.2.3 The Relationship Between Performance Expectancy and Continuance Intention

Performance expectancy is “the degree to which an individual believes that using the system will help to attain gain in job performance” (Venkatesh et al., 2003 p. 447). When nurses form positive expectation towards EHRs use, they may continue their usage. The effect of perceived usefulness on continuance usage has been confirmed in previous research. For example, Bhattacharjee (2001) noted that, though the usefulness-intention (performance Expectancy) relationship was initially derived within the context of acceptance, it is likely to hold true in continuance contexts. This is in view of the fact that human tendencies for subconsciously pursuing instrumental behaviours or striving for rewards are independent of the timing or stage of such behaviours. In view of the literature review, Venkatesh et al. (2011) and Tao Zhou (2011) noted the positive influence of the facilitating conditions on continuance intention. Thus, this research postulates:

Hypothesis 3 (H3): Performance expectancy will have impact on the Jordanian nurses' continuance intention to use EHRs.

2.7.2.4 The Relationship Between Social Influence and Continuance Intention

Social influence is noted to be the extent to which an individual perceives that other persons who are important think he or she should use a new IS (Venkatesh et al., 2003). This factor has been noted as being significant in determining intention across a myriad of empirical endeavours (Venkatesh & Davis, 2000). Moreover, it has been posited that social influence is can directly affect intention. This is as proposed in the TPB. In the process of system use, individuals may regulate their pre-usage social influence perceptions because of their observations of others' performance of the behaviour, the

readiness of new information and/or changes in the opinions of friends and peers. In view of the submission of the ECT (Bhattacharjee, 2001), positive disconfirmation of social influence is positively related to post-usage social influence. Furthermore, based on previous relevant research (Venkatesh et al., 2011), post-usage social influence will have a positive influence on continuance intention. In view of literature review; Tao Zhou, (2011) noted the positive influence of the social influence on continuance intention. Thus, this research postulates:

Hypothesis 4 (H4): Social influence will have impact on the Jordanian nurses' continuance intention to use EHRs.

2.7.2.5 The Relationship Between Top Management Support and Continuance Intention

Top management support is the degree to which top management understands the importance of IS function and the content to which it is involved in the activities (Ragu-Nathan, Apigian, Nathan, & Tu, 2004). Top management support (behavior) is the “explicit and active support of the top management towards the introduction and development of new information technology” (Bruque-Cámara, Vargas-Sánchez & Hernández-Ortiz, 2004, p. 138). Researchers believed that top management support is critical in enhancing the incorporation of technology into an organization (Yigitbasioglu, 2015; Low, Chen, & Wu, 2011; Jarvenpaa & Ives 1991; Kwon & Zmud, 1987; Leonard-Barton & Deschamps, 1988; Purvis, Sambamurthy, & Zmud 2001) as it facilitates EHRs continuance to use in different ways. The most difficult and challenging EHRs implementation relates to the nature of healthcare information systems and the critical

role that it plays amidst the complexities involved in the process. This include several aspects such as distinctive and advanced technical features, the complexity of executing administrative roles and the confronting of security and safety issues.

Besides, initiating a new technology into an already complex and sophisticated system is more challenging. This is in view of the fact that change must be persistent and has to include numerous levels of individuals, their roles and relationships in addition to the socio-technical aspects or what is commonly known as business processes (Boswell, 2013; Greenhalgh et al., 2008). TMS is critical because the implementation of IS innovations is resource-intensive. Considerable material and managerial resources are required not only to develop IS applications and infrastructures, but also to support end users (Yigitbasioglu, 2015; Sharma & Yetton, 2003; Jarvenpaa & Ives, 1991; Kwon & Zmud, 1987; Leonard-Barton & Deschamps, 1988; Purvis et al., 2001). In addition, representational actions of support by managers contribute to successful implementation. This is so because these actions legitimize IS innovations, signal management commitment to successful implementation, and acts as a convincing tool to end users to expend the effort required to adopt the innovations (Leonard-Barton & Deschamps, 1988; Purvis et al., 2001).

Based on the above, support and supervision of end users during implementation also contributes to implementation success (Bhattacharjee, 1996). It is important that managers work closely with end users to mandate, negotiate, persuade, motivate, and support them in adopting IS innovations. Management support is also considered critical

for re-conceptualizing work processes and for changing existing routines and processes that are critical for successful implementation (Purvis et al., 2001). In view of the literature review and according to this researcher's knowledge, no studies have investigated the direct relationship between TMS and CI. However, many scholars mentioned a positive influence of the TMS on intention to use (e.g., A-Hadban et al., 2016). Thus, this research postulates:

Hypothesis 5 (H5): Top management support will have impact on the Jordanian nurses' continuance intention to use EHRs.

2.7.2.6 Mediating Effect of Performance Expectancy on The Relationship Between Five Factor Model and Continuance Intention

Research conducted over last decade has produced relatively little concrete knowledge regarding the determinants of technology continuance intention to use continuance usage (Gilani et al. (2016). However, reviews of the literature have consistently demonstrated studies focused on EHR pre-adoption behavior (Morton & Wiedenbeck, 2009), studies on post-adoption behavior remain lacking. Gilani et al. (2016) has affirmed this fact. Most studies of personality and technology have not incorporated personality traits into UTAUT (Barnett et al., 2015). Thus, a need exists for more research on the FFM and technology use within the framework of UTAUT (Barnett et al., 2015). So far, there has been a scarcity in research investigating the effect of FFM on continuance intention to use with UTAUT. So far, previous studies (Lakhal & Khechine, 2017; Sapsani & Tselios, 2017; Rahman, 2017;Chiorri, Garbarino, Bracco, & Magnavita, 2015; Lee, You , & Lee, 2016; Barnett et al., 2015; Boontarig, Chutimasakul, & Papasratorn, 2013; Jackson, Mun,

& Park, 2013; Terzis, Moridis, & Economides, 2012; Punnoose, 2012; Zhou & Lu, 2011; Devaraj, 2008; Wang & Yang, 2005; Sharma & Citurs, 2004) have only examined the FFM directly and indirectly with intention to use through UTAUT variables (effort expectancy, performance expectancy, social influence and facilitating conditions). Therefore, this current study builds on past research (Venkatesh, Thong, Chan, Hu, & Brown, 2011; Wang, Ngai, & Wei, 2012) by examining performance expectancy as mediator on the effect of FFM on continuance intention.

One interesting point to note about the previous innovation usage literature is that it primarily ignored the mediation effect of performance expectancy in the relationship between conscientiousness, extraversion, neuroticism, openness to experience, and agreeableness with continuance intention to use (post-adoption). Many studies have investigated the mediation effect of performance expectancy in the relationship between conscientiousness, extraversion, neuroticism, openness to experience, and agreeableness with intention to use (pre-adoption) (Wang & Yang, 2005).

Performance expectancy is the extent to which individuals believe that using a particular IT will enhance their job performance. The expectation is that technologies that are perceived by users as being useful are more likely to result in positive user intentions regarding their usage (Bhattacharjee & Lin, 2015). According to IT continuance research among the four key variables in UTAUT performance expectancy (perceived usefulness in ECT) is the only factor has a continued effect on users' IT CI because users are unlikely to continue IT use unless the IT benefits them in their future work. This pattern of effects

is supported by empirical research in IT acceptance and continuance, particularly for utilitarian technologies (e.g., Karahanna et al, 1999; Bhattacharjee, 2001; Venkatesh et al, 2003).

However, pre-usage expectations may be modified over time as users learn about the IT from their first-hand experiences. Pre-usage expectations are often based on second-hand information, such as vendor claims or industry reports, and tend to be weaker and more unstable than post-usage expectations based on users' own first-hand usage experience. That is because the primary expectation that drives IT usage behaviours is the extent to which individuals believe that using a particular IT will enhance their job performance (Bhattacharjee & Lin, 2015; Bhattacharjee, Perols & Sanford, 2008).

Also, UTAUT is an adaptation of eight theories: innovation diffusion theory, theory of reasoned action, technology acceptance model; theory of planned behavior, model combining the technology acceptance model and theory of planned behavior, model of PC utilization, motivational model and social cognitive theory. The literature guided the thinking of this current study about how personality might influence UTAUT relationships. The TRA treats personality as an external variable that can only affect behavior indirectly (Ajzen & Fishbein 1980). The term "external" was used by Ajzen and Fishbein (1980) to offer the possibility that other exogenous or external variables might affect the established TRA relationships between beliefs, attitudes, intentions, and behavior. Personality is an exogenous variable in a model linking external variables to behavior; in particular, personality is hypothesized to lead to beliefs related to the

behavior. In developing their theory, Ajzen and Fishbein (1980) used two of the Big Five factors — extraversion and neuroticism — as examples of personality traits that may play a role in decisions to engage in a particular behaviour.

Extending this logic to UTAUT, theoretical arguments based on the TRA suggest that personality factors would be related to specific beliefs about the performance expectancy of a particular technology and to social influence.

2.7.2.6.1 Mediating Effect of Performance Expectancy on The Relationship Between Agreeableness and Continuance Intention

Agreeableness is usually used to describe those who score high in understanding others. It also used to describe the state of trust, straightforwardness, altruism, compliance, modesty, and tender mindedness (Costa & McCrae, 2008). Some characteristics of an agreeable personality are described as being kind, considerate, likable, helpful, and cooperative (Graziano & Eisenberg 1997).

Previous meta-analytic reviews indicate that agreeableness can significantly predict validity in jobs related to interpersonal interaction and teamwork, especially when the interaction involves helping and cooperating with others (Barrick et al., 2001). Consequently, agreeableness is likely to be related to technology beliefs when a certain technology promotes collaboration, cooperation, and the accomplishment of tasks. In comparison to other dimensions of personality, agreeable personalities tend to show more accommodating tendencies and cooperate when considering new technologies. They also

tend to usually focus more on positive and cooperative dimensions of the technology instead of those elements that may be less facilitative of performance (Devaraj et al., 2008). Thus, this research postulates:

Hypothesis 6 (H6): Performance expectancy will mediate the relationship between agreeableness and Jordanian nurses CI to use the EHRs.

2.7.2.6.2 Mediating Effect of Performance Expectancy on The Relationship Between Openness to Experience and Continuance Intention

Openness to experience is the degree to which an individual is ready to learn new things and the willingness displayed in accepting to accept new ideas. This trait relates to fantasy, aesthetics, feelings, actions, ideas, and values (Costa & McCrae, 2008). According to Devaraj et al. (2008), people who are open to experience are willing to try new and different things. They actively seek out new and varied experiences, and value change (McCrae and Costa 1997). Because rapid change and diversity are now the norm in business organizations, openness to experience will be increasingly important in explaining work-related behavior (Hough and Furnham 2002).. Hence, those individual's high in openness are more likely to hold positive attitudes and cognitions toward accepting job-related technology in part because of their predisposition to embrace new approaches to work; they are less threatened by the change implied in adopting technology. This burning desire to do varied things that is the core facet of openness to experience will influence their judgment about the utility of the technology.

According to Behavioral Decision Theory, people are usually prone to heavily seeking and weighing information that agrees with their beliefs and desires while discounting information that does not meet with their inclinations. This occurrence is known as confirmatory bias (Bazerman, 1994). Consequently, persons who are more open tend to strongly weigh arguments that are in line with their innate preference to continue use the new technology. Thus, this research postulates:

Hypothesis 7 (H7): Performance expectancy will mediate the relationship between openness to experience and Jordanian nurses CI to use the EHRs.

2.7.2.6.3 Mediating Effect of Performance Expectancy on The Relationship Between Neuroticism and Continuance Intention

Neuroticism is a person's predisposition to experiencing psychological distress (Ross, Orr, Sisic, Arseneault, Simmering, & Orr, 2009), which involves traits such as feeling shy, guilty, tensed and moody. Besides, neuroticism reflects people's degree of anxiety, hostility, depression, self-consciousness, impulsiveness, and vulnerability to stress (Costa & McCrae, 2008).

Neuroticism is shown as a negative reaction to both life and work situations, and this generalizes to beliefs about the performance expectancy of technology. Devaraj et al. (2008) stated that personalities who are neurotic are likely to see workplace technological improvements as intimidating and demanding, hence the tendency to feel negative about its use. Particularly, because the use of technology in places of work demands attention for self and offers the potential for other people to monitor work or collect information

about work habits, neurotics ultimately form negative beliefs about the technology. Hence, people with high neuroticism can be expected to constantly react to and evaluate a stimulus negatively, while those low in neuroticism are more likely to respond and categorize the same stimulus in a more positive fashion (Devaraj et al., 2008). Thus, this research postulates:

Hypothesis 8 (H8): Performance expectancy will mediate the relationship between neuroticism (for people who have low level of neuroticism) and Jordanian nurses CI to use the EHRs.

2.7.2.6.4 Mediating Effect of Performance Expectancy on The Relationship Between Extraversion and Continuance Intention

The characteristics of extraversion are warmth, unreservedness, boldness, activity, excitement seeking, and positive emotions (Costa & McCrae, 2008). In describing the extraverted personality, Watson and Clark (1997) described it as being social, active, and outgoing, and place a high value on close and warm interpersonal relationships.

Barrick and Mount's (1991) meta study, it was posited that more extraverted personalities are particularly high performers in jobs with a social component, such as management and sales. In a team setting posed for better training efficiency, it is posited that extraversion can be related to effectiveness (Barrick et al., 2001). The desire to gain social status is one of the most critical motivations for individuals in deciding to adopt an innovation (Rogers, 1983). Venkatesh and Davis (2000) opined in their extended TAM2 that when important members of a person's social network believe that he or she should

perform a behavior, he or she will be motivated to do so to either establish or maintain a favourable social image.

Additionally, heightened power and influence resulting from performing behaviours that are viewed as desirable by one's social network will lead to indirect improvements in job performance due to image improvement. Those high in extraversion are as expected to be disposed to care about their image and other social concerns of behaviours, and therefore are more likely to form continuance intentions to use new technology based upon their perceptions of the opinions of significant others. Thus, this research postulates:

Hypothesis 8 (H8): Performance expectancy will mediate the relationship between extraversion and Jordanian nurses CI to use the EHRs.

2.7.2.6.5 Mediating Effect of Performance Expectancy on The Relationship Between Conscientiousness and Continuance Intention

Conscientiousness is a special characteristic of an individual with a high level of responsibility, whose motivation to achieve is high, who is self-disciplined, highly competent and reliable (Costa & McCrae, 2008). Persons with conscientious personalities are inherently moved to achieving and performing at a high level and are always poised to take actions that lead to improvements in their job performance. Conscientious personalities are people with a high level of self-control, and these traits are usually shown in their knack for achieving their goals and for persisting for greater heights (Costa et al., 1991). In their arguments, Barrick and Mount (1991) noted that, in view of the overarching nature of this construct in the management literature, its role in contributing

to job success cannot be over-emphasized. Also, Devaraj et al. (2008) noted that conscientious people are mostly careful in considering whether technology provides an opportunity to further on-the-job accomplishment and then act based on that assessment. Conscientiousness is related to the enactment of their continuance intentions. Thus, this research postulates:

Hypothesis 10 (H10): performance expectancy will mediate the relationship between conscientiousness and Jordanian nurses CI to use the EHRs.

2.7.2.7 Moderating Effect of Conscientiousness on The Relationship Between UTAUT Variables and Continuance Intention

The review of literature showed a lack of studies investigating the moderating effect of FFM regarding to technology continuance intention to use and continuance usage. So far, previous studies (Chiorri, Garbarino, Bracco, & Magnavita, 2015; Boontarig et al., 2013; Devaraj et al., 2008; Wang & Yang, 2005; Sharma & Citurs, 2004) have only examined the moderating effect of FFM on the relationship between intention to use and UTAUT variable (effort expectancy, performance expectancy, social influence and facilitating conditions). Limited studies were found that had investigated the moderating effect of FFM on the relationship between UTAUT variables and continuance intention to use. Therefore, this study builds on previous research investigating the moderating effect of FFM on the relationship between intention to use and UTAUT variable logic (Chiorri et al., 2015; Boontarig et al., 2013; Venkatesh et al., 2011; Devaraj et al., 2008; Wang & Yang, 2005) to examine conscientiousness as moderator on the effect of UTAUT variables on continuance intention.

Conscientiousness is related to individuals who are more prone to planning, organizing, and accomplishing tasks. High C scores are indicative of scrupulous, punctual and reliable person. A high C person would display inclinations such as being a workaholic or being compulsively neat. Low C persons have lower moral standards and are less exact in goal seeking (Costa & McCrae, 1992a). The hallmark of the conscientious personality is self-control reflected in a need for achievement, order, and persistence (Costa et al., 1991); these traits are fundamental components of intrinsic motivation at work and high levels of job performance (Barrick & Mount 2000). EHRs were introduced into the Jordanian healthcare system based on government's belief that EHRs have the potential to augment the service quality and productivity of the healthcare practitioners and growing the effectiveness and efficiency of health services. Therefore, the moderating effect of conscientiousness is expected to play a crucial role in the relationship between UTAUT variables and continuance intention.

2.7.2.7.1 Moderating Effect of Conscientiousness on The Relationship Between Effort Expectancy and Continuance Intention

In relationship to the reviewed literature, it is posited that conscientiousness will interact with effort expectancy in determining continuance intention. Conscientious people are hard workers who have this inherent ability to perform at high levels no matter the degree of complexity of the technology that will be used to perform the work (Devaraj et al., 2008). Hence, they are unlikely to be influenced by whether the technology is easy to use or not. On a different note, people with lower levels of conscientiousness are not as inclined to perform at a high level and worry about the new technology if that technology

needs high efforts to perform. Therefore, they will be more concerned about the complexity of the technology and the effort they will exert to perform their jobs. In view of the literature review and according to this researcher's knowledge no studies have investigated the moderating effect of conscientiousness between effort expectancy and CI. Thus, this research postulates:

Hypothesis 11 (H11): Conscientiousness will moderate the relationship between effort expectancy and CI to use the EHRs where the relationship is weaker for individuals with low conscientiousness.

2.7.2.7.2 Moderating Effect of Conscientiousness on The Relationship Between Facilitating Condition and Continuance Intention

Furthermore, it can be posited that conscientiousness will interact with facilitating conditions in determining continuance intentions. Conscientious people are hard workers who are inherently high achievers whose performance levels are high if they believe that that their organization provides them organizational and technical infrastructure to support the use of the system. Hence, conscientious people will form stronger continuance intentions to use technology. Contrarily, if a person believes his/her organization is not making available the necessary organizational and technical infrastructure to support the use of the system, conscientiousness will also increase those beliefs and decrease continuance intentions. In view of the literature review and according to this researcher's knowledge, no studies have investigated the moderating effect of conscientiousness between facilitating conditions and CI. Thus, this research postulates:

Hypothesis 12 (H12): Conscientiousness will moderate the relationship between facilitating conditions and the CI to use the EHRs where the relationship is weaker for individuals with low conscientiousness.

2.7.2.7.3 Moderating Effect of Conscientiousness on The Relationship Between Performance Expectancy and Continuance Intention

On another note, it is posited that dispositional tendency will increase or diminish the extent to which performance expectancy result in continuance intention to use technology. According to Devaraj et al. (2008), people with a high level of conscientiousness are cautious in pondering ways in which the use of technology would allow them to be more efficient and perform at a higher level at work. If this perception is formed, then conscientiousness will amplify those beliefs and increase continuance behavioural intentions. On the other hand, if a person decides that a technology is not useful, conscientiousness will also increase those beliefs and decrease continuance behavioural intentions (Devaraj et al., 2008). In view of literature review and according to the researcher's knowledge, no studies have investigated the moderating effect of conscientiousness between performance expectancy and CI. Thus, this research postulates:

Hypothesis 13 (H13): Conscientiousness will moderate the relationship between performance expectancy and CI to use EHRs such that the relationship is weaker for individuals with low conscientiousness.

2.7.2.7.4 Moderating Effect of Conscientiousness on The Relationship Between Social Influence and Continuance Intention

Conscientiousness is expected to relate with social influence in determining continuance intentions. Still dwelling on the position of Devaraj et al. (2008), conscientious personalities are careful in considering and weighing the opinions available to them on whether to continue to use a new technology. Should conscientious persons believe that significant others believe technology should continue to be used, they will form stronger continuance intentions to use technology. On the contrary, they will also with judgment, consider and process negative social influence, in conditions under which trusted others do not believe that a new technology should be used. In view of this, continuance intention to use technology gets lowered. Basically, such instances of those whose conscientiousness are not as inclined to carefully process and weigh additional information. Hence, the effect of other opinions on continuance behavioural intentions also decreased. In view of the literature review and according to this researcher's knowledge, no studies have investigated the moderating effect of conscientiousness between performance expectancy and CI. Thus, this research postulates:

Hypothesis 14 (H14): Conscientiousness will moderate the relationship between social influence and CI to use the EHRs where the relationship is weaker for individuals with low conscientiousness.

2.8 Theoretical Framework

Based on the review of previous literature, theoretical models and theories related to continuance intention to use, effort expectancy, performance expectancy, social influence, facilitating conditions, top management support, conscientiousness,

extraversion, neuroticism, openness to experience and agreeableness, the theoretical framework for this study was constructed. The theoretical framework of this study was adapted and underpinned by Unified Theory Acceptance and Use Technology 2 (UTAUT 2) (Venkatesh et al., 2012; Venkatesh et al., 2011; Tao Zhou, 2011), the Five Factor model (Costa & McCrae 1992a), and Expectation Confirmation Theory (ECT) (Bhattacharjee, 2001).

As illustrated in Figure 2.20, this study proposes that effort expectancy, performance expectancy, social influence and facilitating conditions have direct relationships with the continuance intention to use EHRs. This assumption agrees with of researchers such as Venkatesh et al. (2011) and Tao Zhou (2011). Additionally, this study also postulates that top management support directly influences continuance intention to use EHRs. So far, no research has investigated the effect of top management support on continuance intention to use EHRs. A few studies investigating the effect of top management support have examined different independent and outcome variables. For example, Al-Hadban et al. (2016) studied TMS effect on healthcare staff adoption for a health information system in public sector in Iraq, based on UTAUT framework. The findings showed that top management support has a significant influence on behavioural intention. On other hand, Sargent, Hyland, and Sawang (2012) investigated the factors that can impact intentions of individuals to use technology can aid managers in implementing strategies to improve and increase technology uptake and improve the process of innovation adoption. The findings indicate individuals' intention to use information technology is influenced by top

management. Therefore, this study attempts to fill the research gap by investigating the effect of top management support on continuance intention to use EHRs.

Furthermore, the framework also proposes that performance expectancy mediates the relationship between FFM dimensions on continuance intention to use EHRs. So far, no research has used performance expectancy as mediator on the relationship between FFM dimensions on continuance intention to use EHRs. A few studies using performance expectancy as a mediator have examined different independent and outcome variables. For example, Wang and Yang, (2005) conducted a study to examine the roles that personality traits play in the UTAUT model under the context of online stocking. The results revealed that performance expectancy mediates the relationship between extraversion and intention to use online stocking, while performance expectancy did not mediate the relationship between conscientiousness, neuroticism, openness to experience and agreeableness and intention to use online stocking. Therefore, this current study attempts to fill the research gap by using performance expectancy as mediating variable on the relationship between conscientiousness, extraversion, neuroticism, openness to experience, agreeableness and continuance intention to use EHRs.

In addition, the framework also proposes that conscientiousness moderates the relationship between UTAUT variables on continuance intention to use EHRs. So far, no research has used conscientiousness as a moderator on the relationship between UTAUT variables on continuance intention to use EHRs. A few studies using conscientiousness as moderator have examined different independent and outcome variables. For example,

Boontarig, Chutimasakul, and Papasratorn (2013) conducted a study trying to determine user adoption of online social networking, regarding health information. They applied UTAUT to test user adoption of social networking related to healthy living. They proposed that personality traits should be considered as additional moderators in this context. The results revealed that only agreeableness moderates the relationship between performance expectancy and intention to use health information associated with online social networking services for individual higher in agreeableness.

Furthermore, Wang and Yang (2005) conducted a study to examine the roles that personality traits play in UTAUT model under the context of online stocking. The results revealed that conscientiousness moderated the relationship between social influence and intention to use online stocking, while conscientiousness did not moderate the relationship between effort expectancy, performance expectancy, facilitating conditions and intention to use online stocking.

Therefore, this study attempts to fill the research gap by using conscientiousness as moderating variable on the relationship between effort expectancy, performance expectancy, social influence, facilitating conditions, and continuance intention to use EHRs.

The proposed mediation moderation model of this study is among the first to integrate all variables (continuance intention to use, effort expectancy, performance expectancy, social influence, facilitating conditions, top management support, conscientiousness,

extraversion, neuroticism, openness to experience and agreeableness) in a single model.

The research model is illustrated as follows:



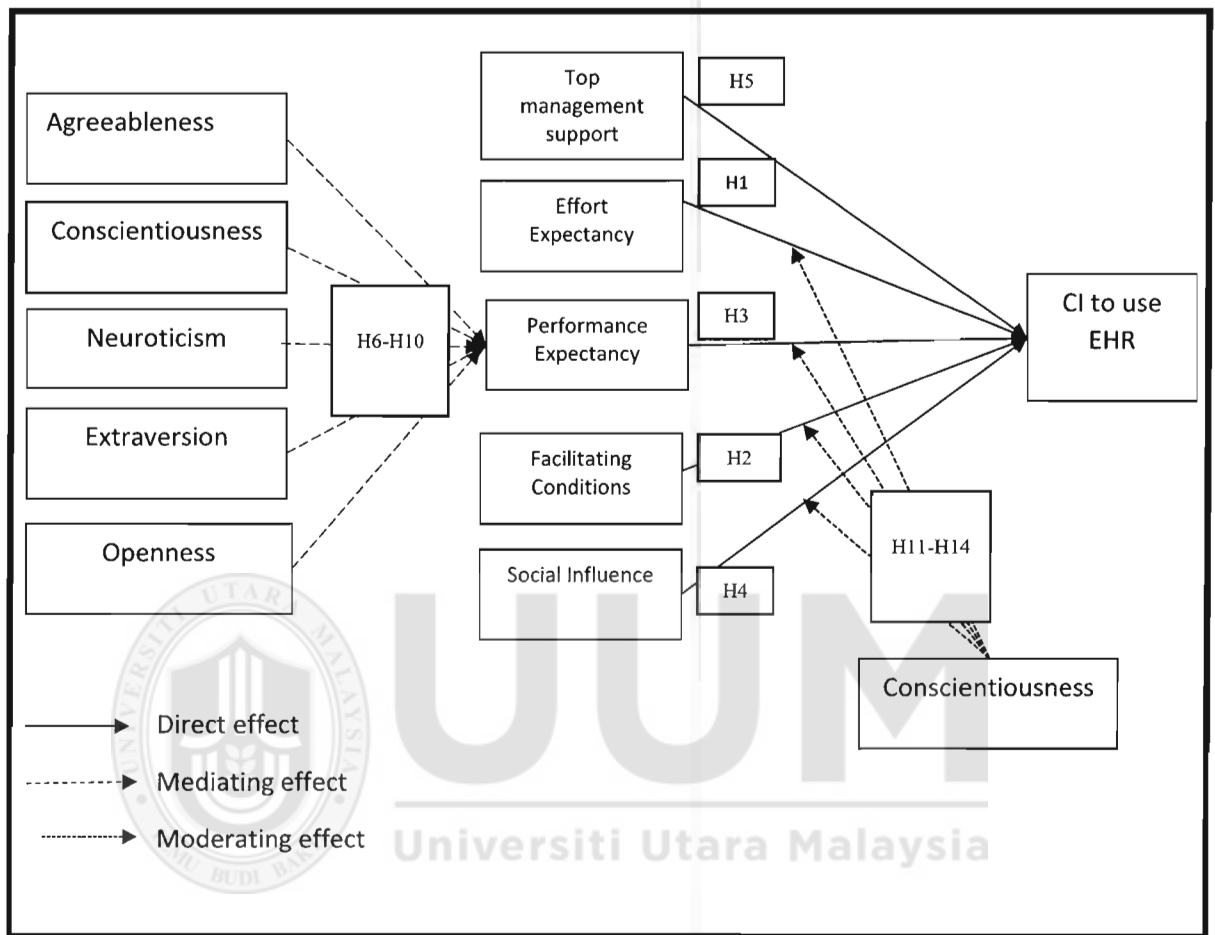


Figure 2.20
Theoretical Framework of the Relationship FFM, UTAUT variables, top management support and continuance intention to use

2.9 Summary of the Chapter

This chapter discussed the relevant literature on factors that can influence nurses' continuance intention to use EHRs in the Jordanian public health sector. Specifically, the various components of the conceptual framework and how they affect nurses' continuance intention to use EHRs, namely, effort expectancy, performance expectancy,

social influence, top management support, facilitating conditions and nurses' personality dimension (agreeableness, extraversion, openness to experience, neuroticism and conscientiousness) were all discussed from the perspective of UTAUT theory. A thorough analysis of the previous literature provides better insights into understanding nurses continues intention to use EHRs at their workplace. The review of literature that has been discussed both theoretically and empirically also suggests that the background of this study has researched rigorously. This included the components of this study, namely, top management support, nurses' personality (FFM), performance expectancy, social influence, effort expectancy and facilitating conditions that affect nurses' continuance intention to use.

The most significant finding from the literature review is that no research to date has examined the following: 1) the influence of top management support on continuance intention to use, 2) the mediating role of performance expectancy on the relationship between FFM and continuance intention to use and 3) the moderating role of conscientiousness on the relationship between effort expectancy, performance expectancy, social influence, facilitating conditions, and the continuance intention to use EHRs. It is envisaged that by addressing these three gaps, this research will advance new knowledge and shed light on the continuance intention to use research, particularly in EHRs. Finally, last part illustrates the research framework development.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

Specifically explained in this chapter are the various methodological steps used to carry out the present research. Specifically, the chapter is broken down into seven main sections; the research design, measurement, population, sampling and sampling procedure, pilot study and techniques of data analysis. The summary of the chapter was also done.

3.2 Research Design

Specifically, the research design of any study offers a synopsis of the techniques needed to get information in resolving business research related matters (Malhotra, 1999). According to Zikmund, Babin, Carr and Griffin (2013), research design is a “master plan that specifies the methods and procedures for collecting and analyzing the needed information” p.64. Also, it is a plan that guides the researcher on how to respond to research questions of a study (Saunders, Lewis, & Thornhill, 2009), how to control statistical errors, and suggests a roadmap of, the different kinds of observations to make, the analysis of such observations, and the probable inferences that can be drawn from the analysis. It is commonly noted that a study’s purpose and related objectives determines the most suitable research design expected to be used (Yin, 2003). More so, in attempting to understand and possibly explain the relationship between and among exogenous and

endogenous variables of a study, the most suitable method to adopt is the quantitative research method (Leedy & Ormrod, 2005). This submission is predicated upon the fact that a quantitative research method analyses data from which theories are proven and discovery / confirmation of important variables for future research are noted based on standards of validity, reliability and related statistical procedures (Zikmund et al., 2013).

Since most empirical investigations are descriptive in nature, quantitative findings are mostly a product of a survey (Zikmund et al., 2013). In addition, survey method can be considered as a good approach to use for viewing a greater number of variables that are impossible to do with experimental approaches. Also, survey data are gathered regarding the real-world environment instead of just allowing the research to study several variables simultaneously. Owing to its capability of studying a large sample size, and if a sample is carried out carefully; it is not surprising why survey findings are used to generalize real word situations (Cornford & Smithson, 2006). Therefore, based on the aforementioned explanations, this study adopts a survey method in a quantitative approach to investigate nurses' continuance intention to use EHR in public hospitals in Jordan. Specifically, this study examines the relationship between UTAUT factors, continuance intention to use EHR, FFM and TMS.

Basically, a survey research is done for the purpose of the exploration, description or explanation of an empirical phenomena (Sekaran & Bougie, 2010; Pinsonneault & Kraemer, 1993). The essence of survey research related to exploring a phenomenon is to be better aware and be familiar with a topic and related ideas.

On the exploratory survey, it basically emphasizes what concepts there are to measure, and how best those concepts are to be measured. Additionally, the exploratory survey is undertaken to find out and raise new likelihoods and dimensions of a pre-determined population. The use of survey research primarily for exploration is almost never necessary. Rather, it should be predicated upon the development of concepts and methods for a more comprehensive, systematic descriptive surveys (Dillman, 1979; Fowler, 1984, 2013). Summarily, exploratory survey is mainly conducted to extract a wide-range of varying responses from persons in a less-structured manner as the basis for design of a more careful survey (Pinsonneault & Kraemer, 1993).

For description, a survey research focuses on finding out specific circumstances, actions, approaches or thoughts. It is designed to statistically describe a phenomenon in a population or among subgroups of a population with an additional intent of making a distributive comparison between the components of a population. Analysis stimulated by descriptive questions is basically for ascertaining realities rather than testing a theory. The hypothesis is not causal, but simply that common perceptions of the facts are or are not at odds with reality. (Pinsonneault & Kraemer, 1993).

Lastly, for the purpose of explanation, a survey research is done to test theories and causal relationships. It specifically explains how a relationship occurs between variables, and usually with support from a grounded theory (Pinsonneault & Kraemer, 1993). Grounded theories explain cause and effect of parsimonious relationships between variables and proposes directions of such relationships. The theory includes an element of cause and effect in that it not only believes the existence of relationships between

variables in line assuming directionality (e.g., that the relationship is positive or negative, or that variable A has an influence over variable B) (Pinsonneault & Kraemer, 1993). Explanatory questions may not necessarily be asked to establish the existence of a causal relationship, but to ask why such relationship occurs. The main question in an explanatory research is; "Does the hypothesized causal relationship exist, and does it exist for the reasons posited?" Hence, this study attempts to explain the relationship between UTAUT theory factors, FFM model, continuance intention to use EHR, and TMS, this study employed Explanatory survey research method (Pinsonneault & Kraemer, 1993).

According to Zikmund et al. (2013) survey research methods are classified by first; way of the manner of communication, second; the time frame data is collected, and third; the structure and disguised of questionnaire. First, the method of communication has two categories for collecting data; first one is live interview and the second one is non-interactive (self-administered questionnaires). First category is personal interview which defined as a person-to-person communication in which and interviewee is expected to respond to questions from an interviewer. There are various methods by which personal interviews are conducted, namely, door-to-door interview, mall intercept interview and telephone interview. Characteristically, there are three types of telephone interviews namely, central location interview, computer-assisted telephone interview and computerized voice-activated telephone interview. On a related note, self-administered questionnaires are noted to be a survey patter where respondents are responsible for reading and answering the questions as stated therein. The two types of self-administered questionnaires are, paper and electronic. The paper questionnaires have four sub-types

namely, mail, in-person drop-off, insert and fax. Also, the electronic questionnaires have four types; e-mail, internet website, interactive Kiosk and mobile phones (Zikmund et al., 2013).

In deciding on which survey method to use for any study, the design of the research is very critical as these methods have their distinct advantages and disadvantages (Aaker, Kumar & Day, 1995; Zikmund et al., 2013). Of all the methods, the face-to-face methods is noted to be very useful in leading to greater response rates. It also allows researchers the use of physical motivations in administration and collection of survey instruments, in addition to explaining confusing and/or complex questions (Zikmund et al., 2013). The disadvantage of this method is that it is fraught with biases in addition to huge financial implications involved in the process.

Relatively, the telephone survey is noted to be a fast and cost-effective method of data collection which is effective in getting to individuals who are hard to reach like busy retailers. However, a noted disadvantage is that the response rate is usually moderate, and also requires that interviewers spend so much making calls (Zikmund et al., 2013).

On another note, the mail survey is noted to produce precise results in the sense that the respondents respond to questions on the instrument in a discretionary manner and time-frame, and biases noted from this method is usually infinitesimal or almost non-existent (Zikmund et al., 2013). The other side of the mail survey method is that it is usually noted

for low response rate and issues of non-response if not randomly distributed bias may arise (Zikmund et al., 2013).

The internet has gathered so much prominence over time especially in its use for gathering data for public surveys (Couper, 2000, Zikmund et al., 2013). The internet survey method for data collection is cost-effective as there will be no need for printing and mailing the survey instrument (Dillman, 2000; 2007; Zikmund et al., 2013). However, this method is only useful in locations that have full internet access, connectivity and use (Couper, 2000; Zikmund et al., 2013), but often times, respondents' access to the internet, their skills in its use ought to be put into consideration before using this survey method (Dillman, 2000; Zikmund et al., 2013).

Lastly, on self-administered questionnaires method, the researcher chooses the drop-off-survey tactics, which is a survey method where the interviewer is expected to travel to the location of the respondents to drop-off and later pick up the questionnaires (Zikmund et al., 2013). Drop-off-survey is characteristic of the freedom of merging the benefits of mail survey and face-to-face interview, in the sense that survey instruments are personally hand-delivered to respondents (Zikmund et al., 2013; Cooper & Schindler, 2011). In this instance, respondents are urged to finish answering the questions and return same within a limited time frame. The response rate in the use of this method is usually high with a noted rate of 70% and the cost implication of using this method is between 18 to 40% lesser than that in mail survey (Cooper & Schindler, 2011). However, the success of such

a survey depends on the interviewers' ability to systematically reach-out to the targeted respondents in order to ensure that the instruments are well (CSU, 2012).

Consequently, the drop-off survey with questionnaire being the primary tool of data collection was used in the present study. The reason using this approach is predicated upon the following six reasons:

The drop-off survey is noted to have a better response rate than the mail survey, telephone interviews and internet survey. In this sense, the interviewer is able to have a one-on-one interaction with the respondents, while also intimating them on the need for the survey and further giving the respondents the assurance of confidentiality (Cooper & Schindler, 2011). Additionally, it is noted that the drop-off survey gives respondents the opportunity to answer questions in the instrument as it is convenient for them, and by this, reducing or eliminating bias which are mostly noted from telephone interviews (CSU, 2012).

In the drop-off survey method, data collectors are attuned with the know-how of administering and subsequently collecting responses from nurses. As the questionnaires are given to the nurses by hand, they are at liberty to answer as it pleases them. By this, they are motivated to respond as quickly as possible, thereby ensuring high response rate. In comparison to the face-to-face interview, the drop-off survey is cost and time-effective (Zikmund et al., 2013).

Notwithstanding the advantage of the drop-off survey method in terms of better response rate and cost-effectiveness, it is noted to be effective in better managing of the sample design. That is, by effectively identifying the location of the respondents and by excluding

respondents who are completely out of the sample frame of the study (Cooper & Schindler, 2011). To further get a better response rate and reduce non-response errors, the researcher is obliged to encourage respondents to, in as much as possible, ensure they accurately respond to the questions in the instrument, while further emphasizing the essence of the research, and now filled questionnaires can be returned accordingly (Cooper & Schindler, 2011). Taking a cue from the above submissions, the instrument for this study was hand-delivered to the nurses by the researcher himself with a list of nurses from the head departments from the selected hospitals. The questionnaires were distributed within two months, starting from 22 July 2015 till 27 September 2015.

In addition, the second classification according to Zikmund et al. (2013), survey research method classified based on temporal classification which are divided into two types namely, cross-sectional and longitudinal. The cross-sectional survey is used to refer to a study where several sections of a population are sampled and data collected therefrom in a given time and moment. The longitudinal survey is one in which respondents are sampled at different times. It is a direct opposite of the cross-sectional survey. Consequently, since the data for this study was collected from a single response source, it is thus classified as cross-sectional. The process was done in as economical way as possible since data was collected from a sizeable population, thereby ensuring data was collected from a representative sample of a select population (Zikmund et al., 2013).

Furthermore, the third classification according to Zikmund et al. (2013), survey research method classified based on structural-unstructured and disguised-undisguised questionnaires questions. First, a structured question is a question that imposes a limit on the number of allowable responses. While unstructured question defined as a question that does not limit the respondent' answers. Second, undisguised questions are direct questions that assumes the willingness of the respondent in answering. While disguised questions are unforeseen questions that assume the purpose of the study must be hidden from the respondent.

Questionnaires can be categorized by their degree of structure and degree of disguise. For example, interviews in exploratory research might use unstructured questionnaires. While descriptive research might use structured questionnaires. Also, explanatory research might use highly structured questionnaires. The questionnaire questions in this study employed highly structured-disguised and highly structured-undisguised approaches due to this study is employed explanatory survey research to test theory and causal relations.

The questionnaire is used to collect primary data in a research (Gay & Airasian, 2003; Zikmund et al., 2013). It is noted as a tool that is most effective in obtaining, personal, organizational and societal evidences, opinions and behaviours. The questionnaire designed for collecting data from the sampled respondents of this study was adapted from previous literature. They were thus distributed to an entire population of public hospitals which fully implemented EHR (to be explained later) to study the most important factors that effect on their continuance intention to use EHR.

In the questionnaire, items identified from the literature to measure the main variables were assembled. As the items were originally in the English language, the researcher used back-translation and decentering (Brislin, 1986; Brislin, Lohner, & Thorndike, 1973) to translate all variables except personality dimensions because it has been already translated to Arabic from the author and provided by Psychological Assessment Resources, Inc. which is responsible for selling the copy rights (the contract attached in appendix), the other variables (UTAUT, CI and TMS) translated by "Knowledge Tracks Translation Company" in Amman, Jordan which is an international certified translator company the company followed back-translation, and decentering technique (Brislin, 1986; Brislin, 1970; Brislin, Lohner, & Thorndike, 1973) to translate the items to Arabic language.

The suggested technique is back-translation, and its close relative, decentring (Brislin, 1986; Brislin, 1970; Brislin, Lohner, & Thorndike, 1973). In back-translation, one bilingual translates from the source to the target language, and another blindly translates back to the source. This process is repeated severally as different bilinguals work with the efforts of their predecessors. The work of the team of bilinguals, all working autonomously on a different step are illustrated as follows:

Moving back and forth between languages in this way is the basis of decentring, since no one language is the "centre" of attention. The procedure can be repeated for severally and then the researcher compares the last back-translated version with the original version. If a concept "survives" the decentring procedure, it is assumed to be Etic (a phenomenon,

or aspects of a phenomenon, which have a common meaning across the cultures under examination. It is also referred to as the core meaning). Insofar as there must be readily available words and phrases in the two languages that can be used by the translators. If a concept is not in the final back-translated version, the reason could be that it is Emic (Emic aspects are different in the two cultures, but each emic is related to the shared etic concept). That is, the concept might be readily expressible in only one of the languages.

In this instance, the bilinguals should be extensively engaged to identify who can indicate reasons why any of the words were and were not translatable. The aim of this procedure is that it guides final decisions about the wording of the original language version which will eventually be used in actual data collection. That version will often be the final back-translation. The reasoning for this suggestion is that the final back-translation is most likely to be equivalent to a target language version, probably the version immediately preceding the final step in the decentring process (Brislin, 1986; Brislin, 1970; Brislin, Lohner, & Thorndike, 1973).

Before the adoption of the translated copy of the instrument, a comparative analysis of the initial and back-translated English versions of the questionnaire were done, so as to ensure that they both carry the same meaning, and refining can be done where necessary (Craig & Douglas, 2000) (the English and Arabic versions of the questionnaire are available in appendix). Such procedure was commonly employed by previous researchers. The translation of the English items into Arabic was necessary because the English language is not the mother-tongue language of nurses in Jordan.

3.3 Research Instrument and Operational Definitions

Developing questionnaires to be used to collect data from respondents can be done in two ways or forms namely, getting information on socio-demographic characteristics of the respondents (gender, age, education, years of experience in the nursing profession, department, name of hospital, number of years of working in the current hospital), and questions that relates to the variables under study. On the scales of measurement, the 5-point Likert type scale developed by Rensis Likert (1932) of “strongly disagree” to “strongly agree” in which the respondents are to show their level of agreement regarding the questions posed to them. Specifically, one indicated strong disagreement and five indicated strong agreements with an item. This scale-type is suggested among scholars to be very reliable, simple to construct and provides adequate data that relates to the opinions of the respondents (Tittle & Hill, 1967).

Specifically, the instrument consists of two sections; demographic data and closed ended questions. Demographic data includes; gender, age, educational level, profession experience in years, name of the hospital, department name, experience period in the current hospital. While closed-ended questions represent seven main constructs in the theoretical model. They are: (1) Continuance Intention; (2) Performance Expectancy; (3) Effort Expectancy; (4) Social Influence; (5) Facilitating condition; (6) Top Management Support; and (7) Personality Dimensions. The following section reviews the measurement of these constructs in previous studies and proposes the instrument for this study. Table 3.1 shows the variables, dimensions and total number of items.

3.3.1 Continuance Intention

Defined as the intention of a user to continue using an IS post-adoption (Bhattacharje, 2001). In this study, the CI is operationalized as the intention of nurses to continue to use EHRs post-adoption. The measurement of continuance intention was adopted from Basri (2012). He used six items to measure intention to use which were initially tested among employees in Saudi public organizations, the distinction between intention to use and continuance intention is made because it is important to know that the two ideas symbolize different outcomes (Karahanna, Straub & Chervany, 1999). The researcher modified Basri (2012) items to be reflective to the concept of Continuance Intention because his study conducted in developing country which is similar to the Jordanian context. The arbitration for the new items done from four academic doctors and one practitioner. The internal reliability reported by Basri (2012) was (0.93).

3.3.2 Performance Expectancy

Performance expectancy denotes the extent to which an individual believes that using the system will help him or her to achieve job performance (Venkatesh, Morris, Davis & Davis, 2003). On a related note, performance expectancy is defined as the degree to which an individual believes that technology will assist them in performing their job duties (Holtz & Krein, 2011). However, in this study performance expectancy is operationalized as the belief of the nurses that EHRs will help them in performing their jobs efficiently and in a more productive manner. The measurement of performance expectancy has 5 items adapted from Holtz and Krein (2011). This is predicated upon the fact that it is similar in topic, context and sample to the present study. The arbitration for the new items

done from four academic doctors and one practitioner. The internal reliability reported by Holtz and Krein (2011) was (0.80).

3.3.3 Effort Expectancy

Venkatesh et al. (2003) defined effort expectancy as the extent of convenience perceived for using system. Also, effort expectancy is defined as the degree to which an individual perceives the technology to be easy to use (Holtz & Krein, 2011). However, in this study effort expectancy is operationalized as how nurses perceive the EHRs to be easy to use. The measurement of effort expectancy had 5 items adapted from Holtz & Krein (2011) in view of the similarity of topic, setting and sample to this research. The arbitration for the new items done from four academic doctors and one practitioner. The internal reliability reported by Holtz & Krein (2011) was (0.82).

3.3.4 Social Influence

Social influence is the degree to which a person presume that others are important to him/her in using new system (Venkatesh et al., 2003). It is also the degree to which a person feels some form of social pressures on the use of a particular technology (Holtz & Krein, 2011). In this study however, social influence is operationalized as the degree to which nurses feel they socially pressurised to use EHRs. The measurement of social influence had 8 items adapted from Holtz & Krein (2011). This was also done in view of the similarity of the topic and context of the research being reported. The arbitration for

the new items done from four academic doctors and one practitioner. The internal reliability reported by Holtz & Krein (2011) was (0.79).

3.3.5 Facilitating Condition

According to Venkatesh et al. (2003), facilitating condition is the extent to which people believe that organizational and technical infrastructure exist to support use of the system. On the position on Holtz and Krein (2011), it is the extent to which a person believes that his or her organization supports and makes available the needed resources for the implementation of technology (Holtz & Krein, 2011). In the present study, facilitating condition is operationalized as the degree to which nurses believe that their hospital supports and make available the necessary knowledge and resources needed to continue using EHR. Facilitating condition has 6 items adapted from Holtz & Krein (2011) based on similarity of research topic, and context of the study. The arbitration for the new items done from four academic doctors and one practitioner.

3.3.6 Top Management Support

Slevin and Pinto (1987) defined TMS as the desire of top management to offer resources that are essential and authority or power for the success of a project. On the other hand, Ragu-Nathan, Apigian, Ragu-Nathan and TuQ (2004) stated that TMS is the extent to which top management understands the importance of the information system functions and its attendant level of involvement in activities related to information systems. However, Gambatese and Hallowell (2011) looked at TMS as a clear commitment and allocation of resources that are sufficient to the innovation and if required active

participation in managing adoption and change of innovation. Numerous scholars made attempts to explain and define TMS but it is obvious that prior studies have adopted either a behavioral and attitudinal interpretation of TMS (Jarvenpaa & Ives, 1991). In this study the top management support is operationalized as the support towards using of EHRs for nurses by top management.

Specifically, TMS have eight items as adopted from Igbaria (1990) with reported internal reliability of 0.76. This measure incorporated two wide-ranging types of support namely, application development support and general support. Application development support is specifically made up of the existence of an information center, and handiness of development assistance. General support includes top management backing, apportionment of resources, and MIS staff support. The scale consisted of eight items, four representing specific support, and four items of general support (Igbaria, Parasuraman & Pavri, 1990).

3.3.7 Personality Dimensions

Finally, for personality dimension's the researcher used the NEO-FFI measurement which consist of 60 items; 12 items for each dimension (neuroticism, extraversion, openness, agreeableness and conscientiousness). The researcher bought the rights to use this instrument in Arabic language from Psychological Assessment Resources, Inc. which has the Exclusive right to give license to use it. For internal reliability for the dimensions according to Psychological Assessment Resources, Inc. According to (Costa and McCrae, 1992a) internal reliability for the dimensions it was (0.68 – 0.86).

3.3.7.1 Neuroticism

Neuroticism (N) signifies the distinction between adjustment or emotional stability and maladjustment (Costa & McCrae, 1992a). Individuals that are low in neuroticism are stable emotionally and well-adjusted. On the other hand, individuals that are high in neuroticism are paranoid, self-conscious anxious, and are susceptible to negative emotions as well as negative reactions towards stimuli that are work-related (Costa & McCrae, 1992a). In this study, Neuroticism operationalized as Nurses' predisposition to experience negative effect and emotional distress during their work using new technology or equipment (EHRs).

3.3.7.2 Extraversion

The extraversion (E) scale is a mix of the extrovert/introversion predisposition in individuals. Extroverts are prototypical, assertive, active, and talkative. However, introvert individuals were more challenging to define, in that they are considered as those that lack extraversion in their personalities (Costa & McCrae, 1992a). Meanwhile their extraversion personality is their mood toward positive emotions, sociability and excitement when they introduced to a new way of doing something. In this study extraversion operationalized as Nurses' predisposition to high perform in jobs with a social component with effectiveness in a team setting, and desire to gain social status to adopt an innovation or technology.

3.3.7.3 Openness to Experience

Meanwhile, openness to experience (O) personality individuals noted to be with active imagination, aesthetic, sensitive, preferences for variety, intellectual curiosity, attentiveness to inner feelings and independence of judgment (Costa & McCrae, 1992a). High openness individuals were leading hypothetically richer lives, entertained eccentric ideas, and experienced feelings stronger than the lower openness individuals. Low openness or closed individuals had a thinner latitude and less powerful concerns. According to Costa and McCrae (1992a), both open and closed individuals play important roles in society and none should be taken as a negative aspect of self. Their openness to experience personality is noticed by a disposition to welcome new ideas and unconventional values in their work. In this study openness to experience operationalized as Nurses' predisposition to hold positive attitudes and cognitions toward embrace new technology to work and seek out new and varied experiences.

3.3.7.4 Agreeableness

Agreeableness (A) factor is associated with interpersonal predispositions. High agreeableness individuals are noted to be philanthropic, compassionate, and willing to help, while low agreeableness individuals would be aggressive, self-centred, unconvinced of others, and competitive (Costa & McCrae, 1992a). In this study, Agreeableness operationalized as nurses' predisposition to be accommodating and cooperative in considering a new technology, and to focus more on positive and cooperative dimensions of the technology rather than those elements that may not be performing effectively.

3.3.7.5 Conscientiousness

Conscientiousness (C) individuals were more prone to planning, organizing, carrying out tasks and organizing. High Conscientiousness scores were indicative of scrupulous, punctual and reliable persons. High Conscientiousness person would display inclinations towards being workaholics or instinctively neat. Low Conscientiousness persons had lower ethical values and less precise in seeking for goals (Costa & McCrae, 1992a). In this study, conscientiousness is operationalized as nurses' predisposition on whether technology provides an opportunity to achieve, perform at a high level, and take actions to improve their job performance. Hence, nurses' conscientiousness personality refers to the temperament of a strong-willed, determined and organized individual willing to change. In this study, the researcher will use the stipulated operational definitions to operationalize the variables in this research framework.

Table 3.1

Measurement of the Variables

Adopted / adapted Variable & Reference	Dimensions	Number of items
Continuance Intention (Basri, 2012)	Continuance Intention	6
Performance Expectancy (Holtz & Krein, 2011)	Performance Expectancy	5
Effort Expectancy (Holtz & Krein, 2011)	Effort Expectancy	5
Social Influence (Holtz & Krein, 2011)	Social Influence	8
Facilitating condition(Holtz & Krein, 2011)	Facilitating Condition	6
Top Management Support(Igbaria, 1990).	Top Management Support	8
Personality Dimensions (Costa & McCrae 1992a)	Neuroticism	12
	Extraversion	12
	Openness to Experience	12
	Agreeableness	12
	Conscientiousness	12

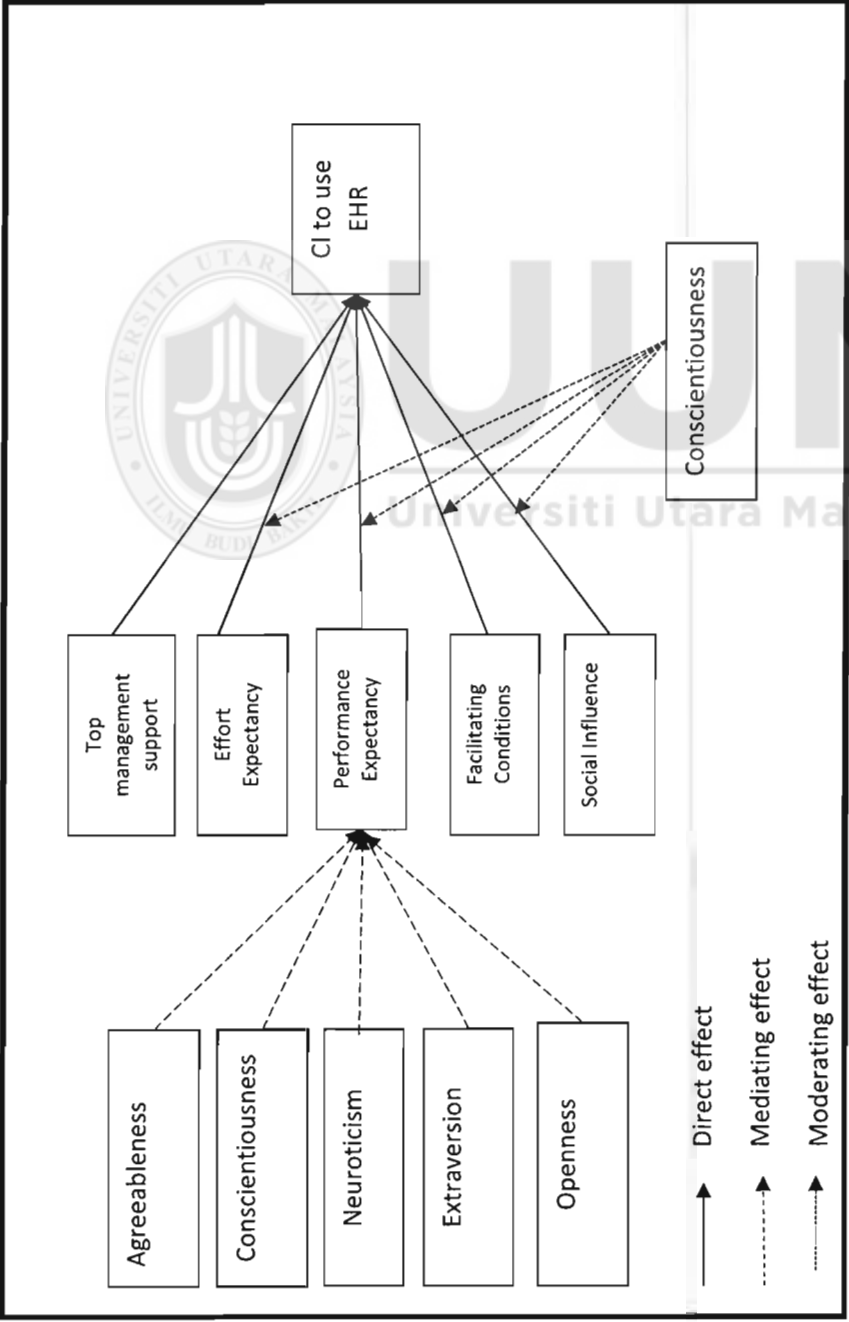


Figure 3.1
Research framework

3.4 Population and Sampling Procedure

According to Saunders, Lewis and Thornhill (2009), sampling reflects the process used to select cases from an entire population. Zikmund et al. (2013) proposed a seven-step procedure in the methodological foundations that can be utilized as a guideline for the sampling process in this study (see Figure 3.2).

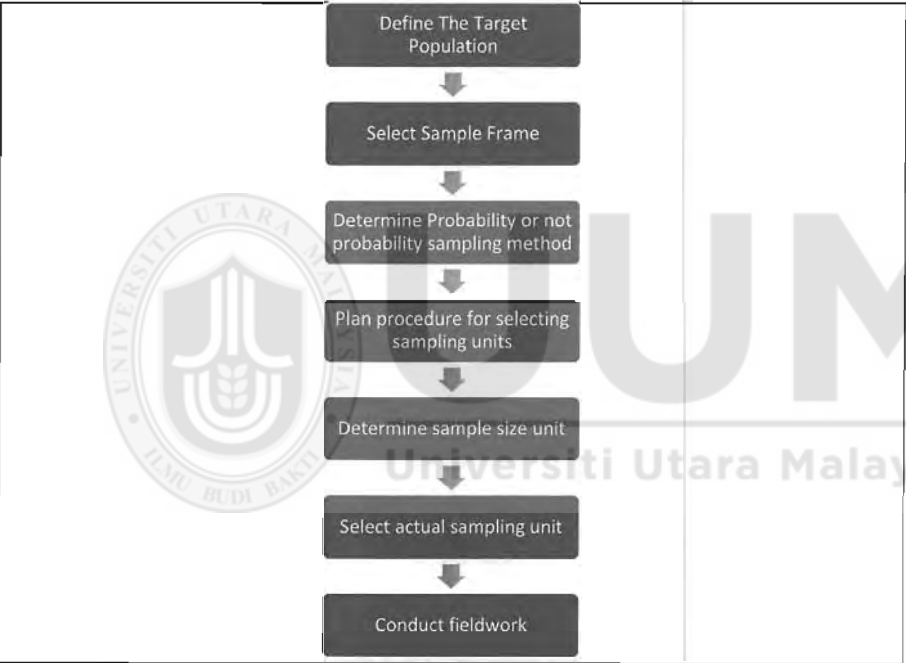


Figure 3.2
Seven-Step Procedure for Drawing the Study Sample
Source: Zikmund et al. (2013)

3.4.1 Define the Target Population

A target population is the entirety of cases that follow certain selected specifications (Iacobucci & Churchill, 2010, p. 282). A population is a whole group of people or organizations that is of interest to a researcher (Sekaran & Bougie, 2010). Also, Zikmund

et al. (2013) defined population as “any complete group of entities that share some common set of characteristics” p.385. Hence, the population in this study are nurses working in public sector hospitals which fully implemented EHR system in Jordan and have the authority to use it to investigate their continuance intention to use EHR.

3.4.2 Select a Sampling Frame

The second stage is identifying the sampling frame, which is the list of elements from which a sample is drawn. It is also referred to as the working population (Zikmund et al., 2013; Iacobucci & Churchill, 2010). In this study, the sample frame are public hospitals which fully implemented EHR in Jordan. The comprehensive list of public hospitals which fully implemented EHR in Jordan as provided by the Electronic Health Solution Company (the company charged with the responsibility of implementing EHR in Jordan). According EHS the number of hospitals in Jordan that fully implemented EHR are 11 and are noted below in Table 3.2.

Table 3.2
Hospital fully implemented EHR in Jordan

Provenance	Hospital Name
North	1. Princes Rahmah Hospital. 2. Princes Badeaha Hospital. 3. Al Mafraq Governmental Hospital. 4. Al_Mafraq / Gynecology & pediatrics. 5. Al_Ramtha Hospital.
Central	1. Prince Hamzah hospital. 2. Prince II Hussain Ben Abdullah. 3. Al Zarqa Governmental Hospital. 4. Al_ Hussein for Cancer Hospital.
South	1. Ma'an hospital. 2. Queen Rania Al Abdalla Hospital.

Source: EHS (personal communication, October, 13, 2015).

3.4.3 Select a Sampling Methods

There are several alternative ways to select a sampling procedure. Sampling is divided for two types. The first is non-probability sampling which is a sampling technique where units of the sample are picked based on personal judgment or convenience. The probability of selecting a certain element from the population is usually unknown. The following are the specific types of non-probability sampling - convenience sampling, judgment sampling, quota sampling and snowball sampling (Zikmund et al., 2013).

While the second type, is ii) probability sampling which defined as “A sampling technique in which every member of the population has a known non-zero probability of selection”. The specific types include, simple random sampling, systematic sampling, stratified sampling, proportional versus disproportional sampling, cluster sampling and

multistage sampling (Zikmund et al., 2013). In the present study, the systematic random sampling procedure was used.

Sampling method is undistinguishably knotted with the identification of the sampling frame since the choice of sampling method is based on the sampling frame to be developed (Zikmund et al., 2013, Iacobucci & Churchill, 2010). In addition, this step is associated with a sample size that needs to be determined. Therefore the researcher will explain in details the planned procedure for selecting sampling unit part and connect all these concepts together to give clear and understandable idea about this research sampling methodology.

3.4.4 Sampling Unit

Sampling unit is a single element or group of elements subject to being chosen in the sample. According to Zikmund et al. (2013), if the target population has first been divided into units, additional terminology must be used. A unit selected in the first stage of sampling is called a primary sampling unit. The secondary sampling unit is used to identify a unit selected in a successive stage of sampling called secondary sampling unit, while the final stage is referred to as the tertiary sampling unit (Zikmund et al., 2013). In the present study, the primary sampling unit are the public hospitals in Jordan that have completely implemented the EHR system. The secondary sampling unit are nurses who are authorized to use EHR system in work. According to the MOH, registered nurses and practical nurses are authorized to use the system.

3.4.5 Plan Procedure for Selecting Sampling Unit

The researcher divided sampling procedure into two stages. First stage, choosing the public hospitals which fully implemented EHR in Jordan, and these hospitals are mentioned in table 3.2 with their provincial distribution in the Kingdom in the sampling frame section. The number of hospitals are 11, one of these hospitals (Al_ Hussein for Cancer Hospital) apologized for their inability to participate in the study. Hence, only 10 hospitals were included in this study. Due to low number of the hospitals, the researcher decided to include all hospitals in the study so there is no need to select a sampling procedure to choose the hospitals that will be investigated. The second stage, was choosing the nurses who are working in these hospitals with the use of the systematic random sampling procedure. The researcher collected a list of nurses' names from the heads of departments in the 10 hospitals, and then choose randomly one name, after that choose every 5th name in the list to participate in the study. The researcher gave every head department in the hospitals the instruments with a list of the participant's names and collected from them upon completion.

3.4.6 Determine Sample Size

A sample size is the number of units that need to be surveyed so as to achieve exact and dependable findings (Fink, 1995). According to Hair, Anderson, Tatham & Black (1995), the sample size ought to at least have more than the number of covariances in the input data matrix. On a similar note, Roscoe (1975), as cited in Sekaran (2000) recommended a threshold of for determining sample size, which is by multiplying the number of constructs by 10. Also, Bollen (1989) gave a similar suggestion in that an empirical ratio

of estimates parameter should contain at least 10 observations. Also, the sample size calculated according to Krejcie and Morgan (1970), Table 3.3 illustrate the process. The sample population are 2,194 nurses distributed across the 10 public hospitals. Based on Krejcie and Morgan (1970), the sample size for the study is between 322-327 nurses. Nevertheless, in order to ensure that a minimum sample response of 327 is achieved, 510 questionnaires were distributed. The ratio of nurses from each hospital will calculated according to formula below illustrated in table 3.4:

(Number of nurses in hospital "X" / total number of nurses in all hospital) * Sample size.

Table 3.3
Table for sample size determination

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	<u>2000</u>	<u>322</u>
55	48	320	175	<u>2200</u>	<u>327</u>
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364

Table 3.3 (continued)
Table for sample size determination

120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note. —*N* is population size. *S* is sample size.

Table 3.4
Nurses Numbers in hospitals

Provenance	Hospital Name	Nurses number	Total of nurses	The number of nurses from each hospital
North	Princes Rahmah Hospital.	RN: 132 Diploma: 17	149	23
	Princes Badeaha Hospital	RN: 126 Diploma: 11	137	21
	Al Mafraq Governmental Hospital	RN: 123 Diploma: 18	141	21
	Al_Mafraq / Gynecology & pediatrics.	RN: 90 Diploma: 20	110	17
	AL_Ramtha Hospital.	RN: 131 Diploma: 27	158	24

Table 3.4 (continued)
Nurses Numbers in hospitals

Provenance	Hospital Name	Nurses number	Total of nurses	The number of nurses from each hospital
Central	Prince Hamzah hospital.	RN: 444	528	79
		Diploma: 84		
	Prince The Second Hussain Ben Abdullah	RN: 135	181	27
		Diploma: 46		
	Al Zarqa Governmental Hospital.	RN: 363	472	71
		Diploma: 109		
South	Ma'an hospital.	RN: 186	226	34
		Diploma: 40		
	Queen Rania AL Abdalla Hospital.	RN: 70	92	14
		Diploma: 22		
Total	10 hospitals	RN:1800	2194	331
		Diploma:394		

Source: Ministry of Health (2015).

3.4.7 Data Collection Procedure

The researcher actively interacted with stakeholders within the facilities before actual data collection was done. In the present study, the researcher collected data personally (self-administration) from the respondents. Also, because the researcher created the methodology, the data gathering process was thus done as planned. The researcher urged/encouraged the respondents to complete the questionnaire by emphasizing the importance of their participation. They were further instructed to return the questionnaires upon filing them to the researcher. These activities contribute to increasing the rate of

response and decrease non-response error (Cooper & Schindler, 2011). The researcher personally distributed the questionnaires to all nurses by based on the list from head departments in the hospitals. The questionnaires were distributed within two months, starting from 22 July 2015 till 27 September 2015.

3.5 Pilot Study

A pilot study is an investigational study that is done to assess the usability of instruments intended to be used for a study (Zikmund *et al.*, 2013). The measurements of continuance intention, effort expectancy, performance expectancy, social influence, facilitating condition and top management support as adapted to be used in this study have been validated in previous studies (e.g., Basri, 2012; Holtz & Krein, 2011; Igbaria, 1990) and Big-Five personality dimensions (neuroticism, extraversion, openness, agreeableness and conscientiousness) as adopted from Costa and McCrae (1992a). However, of note that the psychometric properties and related facts about these measurements have been extensively discussed in previous sections of this chapter. Consequently, in order to check the reliability and validity of the measures of the constructs of this research, pilot study was conducted for the 11 main constructs.

The primary essence of the pilot test was to achieve the following objectives, to ensure all questionnaire questions are clearly understood by the respondent, to ensure all questions can be completed within a time frame and, the respondents do not get tired or have less motivation with the questionnaire, and to improve the questionnaire so that respondent will have no difficulties in completing the questionnaire (Zikmund *et al.*,

2013). The Cronbach's Alpha was then used to ascertain the reliability of the constructs. More so, it was critical to assess the reliability of the instruments since they have not been tested in the context of developing countries such as Jordan.

3.5.1 Sample of the Pilot Study

Roscoe (1975) argued that a sample size that is larger than 30 and less than 500 is adequate for an empirical investigation. Consequently, 100 questionnaires were self-administered to 100 randomly selected nurses at the Prince Hamzah Hospital and Al-Zarqa hospital since it is the largest amongst the hospitals selected for this study. It also has the biggest fraction of the study population. The pilot study was conducted in July, 22-30, 2015. In the process of administering and collecting the questionnaires, issues raised by the nurses were taken into consideration prior to the administration of the questionnaires of the main study.

3.5.2 Statistical Analysis of Pilot Study

Version 20.0 of the SPSS was used to analyze the reliability of the constructs. Results are hence presented in Table 3.5 illustrating the number of items and the Cronbach Alpha values of each of the constructs. For the purpose of clarity, reliability is used to denote an indicator's measure internal consistency, hence, its use to examine internal consistency of items of all variables. The range of Alpha coefficient is between 0 to 1, where coefficients close to 1 is an assurance of high reliability and a reduction of the effect of measurement error on the test scores. Cronbach Alpha's value for scales with a coefficient alpha between 0.80 and 0.95 are assumed to have very good reliability. Scales values

between 0.70 and 0.80 are considered to have good reliability, and alpha value between 0.60 and 0.70 indicates fair reliability. If the alpha value is below 0.60, the scale has poor reliability (Zikmund et al., 2013). A pilot test was performed to identify the reliability of research instrument and to indicate whether the respondents understand the meaning of each item which was asked in the questionnaire. When reliability of constructs are high, it is an indication of minimum error variance and vice versa. In the pilot test of this study, the alpha values ranged from .610 to .964 for all scales.

Table 3.5
Constructs' Cronbach's Alpha Values

Construct	Number of items	Alpha values	N
Continuance Intention	6	.964	100
Performance Expectancy	5	.811	100
Effort Expectancy	5	.912	100
Social Influence	8	.912	100
Facilitating Condition	6	.853	100
Top Management Support	8	.901	100
Neuroticism	12	.677	100
Extraversion	12	.656	100
Openness to Experience	12	.656	100
Agreeableness	8	.610	100
Conscientiousness	12	.806	100

Source: researcher

3.5.3 Validity Test

Two types of validity tests involved in this research i.e. content validity and construct validity. According to Zikmund (2013) content or face validity is a professional agreement on every item in the questionnaire. Each item in the instrument must be logically and accurately measure what is intended to measure. Construct validity is a measurement to confirm the associated hypotheses generated from a theory based on the concept (Zikmund et al., 2013).

To test the content validity, the researcher has referred the research instrument to 4 academicians and one expert practitioners to determine the validity of items consisted in the instrument. Consequently, to perform construct validity, results from factor analysis is referred in order to justify the construction of conceptual framework in the study. In construct validity, the discriminant factors and the convergent of items for extracted factors identified.

3.6 Techniques of Data Analysis

To achieve the objectives of this study, the SPSS 20.0 and the SMART-PLS 3.0 was used as statistical tools for data analyses. Before running the inferential analyses, the following analyses and assessments were done namely, response rate, profile of respondent's data screening, non-response bias, missing data treatment, outliers (Mahalanobis distance), normality, linearity, and multicollinearity were all done using the SPSS.

On inferential analysis, the PLS-SEM application has expanded successfully in different areas of research, more specifically, marketing, strategic management, IS, management

science, social psychology among others (Hair, Hult, Ringle, & Sarstedt, 2014; Hair, Ringle, & Sarstedt, 2013; Hair, Sarstedt, Ringle, & Mena, 2012; Henseler, Ringle, Sinkovics, 2009; Pavlou & Fygenson, 2006). Various PLS-SEM improvements have been made more recently with the inclusion of the following: guidelines for analyzing moderating effects (Henseler & Fassott, 2010); utilization of confirmatory factor analysis (CFA) for the verification of the measurement model (Hair, Ringle, & Sarstedt, 2011); model quality evaluation (Hair et al., 2011); goodness of fit of models (Tenenhaus, Esposito, Chatelin, & Lauro, 2005); and the model's predictive relevance (Hair et al., 2011; 2013; 2014). These improvements have contributed to the PLS-SEM being a generally useful tool in the marketing and social sciences research domains (Hair et al., 2011). In addition, Hair et al. (2012); Reinartz, Haenlein, and Henseler (2009) and Vinzi, Chin, Henseler, Wang (2010) established the ability of the PLS in analyzing data in multifaceted models, and especially when data collected is not normal, the sample size is small, and in testing moderating effects.

In the present study, the PLS-SEM was used for several reasons. First, PLS is an appropriate statistical analysis tool for complex models (Hair et al., 2012; Reinartz et al., 2009; Vinzi et al., 2010). Due to the nature of SEM and the limitations of AMOS, it was not possible to test the whole model. This was due to the fact that the model had 106 measurement items and a sample of 473 (to be explained later). Therefore, PLS-SEM is generally more favorable with complex models (Hair et al., 2012).

Based on the aforementioned explanations. This study attempt to examine the associations among UTAUT factors, continuance intention to use EHR, FFM and TMS

in Jordanian public sector among nurses. In the social sciences research area, it has been unarguably noted that the complexity of empirical relationships is on the increase. Hence, the need to examine such relationships with moderating effects (Uinzi et al., 2010) are noted. Also, the need to use specialist methods in assessing such relationships with the use of the PLS-SEM approach is highly dependable. On a related note, Uinzi et al. (2010) acknowledged and measured the moderating effects in complex causative structures through the use of the PLS-SEM with group comparisons, which involved assessments of model estimates for unpredictable categories of observation. To exemplify a particular case of moderating effects, the grouping variable was considered as the continuance causal moderator variable. To test moderating effects, PLS path models are considered one of the best statistical methods (Hair et al., 2012; Uinzi et al., 2010). To this end, the PLS-SEM approach was used to test the moderating effect of conscientiousness on the relationship between UTAUT (EE, PE, SI and FC) and continuance intention.

Also, this study attempted to offer theoretical contribution through examining the mediating effect of performance expectancy between personality dimension's (neuroticism, extraversion, openness, agreeableness and conscientiousness) and continuance intention. In general, mediation seeks to reveal how a third variable influences the relationship existing between two other variables and it basically explains a process or mechanism e.g. how a stimulus converts into response (MacKinnon, Fairchild, & Fritz, 2007). According to Hair et al. (2014) from a theoretical perspective, the most common application of mediation is to explain why the relationship between an exogenous and endogenous construct exists (p.36). To test mediating effects, PLS path models are considered one of the best statistical methods (Hair et al., 2014). To this end,

the PLS-SEM approach was used to test the mediating effect of performance expectancy between personality dimension's (neuroticism, extraversion, openness, agreeableness and conscientiousness) and continuance intention.

PLS-SEM offers higher flexibility to the researchers for interaction of theory and data (Chin, 2010). Hair et al. (2011) suggested the use of cross-validated redundancy in PLS-SEM estimations of the structural model plus the measurement model for data production, and found that it fit the PLS-SEM approach accurately. In case an endogenous construct cross-validated redundancy measure values for a certain endogenous latent variable is higher than zero, its illustrative latent constructs reveal predictive relevance.

3.6.1 PLS Model Evaluation

To evaluate PLS models, two main methodological elements have to be considered (Hair et al., 2014), which is the assessments of the measurement and structural models. Table 3.6 illustrate the two-process followed by definitions, all these steps explained in details in chapter 4.

Table 3.6
Model Analysis Assessment

Systematic Evaluation of PLS-SEM Results	
Evaluation of the Measurement Models	Evaluation of the Structural Model
Internal consistency (composite reliability).	Coefficients of determination (R2)
Indicator reliability.	Predictive relevance (Q2)
Convergent validity (average variance extracted).	Size and significance of path coefficients
Discriminant validity.	f2 effect sizes
	q2 effect sizes

Source: Hair *et al.*, (2014)

3.6.1.1 Evaluation of Measurement Model

Reflective measurement model: a “measurement model specification in which it is assumed that the indicators are caused by the underlying construct”. Reflective measurement models are evaluated on the following steps:

- Internal consistency (composite reliability): is “a form of reliability used to judge the consistency of results across items on the same test. It determines whether the items measuring a construct are similar in their scores (i.e., if the correlations between the items are large)”. While, Composite reliability: a “measure of internal consistency reliability, which, unlike Cronbach's alpha, does not assume equal indicator loadings. Should be above 0. 70 (in exploratory research, 0.60 to 0. 70 is considered acceptable).” (Hair et al., 2014).
- Indicator reliability: is “the square of a standardized indicator's outer loading. It represents how much of the variation in an item is explained by the construct and is referred to as the variance extracted from the item”. (Hair et al., 2014).
- Convergent validity (average variance extracted): is “the extent to which a measure correlates positively with alternative measures of the same construct.”. While, Average variance extracted: “a measure of convergent validity. It is the degree to which a latent construct explains the variance of its indicators”. (Hair et al., 2014).

- Discriminant validity: extent to which a construct is truly distinct from other constructs, in terms of how much it correlates with other constructs, as well as how much indicators represent only a single construct. (Hair et al., 2014).

3.6.1.2 Evaluation of the Structural Model

Structural model: “describes the relationships between latent variables. Also, referred to as inner model in PLS-SEM.” The primary evaluation criteria for the structural model are as follows:

- Coefficient of determination (R^2): is “a measure of the proportion of an endogenous construct's variance that is explained by its predictor constructs.” (Hair et al., 2014).
- Predictive relevance (Q^2): is “a measure of predictive relevance based on the blind folding technique”. Blindfolding: is “a sample reuse technique that omits part of the data matrix and uses the model estimates to predict the omitted part.” (Hair et al., 2014).
- f^2 effect size: is a measure used to assess the relative impact of a predictor construct on an endogenous construct. (Hair et al., 2014).
- Q^2 effect size: is a measure used to assess the relative predictive relevance of a predictor construct on an endogenous construct. (Hair et al., 2014).

3.7 Chapter Summary

In this chapter, the methodology of the study has been critically discussed. This research specified the research design, and explained the instruments used based on the relevant literature review. Additionally, this chapter provided some elaborations on the population, the target population and the justification of the choice of the unit of analysis as being Nurses who is authorized to use EHR. Furthermore, this chapter used the data collected from Prince Hamzah Hospital and Al Zarqa hospital to conduct the pilot study analysis. Pilot study analysis was mainly conducted to ensure the validity and reliability of the measures and to ensure high quality data during the real data collection phase. Finally, this chapter described the data collection procedures and the statistical technique.



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CHAPTER FOUR

DATA ANALYSIS AND RESULTS

4.1 Introduction

This chapter presents a comprehensive narrative of the results on analyzed data of this study. Firstly, the descriptive and inferential statistical results as obtained through the use of the Statistical Package for Social Sciences (SPSS) and the Partial Least Squares-Structural Equation Modelling (PLS-SEM) were presented. Specifically, key results after preliminary analysis of survey response and data screening was done. This was followed by the results of the evaluation of the model quality and related analysis extracted from the structural model on the convergent and discriminant validity, reliability analysis, predictive relevance of the model, and effect size. Finally, results of the mediating role of performance expectancy, and the moderating effect of conscientiousness on the relationship between the independent and dependent variables were subsequently presented.

4.2 Analysis of Survey Response

4.2.1 Response Rates

The response rate of a survey reflects the number of questionnaires returned or completed divided by the number of persons qualified to partake in the survey process (Zikmund et al., 2013). Specifically, public hospitals that are fully implementing the EHR in Jordan

constitute the sample frame of this study. In view of the population and sample size of the study (excluding the Al_ Hussein for Cancer Hospital), a total of 510 questionnaires were distributed to nurses with authority to use EHR system in work. Only 490 were returned. Consequently, based on the recommendation of Hair, Black, Babin, Andersen and Tatham (2010), eighteen questionnaires were excluded from further analysis as they were fraught with the issue of missing data. Hence, only 473 questionnaires were usable and subsequently ready for further analysis. By implication, this shows a response rate of 92% and is depicted in Table 4.1. One explanation for high response rate in this study is due to the method of collecting data used in this study. According to Cooper & Schindler (2011) The response rate in the use of Drop-off-survey is usually high with a noted rate of 70%. Also, another study employed a modified Unified Theory of Acceptance and Use of Technology (UTAUT) structural model to understand factors that influence health IT adoption in community health centers in Thailand was conducted using a cross-sectional survey by means of self-administered questionnaire with an 82% response rate (Kijsanayotin, Pannarunothai & Speedie, 2009). Where it is somewhat close to this study in context and data collection method.

Table 4.1
Response Rate

Response	Frequency/Rate
No. of distributed questionnaires	510
Returned questionnaires	491
Deleted questionnaires	18
Returned and usable questionnaires	473
Response rate	92%

4.2.2 Test of Response Bias

On the issue of response bias, Zikmund et al. (2013) noted that a bias occurs when respondents either knowingly or unknowingly respond to questions with some degree of misrepresentation of the truth. Also, the Common Method Variance (CMV), also known to as monomethod bias is proposed to be used to measure response bias. They further noted that “variance that is attributable to the measurement method rather than to the construct of interest” (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003, p. 879). On a related note, it has been opined that common method variance is a major concern for scholars using self-report surveys (Lindell & Whitney, 2001; Podsakoff et al., 2003; Spector, 2006). Specifically, Conway and Lance (2010) stated that “common method bias inflates relationships between variables measured by self-reports” (p. 325).

In the present study, the researcher adopted several procedural remedies to minimize the effects of CMV (MacKenzie & Podsakoff, 2012; Podsakoff et al., 2003; Podsakoff, MacKenzie, & Podsakoff, 2012; Podsakoff & Organ, 1986; Viswanathan & Kayande, 2012). First, to reduce evaluation anxiety, the respondents were notified that there is no right or wrong answer to the items in the questionnaire and they were also given an assurance that their responses will be treated with utmost confidentiality. Secondly, improving scale items was also used to reduce method biases in the present study. In achieving this, the researcher avoided vague concepts in the study instrument. If for in any case such terms were used, simple examples were provided. To further improve the understanding of the scale items, all questions in the survey were written in a simple, explicit and succinct language.

To further examine the CMV in addition to the other procedural remedies described above, the present study adopted the Harman's single factor test as proposed by Podsakoff and Organ (1986). Traditionally, in this procedure all variables of interest are subjected to an exploratory factor analysis and the results of the unrotated factor solution are then looked at to ascertain the number of factors account for the greater level of variance in the variables (Podsakoff & Organ, 1986). The main assumption of Harman's (1967) single factor test is that if a considerable amount of CMV is present, either a single factor may surface, or one general factor would account for most of the covariance in the predictor and criterion variables (Podsakoff & Organ, 1986).

In view of the above, the principal components factor analysis was used to ascertain the CMV. Results of the analysis generated eleven factors that explained a total of 43.270 of the variance, which is less than 50% (c.f., Kumar, 2012). This is an indication that no single factor accounted for the majority of covariance in the predictor and criterion variables (Podsakoff et al., 2012). To this end, the fear of the common method bias was eroded and is unlikely to inflate relationships between variables measured in the present study.

4.2.3 Non-Response Bias

According to Lambert and Harrington (1990), non-response bias is "the differences in the answers between non-respondents and respondents" (p. 5). To estimate the possibility of non-response bias, Armstrong and Overton (1977) suggested a time-trend extrapolation approach, which entails comparing the early and late respondents. They contended that

late respondents share comparable features with non-respondents. Meanwhile, to further minimize the issue of non-response bias, Lindner and Wingenbach (2002) recommended that a minimum response rate of 50% should be achieved. Following Armstrong and Overton's (1977) approach, the present study divided the respondents into two main groups. The nurses who responded within 30 days (i.e., early respondents) and those who responded after 30 days (i.e., late respondents) (c.f., Vink & Boomsma, 2008).

In the present study, 290 nurses, representing 61.3% of the respondents are noted to the early respondents. The remaining 183, representing 38.7% responded after 30 days (Table 4.2). Accordingly, the researcher conducted an independent samples t-test to detect any possible non-response bias on the main study variables of continuance intention, performance expectancy, effort expectancy, social influence, facilitating condition, top management support, neuroticism, extraversion, openness to experience, agreeableness and conscientiousness. Table 4.2 presents the results of independent-samples t-test obtained.

Also, as presented in Table 4.2, it can be noted that the equal variance significance values for each of the eleven main variables of the present study were greater than the 0.05 significance level of Levene's test for equality of variances as suggested by Pallant (2010) and Field (2009). This is an indication that the assumption of equal the variances between early and late respondents is not violated. It can thus be submitted that non-response bias was not a major concern in the present study. Additionally, based on the recommendation

of Lindner and Wingenbach’s (2002), since this study achieved 92% response rate, it is noted that the issue of non-response bias does not appear to be a major concern.

Table 4.2
Test of Non-Respondent Bias

Constructs	Response	N	Mean	Levene's test for equality of variances		t-test for Equality of Means
				F	Sig.	Sig. 2 tailed
Continuance Intention	Early	290	3.9385	1.231	.268	.305
	Late	183	4.0291			.299
Performance Expectancy	Early	290	3.1083	5.548	.19	.395
	Late	183	3.1760			.413
Effort Expectancy	Early	290	3.7662	.359	.549	.147
	Late	183	3.8765			.142
Social Influence	Early	290	3.4668	.732	.393	.210
	Late	183	3.5601			.206
Facilitating Condition	Early	290	3.3655	.711	.400	.584
	Late	183	3.4044			.581
Top Management Support	Early	290	3.1931	.050	.823	.137
	Late	183	3.3108			.135
Neuroticism	Early	290	2.7356	2.483	.116	.408
	Late	183	2.7837			.417
Extraversion	Early	290	3.2606	.088	.767	.887
	Late	183	3.2536			.886
Openness to Experience	Early	290	3.2391	.018	.893	.427
	Late	183	3.2778			.425
Agreeableness	Early	290	3.0690	2.424	.120	.341
	Late	183	3.1148			.349
Conscientiousness	Early	290	3.3724	.240	.625	.371
	Late	183	3.4153			.365

4.2.4 Profile of Respondents

Specifically, this section presents a description of the demographic characteristics of the respondents of this study. Their characteristics are, gender, age, education level, profession experience, hospital experience, hospital name and department (see Table 4.3).

From the table, 332 of the respondents, representing 70.2%, were females while the remaining 141, representing 29.8% were males. Interestingly, the study by Holtz and Krein (2011) also demonstrated a similar distribution regarding the gender of the respondents where the majority of nurses at hospitals were females (92%) compared to their male counterparts (8%). On the age group characteristics, 44% of the respondents (208) fall into the 20-30 years age group. 38.7% of the participants (183) were in the age group of 31-40 years. 75 respondents, representing 15.9% of the sample constitute the age group of 41-50 years. Six respondents (0.6%) are in the age group of 51-60 years. 4 respondents representing 0.8% did not respond, and were thus considered as missing data.

On educational qualification, data gathered showed that most of the respondents hold a Bachelor's degree, which accounted for 76.7% or 363 respondents. 17.1% or 81 respondents hold a Diploma, while the remaining 24, representing 5.1% hold Master's Degree. Respondents with a PhD degree are 2 in number, representing 0.4%. 3 respondents (0.6%) are classified as missing data.

On experience of respondents in the nursing profession, 27.1% of the participants (128) fall in the group of 1-5 years. Next are nurses with 6-10 years working experience with 123 respondents, accounting for 26% of the sample. 100 respondents fell into the work

experience group of 11-15 years, which represents 21.1% of the sample. The work experience group of 16-20 years had 74 respondents, which accounted 15.6% of the sample. For the work experience group of 21-25 years, 8% of the sample with 38 respondents were noted therein. Similarly, 6 nurses fell into the 26-30 years' work experience group, which accounted for 1.3% of the sample. However, the smallest work experience group 31-35 years, had only 1 respondent, representing 0.2% of the sample. 3 respondents did not respond and was thus treated as missing data.

On the demographic characteristics of response rates by hospital, data available on Table 4.3 shows that, 20.5% of the participants from Al Zarqa Hospital had 97 respondents, Prince Hamzah Hospital (18.2%) 86 respondents, Princess Rahma Hospital (12.5%) 59 respondents, Ma'an Hospital (8.9%) 42 respondents ; Maternity and Children Hospital - Mafraq with 8.5% 40 respondents, Queen Rania Hospital (8%) 38 respondents, Prince Hussein Ben Abdulla II Hospital (7.6) 36 respondents, Al Mafraq Hospital (6.1%) 29 respondents, Al-Ramtha Hospital (4.9) 23 respondents and Princess Badeea Hospital (4.9%) 23 respondents.

On departments where nurses are attached to, Table 4.3 indicates that a large number of them are floor nurses accounting for 47.1% or 223 respondents. Nurses working in operating rooms represented 19.9% or 94 respondents, while the remaining 46, representing 9.7% are attached to the emergency department. 45 of the respondents, representing 9.5% are attached to the ICU, nurses working in dialysis unit are 33 (7%).

The smallest portion was nurses works in CCU with 22 respondents (4.7 %). However, 10 nurses (2.1%) did not respond, and are thus considered as missing data.

In concluding the demographic characteristics section, based on the number of years of experience in the current hospital, 220 respondents representing 46.5% had 1-5 years' experience. The second group with 6-10 years' experience has 118 respondents (24.9%). For the group with 11-15 years' experience, it was made up of 60 respondents, accounting for 12.7% of the sample. However, for the group with 16-20 years' experience, there were 47 respondents, representing 9.7% of the sample. Succeeding this is the group with 21-25 years who had 60 respondents, which accounted for 12.7% of the sample. The smallest current hospital experience group was 21-25 years, which accounted for 4% or 19 respondents. 10 respondents 2.1% did not respond and are thus considered as missing data.

Table 4.3
Demographic Characteristics of the Respondents

Items	Category	N	%
Gender	Male	141	29.8
	Female	332	70.2
	Missing data	0	0
	Total	473	100
Age	20-30 years	208	44
	31-40 years	183	38.7
	41-50	75	15.9
	51-60	3	.6
	Missing data	4	.8
	Total	473	100

Table 4.3 *continue*
Demographic Characteristics of the Respondents

Education level	Diploma Degree	81	17.1
	Bachelor Degree	363	76.7
	Master Degree	24	5.1
	PhD Degree	2	0.4
	Missing data	3	0.6
	Total	473	100
Profession Experience	1-5	128	27.1
	6-10	123	26
	11-15	100	21.1
	16-20	74	15.6
	21-25	38	8
	26-30	6	1.3
	31-35	1	0.2
	Missing data	3	0.6
	Total	473	100
Current Hospital Experience	1-5	220	46.5
	6-10	118	24.9
	11-15	60	12.7
	16-20	46	9.7
	21-25	19	4
	Missing data	10	2.1
	Total	473	100

Table 4.3 *continue**Demographic Characteristics of the Respondents*

Hospital Name	Princess Rahma Hospital	59	12.5
	Princess Badeea Hospital	23	4.9
	Prince Hamzah Hospital	86	18.2
	Prince Hussein Ben Abdulla II Hospital	36	7.6
	Al Zarqa Hospital	97	20.5
	Al Mafraq Hospital	29	6.1
	Maternity and Children Hospital – Mafraq	40	8.5
	Al-Ramtha Hospital	23	4.9
	Ma'an Hospital	42	8.9
	Queen Rania Hospital	38	8
	Missing data	0	0
	Total	473	100
Department	ICU	45	9.5
	CCU	22	4.7
	ER	46	9.7
	Dialysis	33	7
	Floor	223	47.1
	Operating room	94	19.9
	Missing data	10	2.1
	Total	473	100

4.2.5 Descriptive Analysis of the Latent Constructs

This section presents a descriptive statistic of the latent variables of the present study. Specifically presented as computed are means and standard deviations. However, all the

all the latent variables used in the present study were measured using a five-point scale of 1 = strongly disagree to 5 = strongly agree. The results are presented in Tables 4.4.

Table 4.4
Descriptive Statistics for Latent Variables

Constructs	Number of Items	Mean	Std. Deviation
Continuance Intention	6	3.9736	.93488
Performance Expectancy	5	3.1345	.84222
Effort Expectancy	5	3.8089	.80612
Social Influence	8	3.5029	.78794
Facilitating Condition	6	3.3805	.75008
Top Management Support	8	3.2386	.83701
Neuroticism	12	2.7542	.61411
Extraversion	12	3.2579	.51992
Openness to Experience	12	3.2541	.51504
Agreeableness	12	3.0867	.50867
Conscientiousness	12	3.3890	.50688

For the purpose of further interpretation, the five-point scale used in the present study was further categorized into three classes of low, moderate and high scales. Scores of less than 2.33 { $4/3 + (\text{lowest value} = 1)$ } is considered as low; scores of 3.67 {(highest value= 5) - $4/3$ } is considered high, while those between low and high scores are considered moderate (Sassenberg, Matschke, & Scholl, 2011). Table 4.4 shows that the overall mean for the latent variables ranged between 3.0867 and 3.9736.

Particularly, the mean and standard deviation for the continuance intention are 3.9736 and .93488, respectively. This is an indication that respondents tend to have a high level of continuance intention to use EHR. Also, it can be noted from Table 4.4 that the mean and standard deviation for performance expectancy are 3.1345 and .84222 respectively, suggesting that respondents' perception on the level of performance expectancy is moderate. Further, the results show a moderate score for social influence (Mean = 3.5029, Standard deviation = 0.78794), a higher score for effort expectancy was noted with mean and standard deviation of 3.8089 and 0.80612, respectively. For the facilitating condition construct, 3.3805 and 0.75008 were the mean and standard deviation values, which suggests a moderate perception among respondents on the construct of facilitating condition.

Other variables and their mean and standard deviation values are, top management support (Mean = 3.2386; standard deviation = .83701), indicating a moderate perception among respondents. For the five dimensions of personality, the means and standard deviations are as follows: for neuroticism (mean = 2.7542; standard deviation = 0.61411), which is an indication that respondents displayed a low level of perception of neuroticism. Extraversion (mean = 3.2579; standard deviation = 0.51992), openness to experience (mean = 3.2541; standard deviation = 0.51504), agreeableness (mean = 3.0867; standard deviation = 0.50867), and conscientiousness (mean = 3.389; standard deviation = 0.50688). The above scores indicate that the respondents tend to have moderate levels of perception of extraversion, openness to experience, agreeableness, and conscientiousness.

4.3 Data Screening and Preliminary Analysis

Prior to conducting the statistical analysis of the study, data screening was done. This is important because data spread directly impacts on whatever choice of data analysis techniques and tests that is chosen (Byrne, 2010). Although this study used the PLS to assess the quality of the model (measurement and structural models) and test the hypotheses, which has no concern on how data is distributed, data screening was still done so that the nature of the distribution of the data could be known. In this procedure, detection and treatment of missing data, outliers, normality, linear relationship and multicollinearity tests were done.

4.3.1 Code Book

Code book is a new feature of IBM SPSS that is used to illustrate descriptive statistics of variables. Specifically, the output from the procedure presents a summary of the label, value labels, missing value, mean and standard deviations for each variable.

4.3.2 Missing Data

Among empiricists, and especially among those in the applied quantitative research area, the issue of missing data has become a major concern, as it has the ability to negatively skew the results of an empirical endeavour (Tabachnick & Fidell, 2013; Cavana, Delahaye, & Sekaran, 2001). Furthermore, the PLS-SEM software will not be able to run should there be cases of missing values in the data so generated for analysis (Hair et al.,

2014). Hence, all questionnaires having more than 15% missing values were removed prior to commencing the main analysis of the study.

In the original SPSS dataset, of the 46354 data points, 324 were randomly missed, which accounted for 0.69%. Specifically, continuance intention and performance expectancy had 9 and 10 missing values respectively. Effort expectancy had 8, social influence had 14, facilitating condition had 24, and top management support had 20 missing values each. For the personality characteristics, neuroticism had 46; extraversion had 89, openness to experience had 44, agreeableness had 21 and conscientiousness had 39 missing values each. While there is no tolerable percentage of missing values in a data set for making an effective statistical inference, empiricists have posited that missing rate of 5% or less is insignificant (Schafer, 1999; Tabachnick & Fidell, 2007). In another submission of Hair et al. (2014), it is noted that “as a rule of thumb, we recommend using mean value replacement when there are less than 5% values missing by indicator.” (p.51). this was eventually done in the present study since the percentage of missing values was 0.69%.

Table 4.5
Total and Percentage of Missing Values

Latent Variables	Number of Missing Values
Continuance Intention	9
Performance Expectancy	10
Effort Expectancy	8
Social influence	14
Facilitating condition	24
Top management support	20

Neuroticism	46
-------------	----

Table 4.5 (continued)
Total and Percentage of Missing Values

Latent Variables	Number of Missing Values
Extraversion	89
Openness to experience	44
Agreeableness	21
conscientiousness	39
Total	324 out of 46354 data points
Percentage	0.69%

Note: Percentage of missing values is obtained by dividing the total number of randomly missing values for the entire data set by total number of data points multiplied by 100.

4.3.3 Removing Outliers

Outliers are defined by Barnett and Lewis (1994) “as observations or subsets of observations which appear to be inconsistent with the remainder of the data” (p. 7). In a regression-based analysis, the presence of outliers in the data set can totally change the estimates of regression coefficients which can lead to defective results (Verardi & Croux, 2008). In order to detect any observation which seems to be outside the SPSS value labels as a result of wrong data entry, first, frequency tables were tabulated for all variables using minimum and maximum statistics. Based on this initial analysis of frequency statistics, there was no value found to be outside the expected range.

Furthermore, the data were examined for univariate outliers using standardized values with a cut-off of ± 3.29 ($p < .001$) as recommended by Tabachnick and Fidell (2013).

Following Tabachnick and Fidell's (2013) criterion for detecting outliers, none of the case was identified using standardized values as potential univariate outliers. Besides using standardized values to detect univariate outliers, multivariate outliers were also detected using Mahalanobis distance (D2). Interestingly, Tabachnick and Fidell (2013) defined Mahalanobis distance (D2) as "the distance of a case from the centroid of the remaining cases where the centroid is the point created at the intersection of the means of all the variables" (p. 74). Based on 98 observed items of the study, the recommended threshold of chi-square is 60.356 ($p = 0.001$). None of the cases was identified using Mahalanobis values as potential univariate outliers.

4.3.4 Assumption of Normality

Previous empirical endeavours are of the opinion that PLS-SEM provides accurate model estimations in situations with extremely non-normal data (Cassel, Hackl, & Westlund, 1999; Reinartz, Haenlein, & Henseler, 2009; Wetzels, Odekerken-Schroder & Van Oppen, 2009) However, this assumption may not be entirely true, in that Hair, Sarstedt, Ringle and Mena (2012) opine that researchers should perform a normality test on data generated from respondents. This is so because highly skewed or kurtotic data can inflate the bootstrapped standard error estimates (Chernick, 2008). This could, by implication underestimate the statistical significance of the path coefficients (Dijkstra, 1983; Ringle, Sarstedt, & Straub, 2012a).

Normality is used to show the symmetrical curve which has the greatest frequency of scores in the middle and smaller frequencies closer to the extremes (Pallant, 2013). In

order to assess the normality of the distribution of scores for the dependent and independent constructs, the Kolmogorov-Smirnov statistic is produced with the normal probability and detrended probability plots. If the significant level is greater than .05 (Coakes & Steed, 2003) or 0.01 (Meyers, Gamst & Guarino, 2006) then normality is assumed. The Shapiro-Wilks statistic is also calculated if the sample size is less than one hundred. If the significant level is greater than .05 (Coakes & Steed, 2003) or 0.01 (Meyers et al., 2006) then normality is assumed.

In light of the above submissions, the present study employed a graphical method to ascertain the normality of data collected (Tabachnick & Fidell, 2007). Field (2009) submitted that in a sample size as large as 200 or more, it is imperative to look at the shape of the distribution graphically instead of looking at the value of the skewness and kurtosis statistics. Field (2009) further submitted that a large sample decreases the standard errors, which in turn inflate the value of the skewness and kurtosis statistics. Consequently, a justification is given for the use of a graphical method of normality test rather than the statistical methods. In view of the above, a histogram and normal probability plots are used in the present study to guarantee that normality assumptions were not violated. Based on Figure 4.1, it is posited that the data collected for this study follow normal patterns and normality assumptions were not violated accordingly.

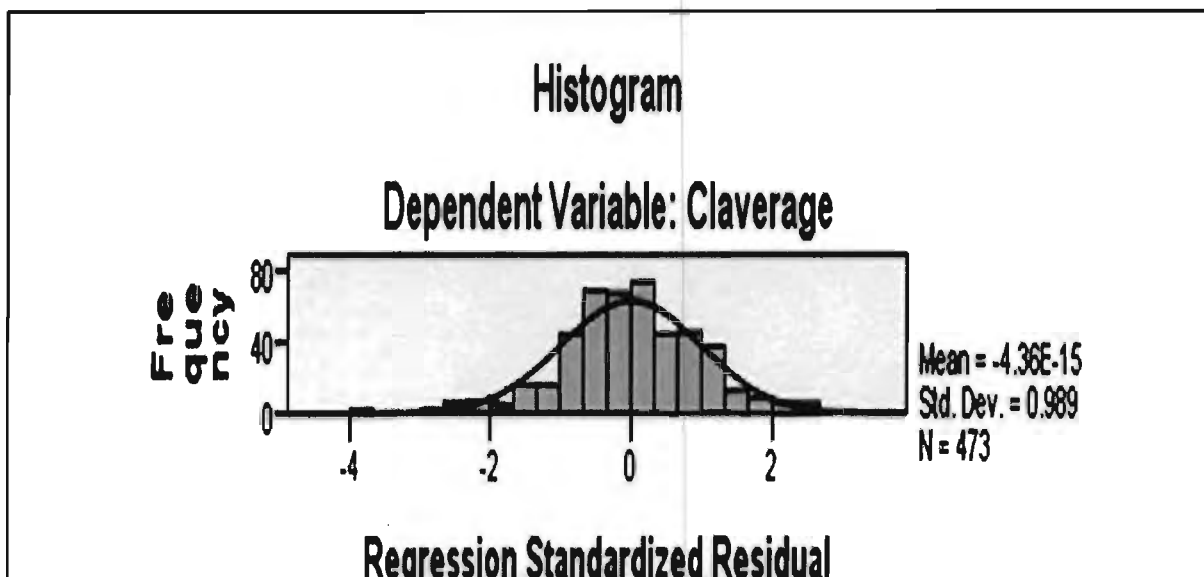


Figure 4.1
Normality Histogram

4.3.5 Test of Linearity

Linearity testing is done to determine the relationship between the dependent variable and other variables. Succinctly put, it predicts the right direction of hypotheses. A positive value means the relationship is considered positive. Hair, Black, Babin, Anderson & Tatham (2006) proposed that researchers use partial regression plot for each variable when there is more than one independent variable. This is proposed to ensure the best representation of variables in the equation. Hence, to access linearity, the normal P-P plot of regression standardized residual plot was used. The normal probability plot of regression standardized residuals for each independent variable on the dependent variable showed that normal distribution was met. The output for linearity test is displayed graphically in figure 4.2.

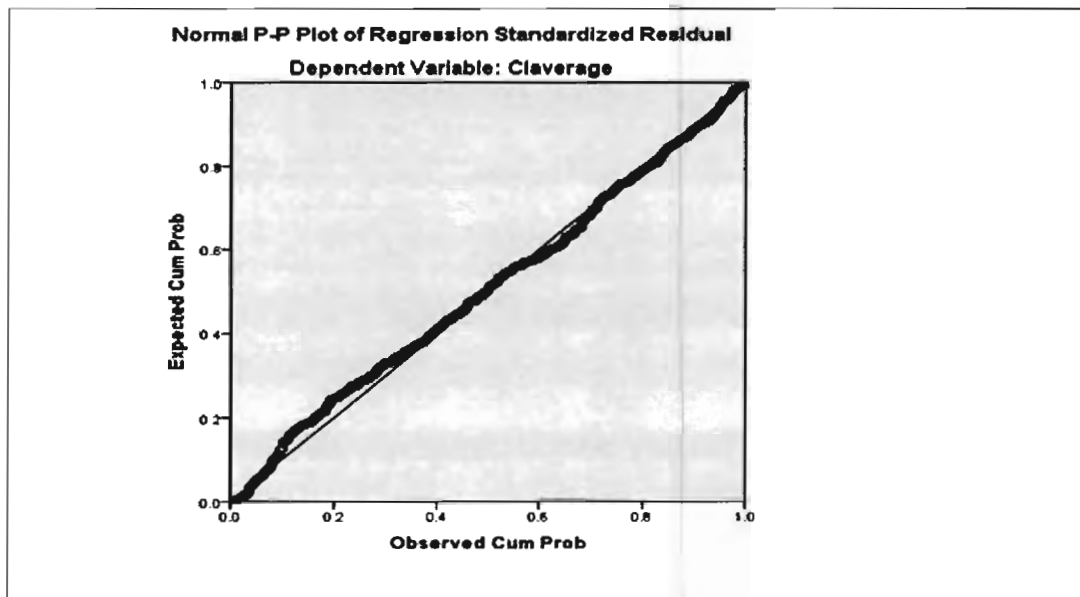


Figure 4.2
Linearity Histogram

4.3.6 Multicollinearity Test

Multicollinearity occurs when there is a high correlation among exogenous latent constructs which can greatly impact on the estimates of regression coefficients and their statistical significance tests (Chatterjee & Yilmaz, 1992; Hair, Black, Babin, Anderson, & Tatham, 2006). Particularly, when cases of multicollinearity occur, it increases the standard errors of the coefficients, which is capable of rendering coefficients statistically non-significant (Tabachnick & Fidell, 2007).

Consequently, Chatterjee and Yilmaz (1992) and Peng and Lai (2012) have suggested two techniques that can be used to address the issue of multicollinearity. The researcher followed those techniques. First, the correlation matrix of the independent variables was

examined. Based on the submission of Hair et al. (2010), a correlation coefficient of 0.90 and above indicates multicollinearity. Table 4.6 shows the correlation matrix of all exogenous latent constructs.

Table 4.6
Correlation Matrix of the Exogenous Latent Constructs

	Latent construct	1	2	3	4	5	6	7	8	9	10
1	PE	1									
2	EE	.493**	1								
3	SI	.478**	.545**	1							
4	FC	.396**	.541**	.532**	1						
5	TMS	.432**	.453**	.603**	.637**	1					
6	Neu.	.278**	.082	.194**	.135**	.202**	1				
7	Ext.	.320**	.403**	.415**	.349**	.364**	.467**	1			
8	Open.	.285**	.383**	.357**	.345**	.353**	.424**	.744**	1		
9	Agree.	.299**	.290**	.344**	.292**	.328**	.629**	.678**	.672**	1	
10	Con.	.304**	.440**	.447**	.361**	.334**	.343**	.737**	.731**	.690**	1

Note: **. Correlation is significant at the 0.01 level (2-tailed).

As shown in Table 4.6, the correlations between the independent variables were sufficiently below the suggested threshold values of .90 or more. This is an indication that the variables were independent and not highly correlated.

Secondly, the variance inflated factor (VIF), tolerance value and condition index were then examined. Hair, Ringle and Sarstedt (2011) suggested that multicollinearity is a concern if VIF value is higher than 0.5, tolerance value is less than 0.20. Table 4.7 shows the VIF values, tolerance values, and condition indices for the exogenous latent constructs.

Table 4.7
Tolerance and Variance Inflation Factors (VIF).

Latent construct	Collinearity Statistics	
	Tolerance	VIF
Performance Expectancy	.642	1.558
Effort Expectancy	.522	1.916
Social Influence	.491	2.036
Facilitating Condition	.503	1.987
Top Management Support	.477	2.097
Neuroticism	.538	1.857
Extraversion	.330	3.034
Openness to experience	.348	2.870
Agreeableness	.324	3.088
Conscientiousness	.312	3.206

Table 4.7 indicates that multicollinearity is non-existent among the exogenous latent constructs as all VIF values were less than 5, tolerance values exceeded 0.20. This is thus line with the suggestion of Hair et al. (2011). Hence, multicollinearity is not an issue in the present study.

4.3.7 Homoscedasticity Test

On the assumption of homoscedasticity, it is suggested that quantitative dependent variables have equal levels of variability across a range of (either continuance or categorical) independent variables. In the present study, the homogeneity of variance test was carried out. Specifically, the Levene's statistic result indicated variance of variables (continuance intention, performance expectancy, effort expectancy, social influence,

facilitating condition, neuroticism, extraversion, openness to experience, agreeableness and conscientiousness). On the whole, the probability values were less than .05 level of significance ($p > .05$) (Hair et al. 2010). Hence, the data for the present study was homogenous.

4.3.8 Reliability Analysis

The reliability test reflects how stable and consistent a measure is, in measuring a certain concept, whose error-free position is consistent with measurement over time and across items in the instrument (Cavana et al., 2001; Hair et al., 2010). It has been noted among researchers that it is very necessary to conduct reliability analysis in any scientific research process (Cavana et al., 2001; Hair et al., 2010; Gliem & Gliem, 2003). Specifically, Gliem and Gliem (2003) verified the importance of measuring and reporting internal reliability (Cronbach's alpha coefficient) for any scales in any given empirical endeavour, and more especially when using the Likert-type formatted scales. Else, repercussion flawed statistical error will occur.

Interestingly, the Cronbach's Alpha, is noted as the most common and widely accepted internal consistency reliability (Cavana et al., 2001). Based on the submissions above, all the constructs in the present study passed the internal consistency scrutiny. This showed an indication that items on particular variables measured constructs for which they were intended to. (Churchill, 1979; Nunnally, 1978). The internal consistency of variables and dimensions are as illustrated in Table 4.8.

Table 4.8
Result of internal consistency reliability

Construct	No. of items	Mean	Std. Deviation	Cronbach's Alpha if item deleted
Continuance Intention	6	3.9736	0.93488	0.868
Performance Expectancy	5	3.1345	0.84222	0.871
Effort Expectancy	5	3.8089	0.80612	0.864
Social Influence	8	3.5029	0.78794	0.863
Facilitating Condition	6	3.3805	0.75008	0.867
Top Management Support	8	3.2386	0.83701	0.868
Neuroticism	12	2.7542	0.61411	0.883
Extraversion.	12	3.2579	0.51992	0.868
Openness to experience	12	3.2541	0.51504	0.870
Agreeableness	12	3.0867	0.50867	0.871
Conscientiousness	12	3.3890	0.50688	0.868

As posited by empiricists, the least acceptable limit for Cronbach's alpha score for pre-test is at 0.60 while for an actual study, it is 0.70 (Zikmund et al., 2013; Hair et al., 2010). On a related noted, Hair, Money, Samuel and Page (2003) posited that a Cronbach's alpha coefficient size of 0.60 is still acceptable (moderate). Consequently, and in reference to Table 4.8, the overall Cronbach's alpha coefficient for each measurement battery was adequate.

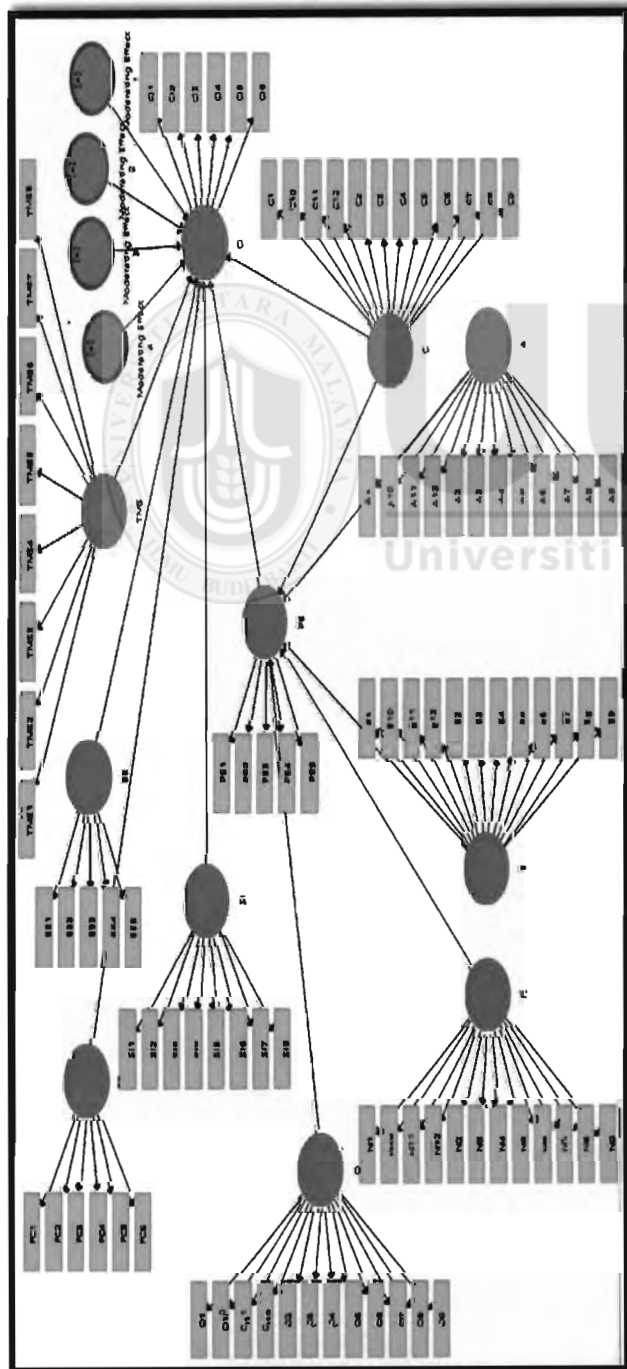
4.4 Assessment of PLS-SEM Path Model Results

As a point worthy of note, Henseler and Sarstedt (2013) and Hair et al. (2014) are of the opinion that the goodness-of-fit (GoF) index may not be appropriate for model validation. In their argument, they noted that the GoF index is unable to distinctively separate valid

and invalid models (Hair, Ringle, & Sarstedt, 2013). Consequently, a two-step PLS-SEM path approach was used to assess and report the model of this study in line with the proposition of Ringle and Sinkovics (2009). Accordingly, the measurement model was assessed, and then followed by the structural model assessment. Both are shown accordingly.



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A- Agreeableness, C- Conscientiousness, E- Extraversion, N- Neuroticism, O- Openness to Experience, CI- Continuance Intention, EE-Effort Expectancy, FC-Facilitating Condition, PE-Performance Expectancy, SI-Social Influence.

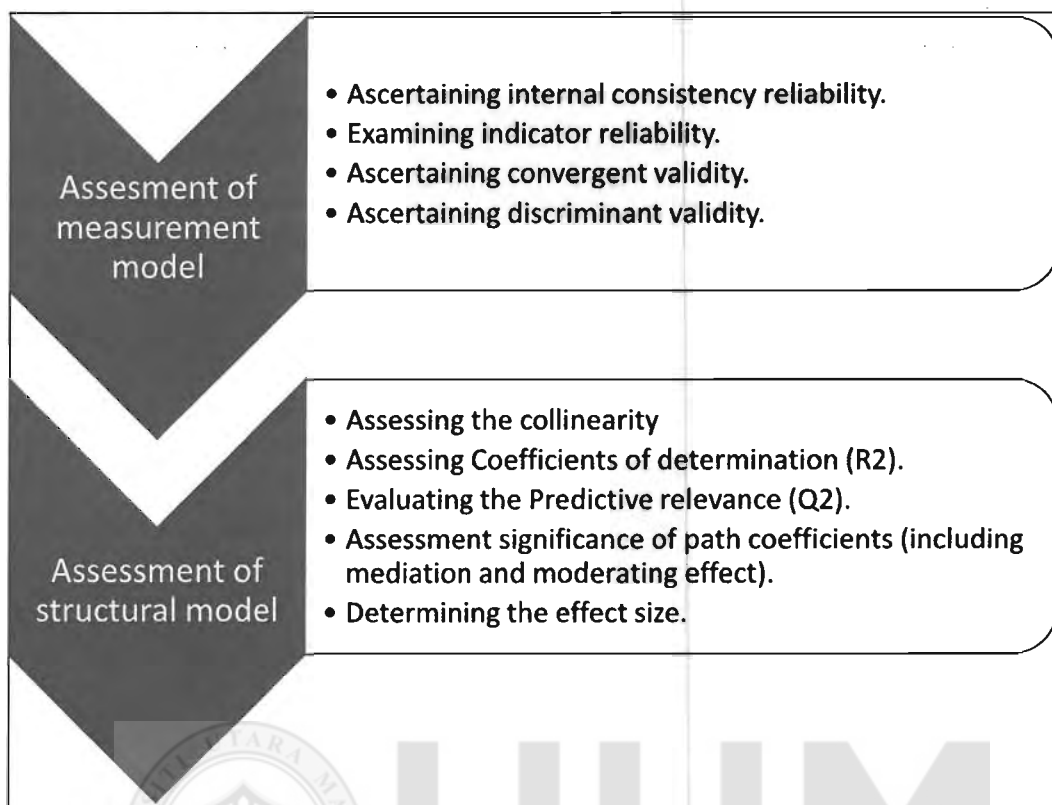


Figure 4.4
Two-Step Process of PLS Path Model Assessment
 Source: Hair *et al.* (2014)

4.4.1 Assessment of Measurement Model

In assessing measurement models of a study, two measurements are taken into cognizance. They are, the formative measurement, in which the indicators cause the construct, and arrows point from the indicators to the construct. On a related note, the reflective measurement is an indication that the measures represent the effects (or manifestations) of an underlying construct. Causality is from the construct to its measures (indicators). In the present study, the model being assessed is construed as reflective.

However, in assessing the reflective measurement, the following are determined, internal consistency reliability, content validity, convergent validity and discriminant validity

(Hair et al., 2014; Hair et al., 2011; Henseler et al., 2009). Table 4.9 summarizes the rules of thumb provisos when evaluating reflective measurement models.

Table 4.9
Rules of Thumb for Evaluating Reflective Measurement Models

Rules of Thumb for Evaluating Reflective Measurement Models
Internal consistency reliability: composite reliability should be higher than 0.708 (in exploratory research, 0.60 to 0.70 is considered acceptable). Consider Cronbach's alpha as a conservative measure of internal consistency reliability
Indicator reliability: the indicator's outer loadings should be higher than 0.708. Indicators with outer loadings between 0.40 and 0.70 should be considered for removal only if the deletion leads to an increase in composite reliability and AVE above the suggested threshold value.
Convergent validity: the AVE should be higher than 0.50.
Discriminant validity: an indicator's outer loadings on a construct should be higher than all its cross loadings with other constructs. The square root of the AVE of each construct should be higher than its highest correlation with any other construct (Fornell-Larcker criterion).

Source: Hair *et al.* (2014).

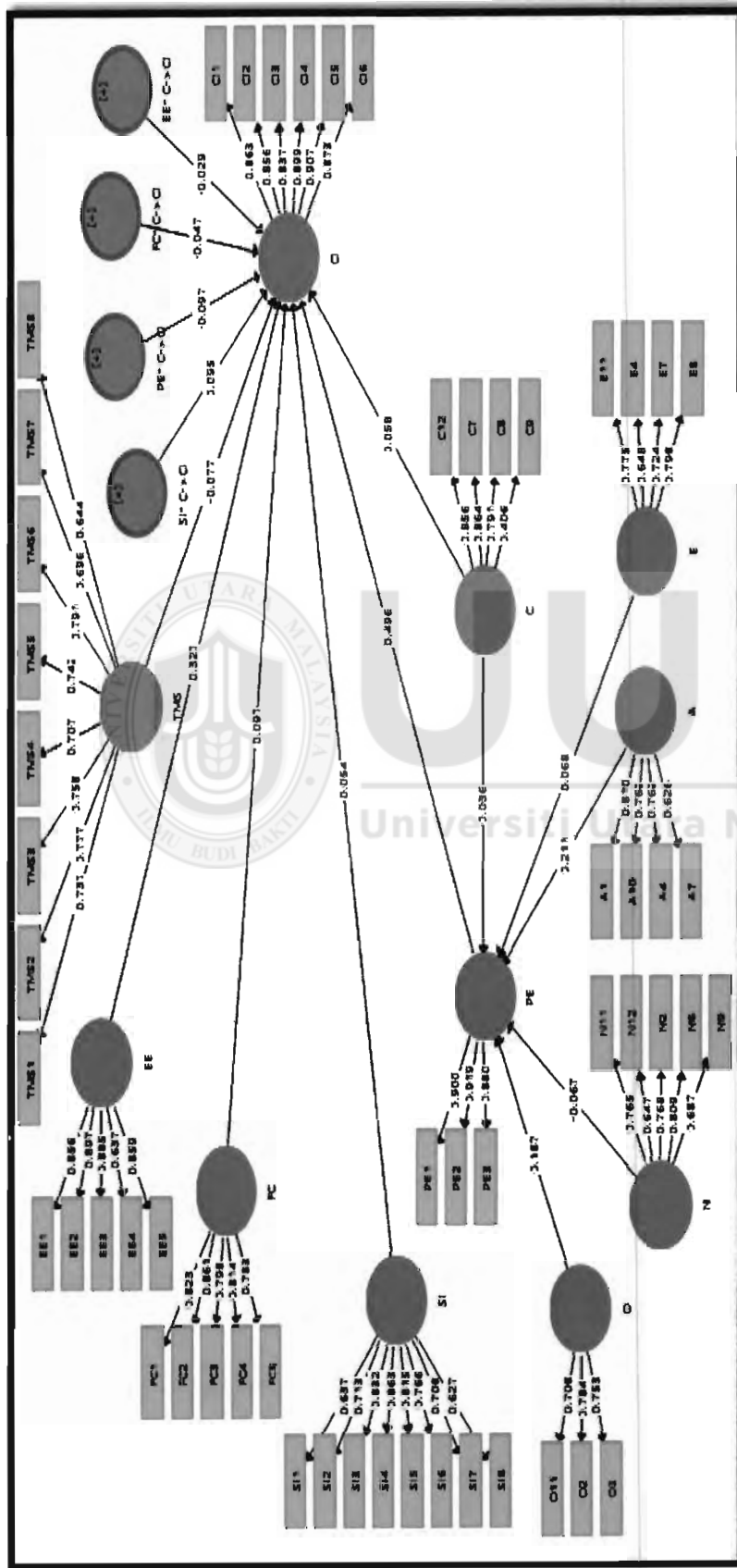


Figure 4.5 Measurement Mode

4.4.1.1 Indicator Reliability

In order to assess the indicator reliability of the constructs, their outer loadings were examined (Hulland, 1999; Hair et al., 2012; Duarte & Raposo, 2010; Hair et al., 2014). Based on established rule of thumb for retaining items with loadings between .40 and .70 (Hair et al., 2014), of the 98 items of the constructs, 30 were deleted as their loadings were below the 0.40 threshold. By implication, only 68 items were eventually retained and used for further analysis. The retained items have loadings of 0.424 and 0.919. Later, the researcher deletes another 13 items from Conscientiousness, Extraversion and Openness to Experience to achieve convergent validity requirement. Therefore only 55 items retain in the model out of 98.

4.4.1.2 Internal Consistency Reliability

The internal consistency reliability assesses the consistency of results across items on the same test. It determines whether the items measuring a construct are similar in their scores. That is, if the correlations between the items are large (Hair et al., 2014). On a related note, internal consistency reliability refers to the extent to which all items on a particular (sub) scale are measuring the same concept (Bijttebier, Delva, Vanoost, Bobbaers, Lauwers & Vertommen, 2000; Sun, Chou, Stacy, Ma, Unger & Gallaher, 2007). Among researchers, it is noted that the cronbach's alpha coefficient and composite reliability coefficient are the most commonly used in estimating internal consistency reliability (Bacon, Sauer, & Young, 1995; McCrae, Kurtz, Yamagata, & Terracciano, 2010; Peterson & Kim, 2013; Hair et al., 2014). However, the composite reliability

coefficient was used to ascertain the internal consistency reliability of measures adapted for the present study. Reasons adduced to this position are hereunder mentioned.

Firstly, the CR coefficient is noted to be a much less biased estimate of reliability as against the Cronbach's alpha coefficient. Clearly, it is the assumption of the Cronbach's alpha that all items contribute equally to its construct without considering the actual contribution of individual loadings (Higgins, & Thompson, 1995; Barclay, Gotz, Liehr-Gobbers, & Krafft, 2010; Hair et al., 2014). Secondly, it is also noted that the Cronbach's alpha is capable of under or over-estimating the scale reliability. The CR considers that indicators have different loadings and can be interpreted in the same way as Cronbach's α (that is, no matter which particular reliability coefficient is used, an internal consistency reliability value above .70 is regarded as satisfactory for an adequate model, whereas a value below .60 indicates a lack of reliability). However, the interpretation of internal consistency reliability using composite reliability coefficient is predicated in the submission by Bagozzi and Yi (1988) and Hair et al. (2011; 2014), who suggested a CR coefficient of .70 or more to be adequate.

Table 4.10 illustrates the CR coefficients of the constructs of the study which ranged from 0.792 to 0.951. This suggests adequate internal consistency reliability of the measures used in this study (Bagozzi & Yi, 1988; Hair et al., 2011; 2014).

Table 4.10

Loadings, Composite Reliability and Average Variance Extracted

Constructs	Measurement Items	Loadings	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Agreeableness	A1	0.810	0.734	0.830	0.552
	A10	0.762			
	A4	0.762			
	A7	0.626			
Conscientiousness	C12	0.856	0.885	0.831	0.567
	C7	0.864			
	C8	0.791			
	C9	0.406			
Continuance Intention	CI1	0.863	0.937	0.950	0.762
	CI2	0.856			
	CI3	0.837			
	CI4	0.899			
	CI5	0.907			
	CI6	0.873			
Extraversion	E11	0.775	0.719	0.827	0.545
	E4	0.648			
	E7	0.724			
	E8	0.798			
Effort expectancy	EE1	0.856	0.886	0.917	0.693
	EE2	0.897			
	EE3	0.885			
	EE4	0.637			
	EE5	0.859			
Facilitating Condition	FC1	0.823	0.875	0.909	0.666
	FC2	0.861			
	FC3	0.798			
	FC4	0.814			
	FC5	0.783			
Neuroticism	N11	0.765	0.798	0.856	0.544
	N12	0.647			
	N2	0.768			
	N6	0.809			
	N9	0.687			
Openness to Experience	O11	0.708	0.682	0.792	0.560
	O2	0.784			
	O3	0.753			
Performance Expectancy	PE1	0.900	0.883	0.927	0.810
	PE2	0.919			
	PE3	0.880			
Social Influence	SI1	0.637	0.886	0.910	0.562
	SI2	0.713			
	SI3	0.832			
	SI4	0.863			
	SI5	0.815			
	SI6	0.766			
	SI7	0.708			
	SI8	0.627			

Table 4.10 (continued)

Loadings, Composite Reliability and Average Variance Extracted

Constructs	Measurement Items	Loadings	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Top Management Support	TMS1	0.737	0.879	0.902	0.537
	TMS2	0.777			
	TMS3	0.758			
	TMS4	0.707			
	TMS5	0.742			
	TMS6	0.791			
	TMS7	0.696			
	TMS8	0.644			

4.4.1.3 Convergent Validity

Convergent validity is noted to be the extent to which a measure correlates positively with alternative measures of the same construct (Hair et al., 2014). It has also been described as the extent to which items truly represent the intended latent construct and indeed correlate with other measures of the same latent construct (Hair et al., 2006). In the present study, the Average Variance Extracted (AVE) was used to assess the convergent validity and in line with the suggestion of Fornell and Larcker (1981). To achieve adequate convergent validity, Hair et al. (2014) and Chin (1998) recommends that the AVE of each latent construct should be .50 or more. Following Hair et al., (2014) and Chin (1998), the AVE values (see Table 4.10) exhibited high loadings ($> .50$) on their respective constructs, indicating adequate convergent validity.

4.4.1.4 Discriminant Validity

Discriminant validity denotes the extent to which a construct is truly different from other constructs. It is suggested that constructs should be distinct from each other even in terms of the indicators measuring such constructs (Hair et al., 2014). Put in another way,

discriminant validity is used to refer to the extent to which a certain latent construct is dissimilar from other latent constructs (Duarte & Raposo, 2010). In the present study, discriminant validity was ascertained using AVE, as suggested by Fornell and Larcker (1981). This was achieved by comparing the correlations among the latent constructs with square roots of the AVE (Fornell & Larcker, 1981). Additionally, discriminant validity was determined following Chin's (1998) criterion by comparing the indicator loadings with other reflective indicators in the cross loadings table (table 4.11).

Table 4.11
Cross-Loading.

Item	A	C	CI	E	EE	FC	N	O	PE	SI	TMS
A1	0.810	0.514	0.381	0.454	0.422	0.333	0.219	0.559	0.325	0.324	0.312
A10	0.762	0.597	0.327	0.548	0.378	0.308	0.233	0.548	0.297	0.300	0.269
A4	0.762	0.551	0.342	0.503	0.320	0.296	0.166	0.497	0.332	0.333	0.269
A7	0.626	0.463	0.241	0.536	0.297	0.245	0.115	0.389	0.174	0.241	0.223
C12	0.597	0.856	0.346	0.543	0.329	0.265	0.282	0.543	0.299	0.315	0.218
C7	0.645	0.864	0.351	0.685	0.343	0.291	0.249	0.586	0.301	0.298	0.210
C8	0.553	0.791	0.297	0.543	0.316	0.217	0.234	0.522	0.254	0.268	0.136
C9	0.276	0.406	0.144	0.199	0.145	0.068	0.601	0.213	0.066	-0.060	-0.068
CI1	0.406	0.335	0.863	0.333	0.617	0.458	0.047	0.354	0.686	0.478	0.387
CI2	0.406	0.329	0.856	0.349	0.614	0.467	0.069	0.349	0.676	0.469	0.410
CI3	0.361	0.372	0.837	0.357	0.581	0.399	0.053	0.353	0.587	0.428	0.330
CI4	0.395	0.366	0.899	0.388	0.635	0.459	0.042	0.393	0.694	0.477	0.391
CI5	0.373	0.334	0.907	0.326	0.653	0.476	0.041	0.371	0.694	0.495	0.401
CI6	0.373	0.333	0.873	0.323	0.626	0.449	0.058	0.365	0.671	0.499	0.378
E11	0.512	0.607	0.328	0.775	0.357	0.279	0.182	0.606	0.279	0.273	0.226
E4	0.518	0.346	0.255	0.648	0.306	0.189	0.045	0.407	0.259	0.206	0.270
E7	0.466	0.547	0.251	0.724	0.308	0.219	0.150	0.485	0.229	0.230	0.202
E8	0.478	0.546	0.326	0.798	0.324	0.238	0.159	0.496	0.260	0.255	0.178

Table 4.11 (continued)
Cross-Loading.

Item	A	C	CI	E	EE	FC	N	O	PE	SI	TMS
EE1	0.357	0.294	0.585	0.344	0.856	0.477	0.045	0.338	0.535	0.430	0.379
EE2	0.372	0.296	0.654	0.356	0.897	0.511	0.069	0.397	0.604	0.460	0.417
EE3	0.386	0.314	0.626	0.342	0.885	0.494	0.060	0.373	0.571	0.439	0.385
EE4	0.426	0.343	0.418	0.385	0.637	0.338	0.059	0.444	0.343	0.427	0.337
EE5	0.475	0.398	0.645	0.424	0.859	0.478	0.060	0.435	0.548	0.505	0.494
FC1	0.367	0.252	0.407	0.273	0.436	0.823	-0.019	0.306	0.390	0.458	0.550
FC2	0.308	0.200	0.447	0.273	0.467	0.861	0.032	0.299	0.405	0.445	0.569
FC3	0.288	0.207	0.386	0.195	0.362	0.798	0.090	0.239	0.320	0.370	0.519
FC4	0.315	0.249	0.383	0.193	0.386	0.814	0.055	0.243	0.393	0.423	0.560
FC5	0.349	0.315	0.474	0.333	0.590	0.783	0.109	0.352	0.436	0.423	0.472
N11	0.228	0.305	0.031	0.173	0.113	0.091	0.765	0.175	0.027	-0.038	0.014
N12	0.185	0.249	0.043	0.105	0.016	0.001	0.647	0.150	0.016	-0.080	-0.080
N2	0.191	0.352	0.043	0.148	0.034	0.056	0.768	0.125	0.044	-0.069	-0.130
N6	0.232	0.278	0.072	0.114	0.034	0.045	0.809	0.153	0.040	-0.058	-0.080
N9	0.099	0.147	0.019	0.136	0.068	0.036	0.687	0.089	0.029	-0.080	-0.059
O11	0.378	0.483	0.278	0.527	0.318	0.249	0.084	0.708	0.283	0.254	0.229
O2	0.611	0.511	0.331	0.519	0.395	0.246	0.159	0.784	0.317	0.363	0.246
O3	0.523	0.463	0.329	0.478	0.337	0.313	0.164	0.753	0.268	0.246	0.245
PE1	0.447	0.367	0.763	0.350	0.624	0.472	0.074	0.391	0.900	0.524	0.435
PE2	0.300	0.252	0.659	0.299	0.546	0.410	0.003	0.342	0.919	0.500	0.443
PE3	0.292	0.262	0.631	0.288	0.534	0.404	0.042	0.305	0.880	0.453	0.409

Table 4.11 (continued)
Cross-Loading.

Item	A	C	CI	E	EE	FC	N	O	PE	SI	TMS
SI1	0.289	0.233	0.368	0.277	0.376	0.323	-0.057	0.270	0.355	0.637	0.384
SI2	0.302	0.249	0.366	0.292	0.387	0.347	-0.031	0.295	0.340	0.713	0.404
SI3	0.410	0.348	0.483	0.318	0.497	0.417	-0.035	0.368	0.487	0.832	0.483
SI4	0.354	0.286	0.463	0.302	0.447	0.398	-0.088	0.338	0.508	0.863	0.492
SI5	0.280	0.208	0.414	0.249	0.397	0.346	-0.056	0.253	0.455	0.815	0.428
SI6	0.323	0.332	0.409	0.278	0.385	0.324	-0.038	0.342	0.370	0.766	0.385
SI7	0.235	0.155	0.390	0.119	0.372	0.475	-0.099	0.249	0.373	0.708	0.514
SI8	0.221	0.096	0.346	0.100	0.364	0.511	-0.115	0.190	0.378	0.627	0.607
TMS1	0.311	0.211	0.425	0.243	0.479	0.516	-0.048	0.267	0.488	0.502	0.737
TMS2	0.415	0.249	0.359	0.283	0.424	0.455	-0.013	0.299	0.372	0.468	0.777
TMS3	0.370	0.272	0.386	0.295	0.412	0.488	0.007	0.303	0.370	0.476	0.758
TMS4	0.201	0.076	0.175	0.140	0.244	0.487	-0.148	0.210	0.222	0.388	0.707
TMS5	0.222	0.090	0.274	0.159	0.312	0.421	-0.054	0.175	0.306	0.463	0.742
TMS6	0.266	0.135	0.330	0.229	0.334	0.599	-0.082	0.282	0.348	0.485	0.791
TMS7	0.142	0.053	0.260	0.188	0.285	0.452	-0.141	0.176	0.291	0.389	0.696
TMS8	0.035	-0.053	0.217	0.105	0.202	0.385	-0.229	0.063	0.273	0.360	0.644

Specifically, the Fornell and Larcker (1981) threshold was used in assessing the discriminant validity. They suggested the use of AVE with a score of 0.50 or more, and that the square root of the AVE should be greater than the correlations among latent constructs.

As indicated in Table 4.11, the values of the AVE of the constructs range between 0.537 and 0.809. This is acceptable based on the Fornell and Larcker (1981) criteria. In Table 4.12, the correlations among the latent constructs were compared with the square root of the AVE. Table 4.12 also shows that the square root of the AVE were all greater than the

correlations among latent constructs, suggesting adequate discriminant validity (Fornell & Larcker, 1981).

Table 4.12
Latent Variable Correlations and Square Roots of Average Variance Extracted

Constructs	A	C	CI	E	EE	FC	N	O	PE	SI	TMS
A	0.743										
C	0.714	0.753									
CI	0.442	0.395	0.873								
E	0.670	0.695	0.396	0.739							
EE	0.479	0.391	0.712	0.440	0.832						
FC	0.400	0.302	0.518	0.315	0.558	0.816					
N	0.253	0.368	0.059	0.182	0.070	0.067	0.738				
O	0.678	0.650	0.417	0.679	0.470	0.357	0.182	0.749			
PE	0.393	0.332	0.766	0.350	0.635	0.480	0.046	0.388	0.900		
SI	0.408	0.325	0.544	0.328	0.541	0.520	-0.085	0.389	0.550	0.750	
TMS	0.363	0.206	0.439	0.298	0.486	0.652	-0.098	0.321	0.477	0.613	0.733

Note: Entries shown in bold face represent the square root of the average variance extracted.
Source: The Researcher.

Furthermore, to assess the discriminant validity of the constructs, the indicator loadings and cross-loadings are used (Chin, 1998). It is argued that discriminant validity is achieved if the indicator loadings are higher than the cross-loadings (Chin, 1998). Based on Table 4.10, it is noted that all indicator loadings were greater than the cross-loadings, suggesting adequate discriminant validity for further analysis.

4.4.2 Assessment of the Structural Model

As a matter of empirical principle, the nature of effects between exogenous and endogenous latent constructs differ based on model specifications that has or has not

moderation effects (Hair et al., 2014). In the present study, one of the objectives is to test the significance of the main effects between all exogenous and endogenous constructs. Hence, while conducting the study analysis with the use of the PLS, the main model was tested without the moderator. After then, the interaction effects can be safely tested in other accordingly (Hair et al., 2014). Therefore, this study executes two models: the main effects model with mediation effect and the moderation effects model. Typically, there are five criteria to assess the structure model including collinearity assessment, coefficient of determination (R^2), Prediction relevance (Q^2), path coefficient (β) (including mediation and moderating effect), and effect size (f^2), (Hair et al., 2011a; Henseler et al., 2009; Sarstedt et al., 2014b).

4.4.2.1 Multicollinearity

In practical terms, the Variance Inflation Factor (VIF) is commonly used to ascertain multicollinearity (Petter, Straub, & Rai, 2007). According to the rule of thumb, a VIF value of 5 and higher indicates a potential problem of collinearity (Hair et al., 2014a; Hair et al., 2011a). Using the PLS algorithm, VIF values for all constructs are generated and presented in Table 4.13. The values vary between 1.174 and 2.804 and are all less than the cut-off value of 5. Therefore, it can be concluded that the variables do not have any multicollinearity issues to their respected endogenous.

Table 4.13
Collinearity Assessment

Construct	VIF	
	CI	PE
Agreeableness	-	2.553
Conscientiousness	1.272	2.804
Extraversion	-	2.472
Effort Expectancy	2.158	-
Facilitating Condition	2.103	-
Neuroticism	-	1.174
Openness to Experience	-	2.312
Performance Expectancy	1.939	-
Social Influence	2.03	-
Top Management Support	2.21	-

Source: researcher.

4.4.2.2 Determination Coefficient (R^2)

The determination coefficient (R^2) is usually done before testing the structural model is the determination coefficient. Practically, the aim of the PLS-SEM is to explain the endogenous latent variables' variance. Hence, the R^2 is the most important criteria to assess the structural model. The judgment of R^2 value is highly dependent on the specific research discipline (Davicik, 2014; Hair et al., 2014a; Hair et al., 2011a; Sarstedt et al., 2014a). While R^2 value of 0.75 is considered high in some disciplines, R^2 values of 0.20 would be perceived as high in other research area (Hair et al., 2011a). Accordingly, some researchers such as Chin (2010) describes the general rule of thumb regarding R^2 as values of 0.67, 0.33, and 0.19 are considered as substantial, moderate, and weak, respectively.

On the other hand, Cohen’s (1988) criterion describes that R^2 value of 0.26 or more is considered as substantial, 0.13 as moderate, and 0.02 as weak.

In the present study, the result of PLS algorithm shows that an estimated model fits the survey data very well. The R^2 for continuance intention is 0.70 indicating a substantial amount of variance explained by the proposed independent variables. On the other hand, R^2 for performance expectancy is 0.19 which consider weak. Based on the above, it can be posited that the structural model explains acceptable variance level of continuance intention to use EHR and performance expectancy.

Table 4.14
R-Squared

Endogenous Variables	R-Squared
Continuance Intention	70 %
Performance Expectancy	19%

4.4.2.3 The Predictive Relevance of the Structure Model (Q^2)

Aside from using the R^2 as the sole measure for predictive relevance, it has been suggested that researchers can apply the predictive sample reuse (Chin, 2010). Predictive relevance (Q^2) of the structural model can also be measured by cross-validated redundancy (Chin, 2010; Hair et al., 2014b; Henseler et al., 2009). The Q^2 ’s value is generated based on the predictive sample reuse technique using the blindfolding procedure.

Table 4.15
Predictive Relevance Q²

Total	<i>Q²</i>
Continuance Intention	0.487
Performance Expectancy	0.138

For model of this study, the construct cross-validated redundancies (Q^2) have been obtained with the use of the blindfolding procedure by omission distance 7. According to Chin (1998), the omission distance should be between 5 and 10. The results of blindfolding procedures in SmartPLS3.0 show that the cross-validated redundancy of the endogenous construct (performance expectancy) is 0.138. On the other hand, the cross-validated redundancy of the endogenous construct (continuance intention) is 0.487. However, both endogenous present an acceptable cross- validated redundancy values.

4.4.2.4 Assessing the Significance of Path Coefficient

In testing the hypotheses in the PLS-SEM, the path coefficient (β), and t-value are used (Hair et al., 2014a; Hair et al., 2011a; Henseler et al., 2009). Path coefficient can be interpreted as standardized beta coefficients of ordinary least squares regressions. Values of path coefficient are standardized on a range of - 1 to + 1. When coefficients are closer to + 1, it represents strong positive relationships. On the other hand, when coefficients are closer to -1, it indicates strong negative relationships (Henseler et al., 2009; Hair et al., 2011a; Hair et al., 2014a). Once the path coefficients are generated, bootstrapping procedure that calculates t-values for each path coefficients is used to assess the significance of each path coefficient. Paths coefficients are not significant when their sign

is contrary to the hypothesized direction, whereas significant paths showing the hypothesized direction empirically support the proposed causal relationship (Hair et al., 2014a; Hair et al., 2011a; Henseler et al., 2009).

To assess the significance of the various effects of the study model, the PLS path algorithm which generates the path coefficient was first run. This was followed by the run of the structural model using the bootstrap procedure by generating 500 resamples (Hair et al., 2014a; Hair et al., 2011a; Sarstedt et al., 2014b). The researcher divided assessing the significance of path coefficient into three segments; direct effect, mediating effect, and moderating effect.

4.4.2.4.1 Assessing the Significance of Path Coefficient for Main Effect

Based on the statistical analysis run in the previous section of this chapter, the results generated are presented as Fig4.6 and Table 4.16.

Table 4.16

Direct Relationship Hypotheses

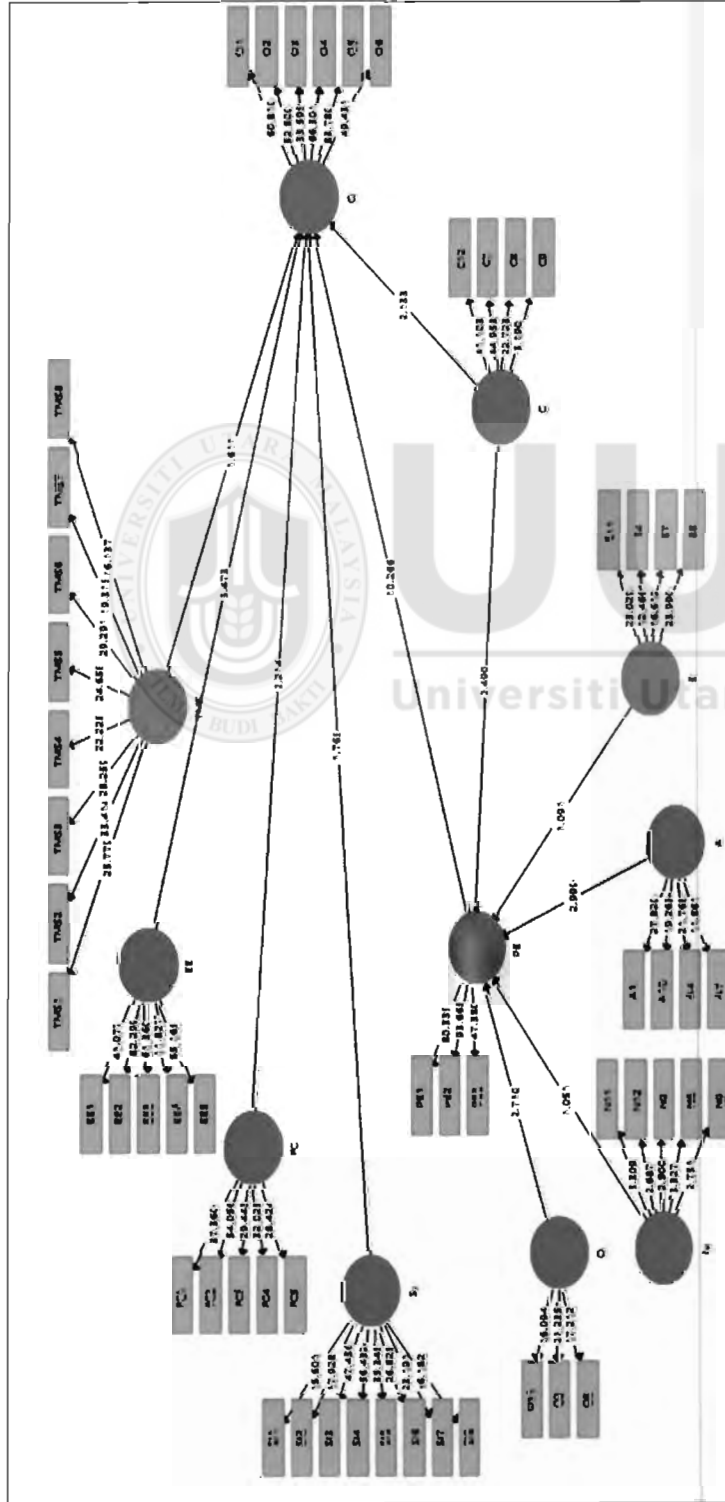
No.	Hypothesis	Beta	P Value	T Statistics	Decision
1	Effort Expectancy-> Continuance Intention	0.314	0.000	5.284***	Supported
2	Facilitating Condition-> Continuance Intention	0.091	0.025	2.246**	Supported
3	Performance Expectancy-> Continuance Intention	0.491	0.000	10.425***	Supported
4	Social Influence-> Continuance Intention	0.075	0.08	1.756*	Supported
5	Top Mgt. Support -> Continuance Intention	-0.067	0.13	1.515	Not Supported

t-values > 1.645* (p < 0.05); t-values > 1.96** (p < 0.02); t-values > 2.33*** (p < 0.01) 1-tailed test

Based on the study hypotheses, hypothesis 1 predicted that effort expectancy will have a significant positive relationship with Jordanian nurses' continuance intention to use

EHRs. Results (Table 4.16, Figure 4.6) revealed a significant positive relationship between effort expectancy and continuance intention ($\beta = 0.314$, $t = 5.284$, $p < 0.01$). Hypothesis 1 is thus supported. Similarly, hypothesis 2 predicted that facilitating condition will have significant positive relationship with Jordanian Nurses' continuance intention to use EHRs. Result (Table 4.16, Figure 4.6) indicated that facilitating condition had a significant positive relationship with continuance intention ($\beta = 0.091$, $t = 2.246$, $p < 0.02$), supporting hypothesis 2.

Similarly, in examining performance expectancy on Jordanian Nurses' continuance intention to use EHRs, result indicated that performance expectancy had a significant positive relationship with continuance intention ($\beta = 0.491$, $t = 10.425$, $p < 0.01$). Hypothesis 3 is thus supported. Also, social influence was predicted to positively influence continuance intention (Hypothesis 4). Result showed significant positive relationship between social influence and continuance intention ($\beta = 0.075$, $t = 1.756$, $p < 0.05$). Thus, hypothesis 4 was supported. For the relationship between top management support and Jordanian Nurses' continuance intention to use EHRs, Table 4.16 shows the relationship between top management support and continuance intention was negatively not significant ($\beta = -0.067$, $t = 1.515$). Therefore hypothesis 5 was not supported.



A- Agreeableness, C- Conscientiousness, E- Extraversion, N- Neuroticism, O- Openness to Experience, CI- Continuance Intention, EE-Effort Expectancy, FC-Facilitating Condition, PE-Performance Expectancy, SI-Social Influence.

Figure 4.6
Structural Model Without Interaction

4.4.2.4.2 Assessing the Significance of Path Coefficient for Mediating Effect

The researcher followed the mediator analysis procedure by Preacher and Hayes (2008) to test mediator effect of performance expectancy on the relationship between personality dimensions and continuance intention. See Table (4.17) and Figure (4.6). As indicated by Preacher and Hayes (2008) if the indirect effect was significant and the Bootstrapped Confidence Interval (Boot CI) did not straddle a 0 in between, indicating there is mediation.

Table 4.17
Summary of mediation results.

Hypothesis	Relationship	Indirect effect(Beta)	SE	t-value	Bootstrapped Confidence Interval (Boot CI)		Decision
					95%LL	95%UL	
H6	A -> PE-> CI	0.104	0.035	2.958***	0.034	0.171	supported
H7	C-> PE-> CI	0.018	0.037	0.487	-0.060	0.083	Not Supported
H8	E-> PE-> CI	0.033	0.029	1.156	-0.021	0.095	Not Supported
H9	N-> PE-> CI	-0.033	0.034	0.975	-0.093	0.040	Not Supported
H10	O-> PE-> CI	0.092	0.036	2.575***	0.020	0.161	supported

Note: t-values > 1.96* (p < 0.05); t-values > 2.33** (p < 0.02); t-values > 2.575*** (p < 0.01) 2-tailed test.

A- Agreeableness, C- Conscientiousness, E- Extraversion, N- Neuroticism, O- Openness to Experience, CI- Continuance Intention, SE- Standard Error, LL- Lower Limit, UL- Upper Limit.

The result in Table 4.17 showed that out of the five mediating effects (indirect effects) that were tested, two were found to be significant. Specifically, the bootstrapping analysis for agreeableness showed that the indirect effect ($\beta = 0.104$) was significant with t-value of 2.958. Also, as indicated by Preacher & Hayes (2008), the indirect effect 95% boot CI: [LL=0.034, UL=0.171], did not straddle a 0 in between, indicating there is mediation.

Also, the bootstrapping analysis for openness to experience showed that the indirect effect ($\beta = 0.092$) was significant with t-value of 2.575. Also, as indicated by Preacher & Hayes (2008), the indirect effect 95% boot CI: [LL=0.020, UL=0.161], did not straddle a 0 in

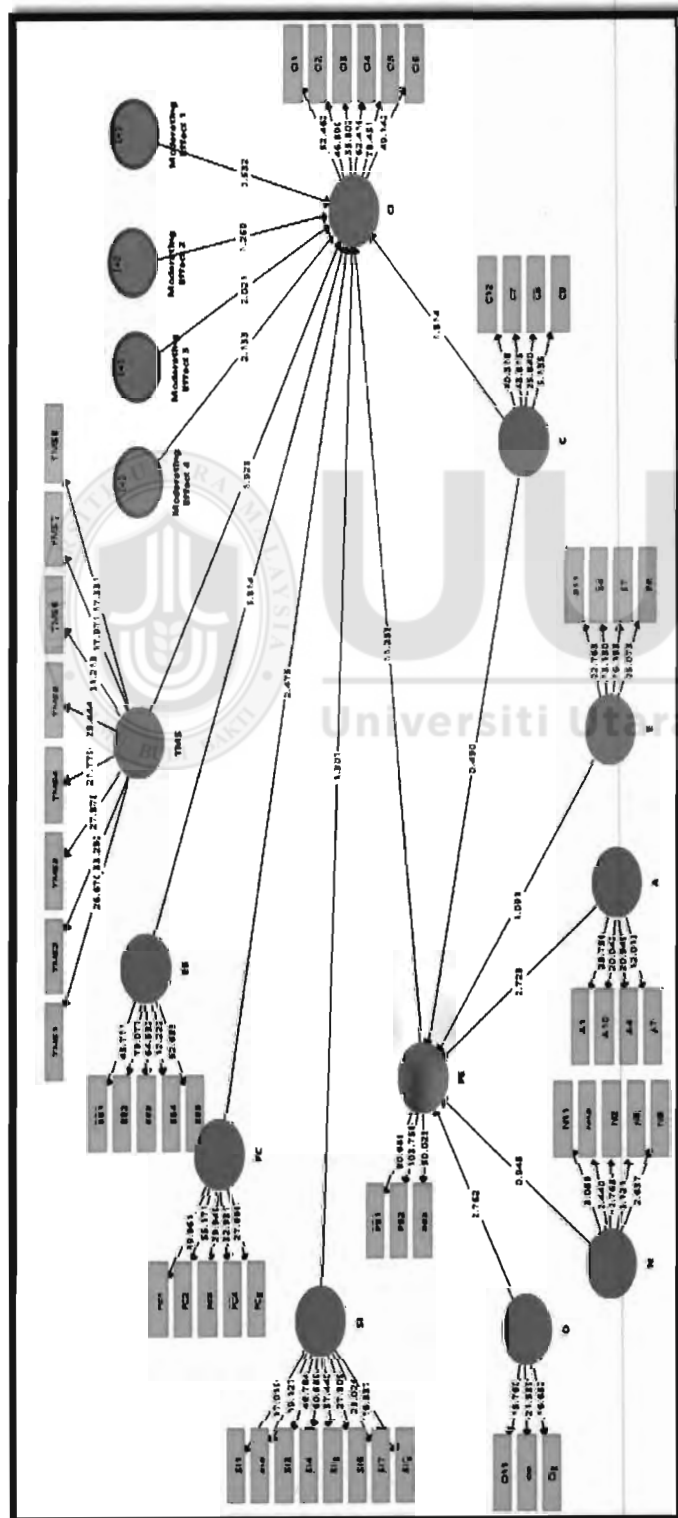
between, indicating there is mediation. Thus, confirming the mediation of performance expectancy on the relationship between agreeableness, openness to experience and continuance intention. This goes to support hypothesis number 6 and 10. However, Performance expectancy found not significant mediate the relationship between conscientiousness and CI to use, extraversion and CI to use, neuroticism and CI to use, thus hypothesis's number 7,8 and 9 were all rejected respectively.

4.4.2.4.3 Assessing the Significance of Path Coefficient for Moderating Effect

Moderation takes place when the effect of a predictor on a criterion varies depends on the level of a third variable, called a moderator variable, which interacts with the independent variable in order to explain the dependent variable (Baron & Kenny, 1986; Edwards & Lambert, 2007). To incorporate interaction effect into path model, PLS requires the interaction term to be modelled as an additional latent variable called "interaction latent construct". Initiating such construct in PLS can be done by way of two approaches of product indicator approach and two-stage approach (Goodhue, Lewis, & Thompson, 2007; Hair *et al.*, 2014a; Hair *et al.*, 2014b; Hair *et al.*, 2011a; Henseler & Chin, 2010). In the product indicator approach, the interaction effect is modelled by creating a latent interaction construct in which its indicators are estimated by multiplying each predictor's indicator with each moderator's indicator (Chin & Dibbern, 2010; Goodhue *et al.*, 2007; Hair *et al.*, 2014a; Henseler & Chin, 2010). In the two-stage approach, the construct scores of predictor and moderator are calculated and saved. However, in the second stage, the latent interaction construct is created in which its indicators are estimated by multiplying the saved scores of both the predictor and moderator (Goodhue *et al.*, 2007;

Hair *et al.*, 2014a). Two-stage approach is suggested to be superior when the moderator is second order construct or the moderator has formative indicators, whereas the product indicator approach is suggested to be superior when the moderator is a reflective construct (Henseler & Chin, 2010; Wilson, 2010).

In this study, conscientiousness has been proposed as a moderator on four hypothesized relationships as specified in Table 4.17 below. Interestingly, conscientiousness is constructed as reflective construct, hence, the one-stage approach for constructing the conscientiousness's interaction latent constructs was done. On the other hand, interaction between the latent constructs related to dependency have been constructed using product indicators approach. Thus, this study has to create four interaction latent constructs. The four interaction latent constructs represent the interaction terms between conscientiousness and the four specified relationships in Table 4.18.



A- Agreeableness, C- Conscientiousness, E- Extraversion, N- Neuroticism, O- Openness to Experience, CI- Continuance Intention, EE- Effort Expectancy, FC- Facilitating Condition, PE- Performance Expectancy, SI- Social Influence.

With regard to the interaction effect of conscientiousness, the interaction latent constructs of effort expectancy $\times$ conscientiousness (EE $\times$ C), facilitating condition $\times$ conscientiousness (FC $\times$ C), performance expectancy $\times$ conscientiousness (PE $\times$ C), social influence $\times$ conscientiousness (SI $\times$ C), have been examined using bootstrapping procedure with 500 resample. All statistical tests were assessed at 5 %, 2% and 1% level of significance using two-tailed t-tests.

Table 4.18
Moderating Effect

Hypotheses	Relationship	Beta	Standard Error	t-value	Decision
H11	EE *C -> CI	-0.029	0.054	0.532	Not Supported
H12	FC*C -> CI	-0.047	0.037	1.269	Not Supported
H13	PE*C -> CI	-0.097	0.048	2.021**	Supported
H14	SI*C -> CI	0.095	0.045	2.133**	Supported

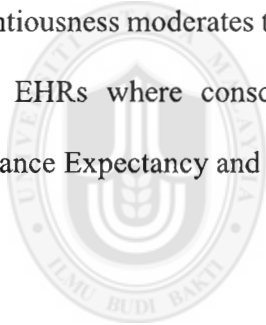
Note: t-values > 1.96* (p < 0.05); t-values > 2.33** (p < 0.02); t-values > 2.575*** (p < 0.01) 2-tail test. EE-Effort Expectancy, FC-Facilitating Condition, PE-Performance Expectancy, SI-Social Influence, C-Conscientiousness, CI-Continuance Intention.

Hypothesis 11 stated that conscientiousness will moderate the relationship between effort expectancy and CI to use the EHRs. From the results as indicated in Table 4.18, Figure 4.7 indicated that the interaction terms representing effort Expectancy X conscientiousness (β = -0.029, t = 0.532, p < 0.01) was not significant.

Also, Hypothesis 12 stated that conscientiousness will moderate the relationship between facilitating condition and CI to use the EHRs. The results shown in Table 4.18, Figure 4.7 indicated that the interaction terms representing facilitating condition x conscientiousness (β = -0.074, t = 1.269, p < 0.05) was not significant.

In addition, Hypothesis 13 stated that conscientiousness will moderate the relationship between performance expectancy and CI to use the EHRs. The results shown in Table 4.18, Figure 4.7 indicated that the interaction terms representing performance expectancy x conscientiousness ($\beta = -0.097$, $t = 2.021$, $p < 0.05$) was negatively significant.

Hence, hypothesis 13 was fully supported. Information from the path coefficients was used to plot the moderating effect of conscientiousness on the relationship between Performance Expectancy and CI to use, following the procedures recommended by Aiken and West (1993) and Marcus, Schuler, Quell & Hümpfner, (2002). Figure 4.8 shows that conscientiousness moderates the relationship between Performance Expectancy and CI to use the EHRs where conscientiousness reduces the positive relationship between Performance Expectancy and continuance intention.



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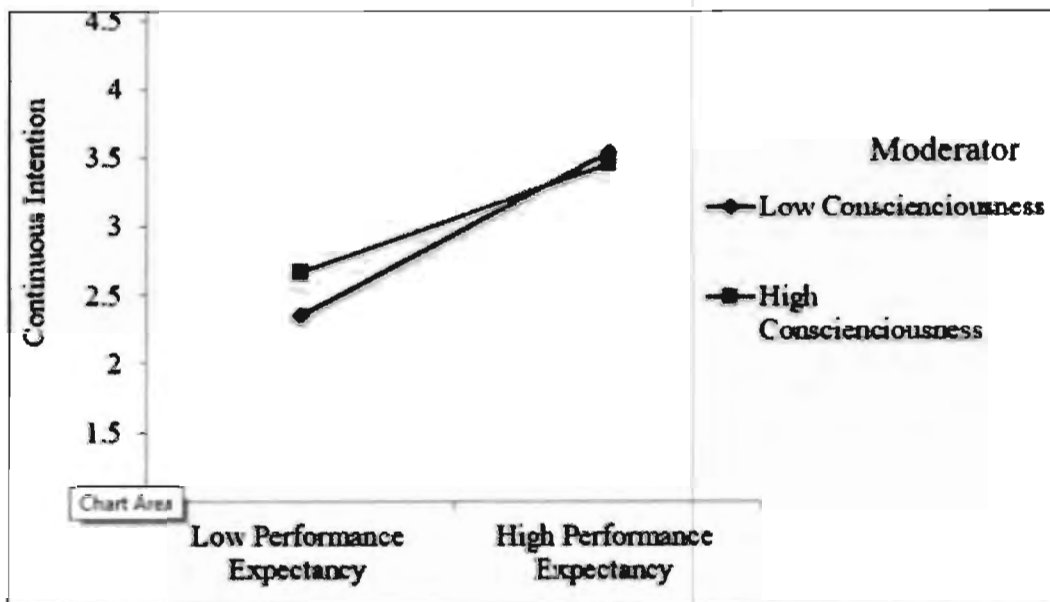


Figure 4.8
Conscientiousness dampens the positive relationship between performance expectancy and continuance intention

Furthermore, Hypothesis 14 stated that conscientiousness will moderate the relationship between social influence and continuance intention to use the EHRs. The results in Table 4.18, Figure 4.7 indicated a significant interaction between conscientiousness and social influence in predicting continuance intention. ($\beta = 0.095$, $t = 2.133$, $p < 0.05$), hence providing strong support for Hypothesis 14. Graphically, this finding is depicted in Figure 4.9 depicted that conscientiousness moderated the relationship between social influence and continuance intention to use, such that conscientiousness strengthens the positive relationship between social Influence and continuance intention.

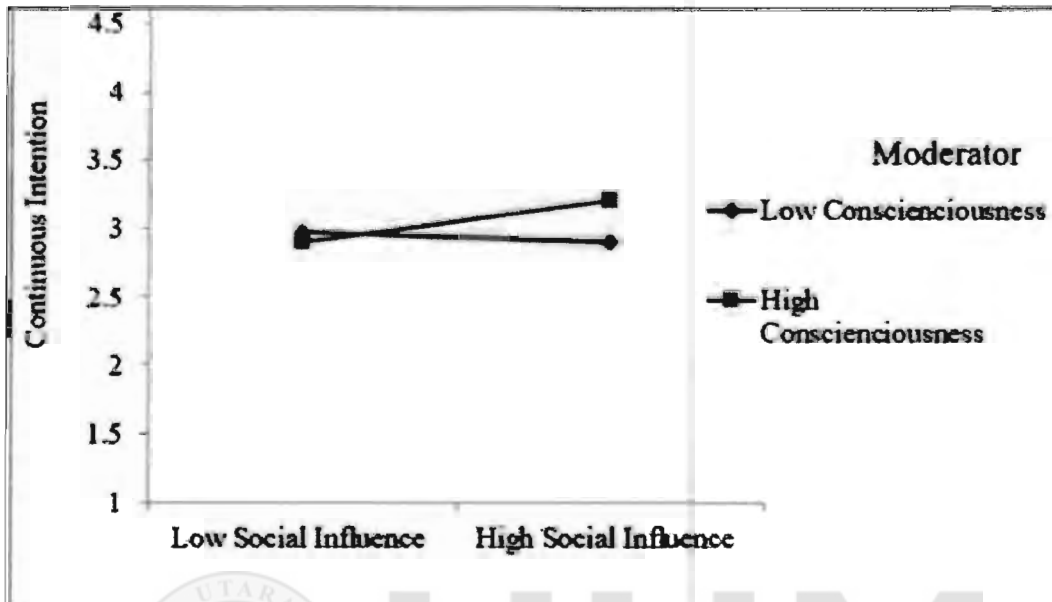


Figure 4.9
Conscientiousness strengthens the positive relationship between social influence and continuance intention

4.4.2.4.4 Effect Size (f^2)

Another assessment to be considered in structural model evaluation involves the effect size (f^2) of each relationship in the structural model. This allows researchers to evaluate the exogenous latent variable's incremental explanation of an endogenous latent variable. The effect size can be determined by calculating Cohen's f^2 (Chin, 2010; Cohen, 1988; Henseler et al., 2009; Hair et al., 2011a; Hair et al., 2014a). The f^2 is calculated by observing the change in R^2 when a specific latent construct is removed from the model. In view of that, the researchers need to estimate R^2 for two PLS path models: the first R^2 will be calculated for the original model as specified by the research framework, whereas

the second R^2 will be calculated for the same model when a selected exogenous construct is removed from the model. Accordingly, the effect size of the omitted construct can be determined using the formula provided below in Figure 4.10. According to the rule of thumb, f^2 with value of 0.02, 0.15, and 0.35 represent small, medium, and large effects, respectively (Cohen, 1988).

$$f^2 = \frac{R_{included}^2 - R_{excluded}^2}{1 - R_{included}^2}$$

Figure 4.10
Formula for effect size calculation

As indicated in Table 4.19, the effect sizes for the agreeableness, conscientiousness, extraversion, neuroticism and openness to experience on performance expectancy, were very small with values ranging from (0.001 up to 0.019). While the effect sizes for the effort expectancy * conscientiousness on continuance intention were not effective, the value ranged from (0.000). Also, the effect sizes for the facilitating condition, social influence, top management support, facilitating condition* conscientiousness, performance expectancy* conscientiousness, and social influence* conscientiousness on continuance intention, were very small the value range from (0.007 up to 0.016). While effort expectancy has medium effect size on continuance intention with value (0.151). Finally, performance expectancy has large effect on continuance intention with value (0.421).

Table 4.19
Effect Size (f²)

Constructs	R ²	f ²	Effect Size Rating
Continuance Intention	0.696		
Effort Expectancy		0.151	Medium Effect
Facilitating Condition		0.016	Very Small Effect
Performance Expectancy		0.421	Large Effect
Social Influence		0.013	Very Small Effect
Top Management Support		0.007	Very Small Effect
EE* C->CI	0.700	0.002	None Effect
FC* C->CI		0.005	Very Small Effect
PE* C->CI		0.018	Very Small Effect
SI* C->CI		0.016	Very Small Effect

EE-Effort Expectancy, FC-Facilitating Condition, PE-Performance Expectancy, SI-Social Influence, C-Conscientiousness, TMS- Top Management Support, CI-Continuance Intention.

Source: the researcher.

4.4.2.4.5 Summary of Findings

Having presented all the results including main, mediating and moderating effects in preceding sections, Table 4.19 summarizes the results of all hypotheses tested.

Table 4.20
Summary of Hypotheses Testing

Hypothesis	Statement	Finding
H1:	Effort expectancy will have positive relationship with Jordanian Nurses' Continuance Intention to use EHRs.	Supported
H2:	Facilitating condition will have positive relationship with Jordanian Nurses' Continuance Intention to use EHRs.	Supported
H3:	Performance expectancy will have positive relationship with Jordanian Nurses' Continuance Intention to use EHRs.	Supported
H4:	Social influence will have positive relationship with Jordanian Nurses' Continuance Intention to use EHRs.	Supported

Table 4.19 (continued)
Summary of Hypotheses Testing

Hypothesis	Statement	Finding
H5:	Top management support will have positive relationship with Jordanian Nurses' Continuance Intention to use EHRs.	Not Supported
H6:	Performance expectancy will mediate the relationship between Agreeableness and Jordanian nurses CI to use the EHRs.	Supported
H7:	Performance expectancy will mediate the relationship between Conscientiousness and Jordanian nurses CI to use the EHRs.	Not Supported
H8:	Performance expectancy will mediate the relationship between Neuroticism and Jordanian nurses CI to use the EHRs with people have low Neuroticism level.	Not Supported
H9:	Performance expectancy will mediate the relationship between Extraversion and Jordanian nurses CI to use the EHRs.	Not Supported
H10:	Performance expectancy will mediate the relationship between Openness to experience and Jordanian nurses CI to use the EHRs.	Supported
H11:	Conscientiousness will moderate the relationship between Effort Expectancy and CI to use the EHRs.	Not Supported
H12:	Conscientiousness will moderate the relationship between Facilitating condition and CI to use the EHRs.	Not Supported
H13:	Conscientiousness will moderate the relationship between performance expectancy and CI to use EHRs.	Supported
H14:	Conscientiousness will moderate the relationship between social influence and CI to use the.	Supported

4.5 Summary

In this chapter, the justification for using PLS path modelling to test the theoretical model in this study was presented. Following the assessment of significance of the path coefficients in addition to key findings of the study were presented. Generally, self-report techniques have provided considerable support for, first, the direct effect relationship between (effort expectancy, facilitating condition, performance expectancy, social influence, and top management support) on continuance intention to use. Secondly, the mediating effect of performance expectancy between personality dimensions (agreeableness, openness to experience, neuroticism, extraversion, conscientiousness) and continuance intention. Third, the moderating effects of conscientiousness on the relationship between effort expectancy, facilitating condition, performance expectancy, and social influence on continuance intention.

Particularly, the path coefficients revealed an insignificant negative relationship between top management support and continuance intention. While the path coefficients revealed a significant positive relationship between the following others: effort expectancy with continuance intention, performance expectancy with continuance intention, facilitating condition with continuance intention and social influence with continuance intention.

On the mediating effects of performance expectancy on the relationship between personality dimensions (agreeableness, openness to experience, neuroticism, extraversion

, conscientiousness) and continuance intention, PLS path coefficients revealed that of the five formulated hypotheses, two were significant. In particular, performance expectancy mediates the relationship between agreeableness and continuance intention to use and openness to experience and continuance intention to use.

Also, the moderating effects of conscientiousness on the relationship between effort expectancy, facilitating condition, performance expectancy, and social influence on continuance intention, the results revealed that of the four formulated hypotheses, two were significant. In particular, conscientiousness moderates the relationship negatively between performance expectancy and continuance intention, and positively between social influence and continuance intention. While in contrast conscientiousness has not moderating effect (insignificant) between: facilitating condition and effort expectancy with continuance intention.

The next chapter (Chapter 5) will then discuss the findings, implications, limitations, suggestions for future research directions and conclusion.

CHAPTER FIVE

DISCUSSION

5.1 Introduction

This chapter discusses the main research findings based on the data analysis done in the previous chapter. The discussions are done in relation to diverse theoretical positions and related empirical endeavours. Specifically, the parts of this chapter are presented as follows: section 2, a presentation of the findings of the study was done. Section 3 discussed the findings of the study in the light of underpinning theories and previous studies. Theoretical, methodological and practical implications of the study are discussed in Section 4. The limitations of the study are presented in line with suggestions for future research directions. In the final section, the conclusion is drawn.

5.2 Recapitulation of the Study's Findings

Over the last decade, information technology (IT) continuance arose as a prominent field of IS research (Bhattacharjee & Lin, 2015). A specified IT cannot be counted successful if its usage is not continuance by users who are anticipated to benefit from its usage (Bhattacharjee & Lin, 2015). IT acceptance and continuance are conceptually and temporally different behaviors, in that continuance can happen only after acceptance (first-time use) (Bhattacharjee & Lin, 2015). This study therefore brings to light the fundamental differences between acceptance and continuance behaviors. Hence, the main objective of this research is to examine continuance intention to use the EHR system in

the Jordanian public health sector among nurses with the use of the UTAUT 2. The study also highlighted post adoption issues in Jordan, an empirical area that has not been delved into before.

Additionally, top management support and the Five Factor Model was introduced to investigate their impact on nurses' continuance intention to use EHRs in the public sector. In general, this research has succeeded in enhancing the present understanding of the important determinants of continuance intention of EHRs in public hospitals in Jordan among nurses by providing answers to the following research questions namely;

- 1) Is there positive significant influence between effort expectancy, performance expectancy, social influence, facilitating conditions and top management support on continuance intention to use?
- 2) Does factor performance expectancy mediate the relationship between personality dimensions (conscientiousness, extraversion, neuroticism, openness to experience, and agreeableness) and continuance intention to use?
- 3) Does conscientiousness moderate the relationship between factors (performance expectancy, effort expectancy, social influence, and facilitating condition) and continuance intention to use?

Consistent with the research questions, a number of research objectives were formulated.

Primarily, the objectives were to:

- 1) Examine the factors (effort expectancy, performance expectancy, social influence, facilitating conditions and top management support) that influence the continuance intention to use.
- 2) Investigate the mediating effect of performance expectancy on the relationship between (conscientiousness, extraversion, neuroticism, openness to experience, and agreeableness) and continuance intention to use.
- 3) Investigate the moderating effect of conscientiousness on the relationship between (performance expectancy, effort expectancy, social influence, and facilitating condition) and continuance intention to use.

Accordingly, the researcher has developed a theoretical framework grounded on the UTAUT, ECT theories and FFM to investigate continuance intention to use EHRs among nurses in the Jordanian public hospitals. The variables examined in this study are effort expectancy, performance expectancy, social influence and facilitating conditions under the UTAUT theory. Also examined in the present study are, conscientiousness, extraversion, neuroticism, openness to experience, and agreeableness under the Five Factor Model (FFM). Finally, the researcher included top management support due to the important and crucial role it plays in the successful implementation of new innovation in any institution (Kwon & Xmud, 1987; Leonard-Barton & Deschamps, 1988; Jarvenpaa & Ives, 1991; Purvis, Sambamurthy & Zmud, 2001).

As mentioned in Chapter Three, data were gathered from nurses who work in Jordanian public hospitals and who are authorized to use the system. Initially 510 questionnaires were distributed while only 490 questionnaires were returned, representing 96% participation. However, only 473 were usable. Therefore, the effective response rate was 92%. Also, all latent variables employed in the current research have been validated to ensure their reliability and validity. The findings showed an acceptable level of reliability and validity to perform further analysis. The data were analyzed using the PLS version 3.0 to test the hypothesized associations in the structural model of the study. Of the three-alternative significance levels available for researchers, this study used the 0.05 level of significance as the cut off level for deciding to reject or accept the hypotheses.

Regarding the direct relationship between the exogenous latent variable and endogenous latent variables, the findings of this study indicated that out of 14 hypotheses, eight were supported and six not supported. The results of the PLS path model showed that effort expectancy, performance expectancy, social influence, facilitating conditions was significantly related to continuance intention. While, top management support was not significantly related to continuance intention.

On the mediating role of performance expectancy on the association between the exogenous latent variables and endogenous latent variables, results provided empirical support for two hypotheses. Specifically, performance expectancy was found mediate the relationship between agreeableness and openness to experience with CI to use. While performance expectancy did not mediate the relationship between neuroticism,

extraversion, and conscientiousness with CI to use. Additionally, results from the analysis shows that conscientiousness as moderator on the relationship between the exogenous latent variable and endogenous latent variables provided empirical support for two hypotheses, and two relationships were not supported. Specifically, conscientiousness moderated the association between social influence and CI to use. Also, conscientiousness moderated the association between performance expectancy with CI to use. While in contrast, conscientiousness moderated the relationship between effort expectancy and CI to use. Also, conscientiousness was not found to moderate the relationship between facilitating condition and CI to use.

5.3 Discussion

This section discusses the study's findings in the light of relevant theories and findings of previous research. The subheadings of the discussion section are structured according to the research questions. The first research question was whether the dimensions of (effort expectancy, performance expectancy, social influence, facilitating conditions and top management support) explain continuance intention to use EHRs among nurses in Jordan. Second research question was whether performance expectancy mediate the relationship between personality dimensions (conscientiousness, extraversion, neuroticism, openness to experience, and agreeableness) and the continuance intention to use EHRs among nurses in Jordan. Third research question was whether conscientiousness moderate the relationship between performance expectancy, effort expectancy, social influence, and facilitating conditions) and the continuance intention to use EHRs among nurses in Jordan.

5.3.1 The Influence of Effort Expectancy, Performance Expectancy, Social Influence, Facilitating Conditions with Top Management Support on Continuance Intention to Use

5.3.1.1 The Influence of Effort Expectancy on Continuance Intention to Use

The findings from the data analysis indicated that effort expectancy was found to have a positive significant relationship with continuance intention, and this is in support of H1. This result is in line with the prediction of the UTAUT (Venkatesh et al., 2011) in which it is indicated that system ease to use improves nurses' continuance intention to use EHRs after utilization. The result of this study entails that as EHRs is perceived as being easy to use, the higher the continuance intention of the nurses to continue use is expected.

A plausible reason for this finding can be adduced to the fact that always, nurses use a bulk of their work-time to carry out one-on-one patient care activities such as providing treatment, administering drugs and conducting clinical evaluations. It is also noted that nurses are not too keen, and eventually oppose the use of information systems because of the long additional time they spend on some not-so-important electronic data updates outside their usually busy schedules (Kirkley & Stein, 2004).

Hence, the need to design and implement an EHR system that is easy to use by the nurses cannot be further emphasized. When nurses recognize that the system is simple and easy to use, they easily adapt and familiarize themselves with its contents and the functionalities offered by the system, thus recognizing that the EHRs will help them as such. In essence, the level of effortlessness of use will affect nurses' awareness of EHRs.

Consequently, user friendly interface for EHRs vis-à-vis the connectivity of networks are mutually significant elements in the course of developing EHRs. More so, in view of the condition that the EHRs system is easy to use in providing care to patients, nurses will certainly have better never-ending intent to make use of EHRs.

5.3.1.2 The influence of Facilitating Condition on Continuance Intention to Use

Along with the first research question, the impact of facilitating condition found support for the presumed influence of facilitating condition on continuance intention to use EHRs in public hospitals in Jordan. That is, nurses believe that they have the resources and knowledge necessary to continue using EHR. This finding is in accordance with the UTAUT prediction (Venkatesh et al., 2011), which predicts that when nurses have the resources and knowledge necessary to use EHRs this will lead to improves nurses' continuance intention to use EHRs after utilization.

One explanation for this result is that, given the minimum adequate resources, nurses formed a positive attitude to engage in using the system. Nurses were able to evaluate the appropriateness of resources (relevant knowledge and assistance) during the use of the system. For example, when nurses had access to the minimum adequate resources and assistance than expected after usage, they experienced positive believes of facilitating conditions, which will, in turn, lead to continuance intention.

5.3.1.3 The Influence of Performance Expectancy on Continuance Intention to Use

This study was intended to determine the impact of performance expectancy on the continuance intention to use EHRs across hospitals in public health sector in Jordan. Consequently, in line with the first research question, the result of data analysis shows that the role of performance expectancy is supported. Performance expectancy is found to be positively significant with continuance intention to use. This result is in line with the prediction of the UTAUT (Venkatesh et al., 2011) in which performance expectancy improves the nurse's continuance intention to use EHRs in health public sector. This suggests that nurses tend to focus on how EHRs will help them in performing their jobs efficiently and in a more productive manner.

One possible explanation for this result is that nurse's capability to perceive patients' clinical history all through the whole period of care is important. This enables nurses to perceive that they have authority at their fingertips that will assist them to boost their eagerness for the system. Nurse's capability to observe the total picture is directly comparative to the level of information that is placed online by the healthcare facilities. This is on the condition that if healthcare facilities only places clinical records online, nurses will fail to feel the benefit of seeing the complete patient documentation accurately such as reviewing a radiology report, or any other care that is being offered by others.

This position is also predicated on the condition that if nurses see from the inpatient backdrop occurrences in an outpatient clinic, they will be capable of getting a complete outlook of the patient. Afterwards, this also assists in increasing the awareness as well as

perceptions between other clinical disciplines of nurses' tasks as well as contributions. The capacity to recognize the patient's medical history all over the entire care process of a patient leads to an improvement in the quality of care provided and by extension decrease in medical errors which reflects positively on nurse's performance and productivity. Thus, this will reinforce them to keep using the system.

Also, another important feature in EHRs is the expert rules capabilities, which permits EHRs to interrelate with clinicians in the process of patient care, providing warning messages vis-à-vis patient safety and excellence of care, thus will reflect on the health care services quality positively through reducing medical errors. Also, update on best nursing practices, as well as other information supporting nursing workflow without being excessively obtrusive. The expansion as well as improvement of expert rules permits EHRs to exponentially enhance the capabilities obtainable to nurses through paper documentation.

5.3.1.4 The Influence of Social Influence on Continuance Intention to Use

The findings from the data analysis indicated that social influence has significant positive effect on continuance intention to use EHRs in public hospitals in Jordan, and in support of H4. This result is in line with the prediction of UTAUT, but the finding of this study is contradicted with past researches (Venkatesh et al., 2011), which revealed social influence do not have impact on continuance intention. The results indicate that raising social influence of other nurses and the colleges form health care providers reinforce the nurse's intention to continue using EHR. The result of this study entails that nurses

perceiving certain important individuals to think it was valuable for them to continue use the EHR system. The study shows that the nurses are concerned by the impressions of other nurses.

Additionally, as the majority of nurses in this sample are women, there may be some gender issues associated with social influence. In fact, Venkatesh and Morris (2000) have suggested that this may be the overall case with women, and may change over time stating. They succinctly noted that, “women consider inputs from a number of sources when making technology adoption and usage decisions” (p. 129). However, it could also be characteristic of a nurse population, regardless of gender. This finding is confounded in this study, as nurses tend to have similar personality traits.

Research suggest that people who intend taking up the nursing profession as a career are noted to be kind, concerned, strong communicators, and with very good people-centered skills (Carpenter, 1995; Smith & Godfrey, 2002). Therefore, the opinion of people is critical to nurse’s decisions to adopt and use new systems. This should reflect in ways health organizations present and deploy EHR system. For example, they could focus on identifying champions for the systems and highlight on the system-savvy image between their colleges, thus reinforce nurses to continue to use EHRs.

5.3.1.5 The Influence of Top Management Support on Continuance Intention to Use

The examination of top management’ support role was one of the interests of the first research question. The researcher examined the role of top management support as a core component of this study. The result indicates that TMS does not significantly influence

nurse's intention to continue to use EHR. In another words TMS do not have influence on nurse's continuance intention to use EHR. In essence, the results show weakness of upper management support performance and do not provide the sufficient support for nurses to continue use EHRs. Evidently, the results obtained from this study contradicts the findings of previous works on intention to use (nearest concept to continuance intention) (Chen& Hsiao, 2012; Sargent, Hyland, & Sawang, 2012; Yang, Sun, Zhang & Wang, 2015; Gangwar, Date & Ramaswamy, 2015; Son, Lee & Kim, 2015; Yigitbasioglu, 2015; Nofal & Yusof, 2016).

One plausible explanation that can be proffered in view of this result is that the training and support provided by top management for the nurses before using the EHRs was inadequate. Interestingly, the training conducted for the nurses on the use of the system by the electronic health solution company lasted for only five days. Also, the nurses were not involved in the decisions on the workflow process as prescribed in setting-up of the system. Hence, producing a staff dedicated to closing the gap between nurses with IT, and establish a documentation committee volunteers to create nursing EHRs teams that will be responsible for managing front-line contact with all clinical staff throughout the system design, training, implementation, and IT support processes was not done. These steps will motivate nurses to engage better in system usage and reinforce them to continue using the system.

Unfortunately, Jordanian top management did not take in their considerations the previous notes. On the ground, top management ignored nurse's role involvement in

decisions about workflow in creating the program in Jordanian hospitals or contribute in system design to meet their needs to perform their work efficiently, which accordingly reflected negatively on their perception about top management support. Finally, the absence of incentives and compensation which play as an important method to motivate nurses. Thus, reflect negatively on their perception about top management role in their hospitals.

5.3.2 The Mediating Effect of Performance Expectancy Between Personality Dimensions (Conscientiousness, Extraversion, Neuroticism, Openness to Experience, And Agreeableness) and Continuance Intention to Use

In general, mediation seeks to reveal how a third variable influences the relationship existing between two other variables and it basically explains a process or mechanism e.g. how a stimulus converts into response (MacKinnon, Fairchild, & Fritz, 2007). According to Hair et al. (2014), based on theory, the most prevalent reason for introducing a mediation in an already existing relationship is basically to explain why the relationship between an exogenous and endogenous construct exists (p.36). For example, Bagozzi, Baumgartner and Yi (1989) rationally raised the concern questioning how nurse's attitude which is a mental event can influence their behavior which is an observable action. They however opined that a mental event automatically does not turn into action in general without having achieved the state of preparedness/willingness/motivation of nurses to perform that action.

In this section, five hypotheses (H6, H7, H8, H9, H10) concerning mediating effects of performance expectancy on the relationships between the five exogenous variables

(neuroticism, extraversion, openness, agreeableness and conscientiousness) and one endogenous variable (continuance intention) were tested. The results of mediation effect established two hypotheses (H6, H10) were found to be significant. The next two sections discuss the results in detail.

5.3.2.1 Significant Mediation Effects

The result of this section identifies that two hypotheses (H6, H10) have been established to be significant. Particularly, significant effect has been established between (1) agreeableness and continuance intention; (2) openness to experience and continuance intention.

5.3.2.1.1 The Mediation Effect of Performance Expectancy on the Relationship Between Agreeableness and Continuance Intention

Hypothesis (H6) state that a mediating influence of performance expectancy between agreeableness and continuance intention relationship in a health public sector context among nurses, was supported. Though, it was recognized as a mediation situation wherein agreeableness in addition to affecting continuance intention indirectly through performance expectancy, also significantly influenced continuance intention directly which is consistent with the submissions of Barnett et al., (2015) which found agreeableness significantly affect intention to use (intention to use the nearest variable to continuance intention). As such, it was found that performance expectancy mediates the relationship between agreeableness and continuance intention towards considering nurses continue use of the EHRs. It further means that if nurses are supportive, accommodating, reliable, unselfish, hopeful, possess stronger agreeableness, they will demonstrate a

higher degree of conformity to operational as well as procedural processes (Higgins, 1996) resulting in stronger performance expectancy.

This will eventually lead to a positive continuance intention to use EHRs among nurses in the Jordanian health public sector, as empirically supported in this study. Furthermore, agreeable nurses are more likely to be accommodating and cooperative in the hope of considering the use of a new technology. Hence, their attention is now based on positive and cooperative dimensions of the technology rather than those factors that may impede performance (Devaraj et al., 2008). Consequently, agreeable nurses hold a positive continuance intention to use EHRs in the Jordanian health public sector.

5.3.2.1.2 The Mediation Effect of Performance Expectancy on The Relationship Between Openness to Experience and Continuance Intention

Secondly, hypothesis (H10) that specifies a mediating influence of performance expectancy between the openness to experience and continuance intention relationship was also supported, wherein the effect was recognized as mediating. It was seen that openness to experience also possessed a direct influence on continuance intention of nurses which in line with Punnoose (2012) and Devaraj et al. (2008) which found openness to experience significantly affect intention to use (intention to use the nearest variable to continuance intention). It further means that if nurses energetically search for new in addition to alternative information with a greater level of intellectual interest, possess stronger openness to experience; curiosity has been revealed to affect individuals to make effort to new behaviours in a number of settings (Malone, 1981a; 1981b;

Loewenstein, 1994; Kashdan, Rose, & Fincham 2004; Reiss, 2004). Individuals with high degree of curiosity are found to be intrinsically stimulated to pursue as well as experience innovative activities (Deci, 1975; Deci & Ryan, 1992; Kashdan & Fincham, 2002).

Research suggest that people who intend taking up the nursing profession as a career are noted to be kind, concerned, strong communicators, and with very good people-centered skills (Carpenter, 1995; Smith & Godfrey, 2002). Previous IS studies have constantly established that intrinsically encouraged individuals are frequently more expected to use a new technology (Venkatesh, 1999; 2000; Venkatesh & Speier, 1999; Van der Heijden, 2004). Therefore, nurses who are open are frequently attracted to use EHRs to please their inquisitiveness and imagination in addition search for new experiences. This results in stronger performance expectancy, which will ultimately lead to a positive continuance intention to use EHRs among nurses in the Jordanian public health sector.

Furthermore, nurses who are characteristic of openness are eager to attempt novel as well as variety of things. They energetically search for novel, different experiences in addition to value change (McCrae & Costa, 1997). Therefore, persons who have greater openness have the possibility to grasp positive attitudes as well as cognitions in accepting work-associated technology since their tendency to hold novel approach to work; they are less endangered by the transformation implicit in accepting technology. This sweltering desire to accomplish a myriad of activities is actually the prime purpose of openness to experience. This eventually positively shapes their perception into using a certain technological system. Resulting in stronger performance expectancy, which will

ultimately lead to a positive Continuance Intention to use EHRs among nurses in the Jordanian health public sector.

5.3.2.2 Insignificant Mediation Effects

The result of this section noted that three hypotheses (H7, H8 and H9) were found has not to be significant. Particularly, performance expectancy was found does not mediate the relationship between (1) conscientiousness and continuance intention, (2) Extraversion and continuance intention, (3) neuroticism and continuance intention.

5.3.2.2.1 The Mediation Effect of Performance Expectancy on The Relationship Between Conscientiousness and Continuance Intention

Hypothesis H7 which stated a mediating influence of performance expectancy between the conscientiousness and continuance intention relationship was rejected and there is no mediating effect recognized. Though, it was recognized as no mediation situation wherein conscientiousness in addition insignificantly affecting continuance intention indirectly through performance expectancy, but significantly influenced continuance intention directly which is consistent with Barnett et al. (2014) which found conscientiousness significantly affect intention to use (intention to use the nearest variable to continuance intention). Conscientiousness personality reflects an inherent enthusiasm to accomplish, perform at a higher level, and in addition to taking actions that enhances individuals' work performance (Devaraj et al., 2008). Because individuals who are conscious have a strong sense of purpose in addition to being accountable and meticulous (George & Zhou, 2001). This result demonstrated that conscientious nurses have the possibility of

accepting the technology, as well as shape the positive viewpoint about continuance intention to use EHRs.

The mediating influence of performance expectancy in the conscientiousness-continuance intention relationship was rejected and there is no mediating effect that was recognized, this was quite surprising. One plausible explanation can be suggested for this result. Time is important and critical for nurses. Consuming more time on documentation means less time for patients. This eventually leads to decreased quality of health services and inhibition in nurse's performance towards patients.

Presently majority of the nurses' routines are congested, and in addition to the large number of patients they are supposed to be providing care for on a standard shift. Apart from a heavy patient load, nurses are required to manage the growing populations and more multifaceted and sophisticated records demands. The consideration of including additional responsibility to an existing frantic day is capable of giving intimidating impression. Nurses are frequently under pressure to perform their job on a daily task; frequently within infeasible time frames, compounding more pressure to make use of clinical technology, which is not constantly 'user friendly,' can become time consuming.

Nurses are of the opinion that they are to some extent carried away from the significant responsibilities as nurse for related administrative work-roles. Nurses do not refuse to continue to use the system due to system itself. The nurses oppose additional workload to their daily job. An important point to discontinue using possibly comes down to the

nurses' apprehension that online charting consumes additional time compare to paper charting. Therefore, nurses believe EHR inhibit their performance to perform in high level. Thus, performance expectancy did not mediate the relationship between conscientiousness and continuance intention.

But on other hand, nurses touched the benefits and advantages of EHRs through nurse's capability to identify patient's medical records across the whole continuum of care. They also have the power at their fingertips to help them increase their enthusiasm for the system. In addition, nurse's capability to view the whole picture is directly proportional to the level of information an organization puts in. Access to clinical documentation online enables nurses to get a holistic view of patients as reflected in giving better medical diagnosis and decreased medical error rate. Hence, these facts reflect that conscientious nurses accept the EHRs, and form the positive beliefs about continuance intention to use EHR.

Furthermore, another explanation of this result is possibly due to workload generated from shortage of nurse's phenomena. Workload can encourage stress for the reason that the level of work cannot be achieved restfully, due to the complexity of the work, or because the work become unsuccessful to make use of a worker's ability as well as experience (Katz & Kahn, 1978). Stress occurs when an environmental demand exceeds the natural regulatory capacity of an organism, in particular, situations that include unpredictability and uncontrollability (Koolhaas et al., 2011).

Similarly, the European Union defined work-associated stress as a worker's experience of not being able to manage or have power over the demands of the work settings (Milczarek, Schneider, & González, 2009). On the condition that long-lasting (prolonged), stress can have negative psychological (such as nervousness, depression) in addition to physical (such as headache, gastrointestinal related issues) effect (Nixon, Mazzola, Bauer, Krueger & Spector 2011; Ganster & Rosen, 2013). Workload is not an intrinsic asset of a job, but rather it surfaces from the interface between the requirements of a task, and thus summarizes the influence of many factors in addition to the objective demands imposed by the task (Hancock & Chignell, 1986).

In a study by Hart and Staveland (1988), the operator can be affected by the perceived job demands following a cognitive assessment of the nature of job, the setting where it occurs, and social, as well as organizational factors that can interrelate as stressors. The level of perceived mental stress is subject to operators' characteristics such as attitudes, motivation, achievement level, skills, knowledge, expertise, and physical conditions (Megaw, 2005). The interface between task demands as well as operator's characteristics result to mental stress or tension, upsetting the performance with regards to reliability, accuracy in addition to efficiency.

The assessment of the performance result, subsequently affect the perceived workload in relation to frustration and resources reallocation. As previously argued in this study, presently majority of the nurses' routine are loaded, in addition they must care for excessive number of patients in any specified shift. Apart from a heavy patient workload,

nurses are obligated to deal with growing sensitive populations, and compounded records requirements.

The consideration of including additional job to an existing uneasy day can rightly seem intimidating. The interaction connecting EHR job demands as well as nurse's individual characteristics perhaps causes a mental stress and tension, affecting their performance with regards to reliability, accuracy in addition efficiency as well as increase stress which is already exist in nursing profession. According to Chiorri, Garbarino, Bracco and Magnavita (2015) personality characteristics of the Five Factor Model play a significant function in worker's reaction to workload which is capable create stress and anxiety.

Conscientiousness personality replicates an inherent enthusiasm to attain, as well as perform at a high degree, in addition take actions to enhance individuals' work performance (Devaraj et al., 2008). But increasing the level of stress and anxiety which generated from adding EHR tasks to an already frantic day, affecting nurse's performance with regards reliability, accuracy as well as efficiency. This eventually leads to decreased quality of health services and inhibition in nurse's performance towards patients. Thus, performance expectancy did not mediate the relationship between Conscientiousness and Continuance Intention.

5.3.2.2.2 The Mediation Effect of Performance Expectancy on The Relationship Between Extraversion and Continuance Intention

Hypothesis H9 noted a mediating influence of performance expectancy between the extraversion and continuance intention relationship was rejected wherein the effect was

recognized as not mediating. It was also noted that extraversion possessed a direct influence insignificantly on continuance intention of nurses to use EHRs which is consistent with Barnett et al. (2015) which found extraversion insignificantly effect intention to use (intention to use the closes variable to continuance intention).

Extraversion personality reflects a propensity to energetically engage with the social world (Landers & Lounsbury, 2006). Since conscientious people have a sociability, exuberance, energy and positive emotion, extroverts likewise enthusiastically search for information to share with others, apart from that, they are action-oriented individuals who are more enthusiastic to attempt to thrilling chances (John & Srivastava, 1999; Funder, 2001; McElroy, Hendrickson, Townsend & DeMarie, 2007). Extraverted personalities are predominantly high performers in their job and a social element, like management as well as sales (Barrick & Mount, 1991). Extraversion is also linked with efficiency in a team environment as well as better training ability (Barrick et al. 2001).

Extroverts usually have a preference for face-to-face, rather than media-based communications and usually have a propensity to keep away from interactions with physical objects for interaction purposes (Landers & Lounsbury, 2006). These findings reflect that extroverted nurses are less likely to accept technology that inhibit their collectivism and increase individualism like EHR. EHRs consuming more time on documentation mean as well less time for patients lead to decrease quality of health services and inhibition in nurse's performance and nurse's social activity with other nurses and their patients , Thus, extraversion possessed did not influence significantly on

continuance intention of nurses to use EHRs and performance expectancy did not mediate the relationship between Extraversion and Continuance Intention and form the negative beliefs about Continuance Intention to use EHRs.

5.3.2.2.3 The Mediation Effect of Performance Expectancy on The Relationship Between Neuroticism and Continuance Intention

Hypothesis H10 which stated a mediating influence of performance expectancy between the neuroticism and continuance intention relationship was rejected and no mediating effect was recognized. It was seen that neuroticism possessed a direct influence insignificantly on continuance intention of nurses to use EHRs which is in line with Barnett et al. (2015) which found neuroticism insignificantly effect intention to use (intention to use the closes variable to continuance intention). Neurotic people are expected to perceive technological advancement in their work as intimidating as well as demanding in addition, they have common negative thinking processes when taking into account technological advances (Devaraj et al., 2008).

Since neurotic people have a strong sense of stress, nervousness, anxiety, hopelessness, paranoia and depression (Venkatesh, Sykes & Venkatraman, 2014). It will be replicated negatively to both life as well as work circumstances, and will generalize to beliefs about the perceived value of technology (Devaraj et al., 2008). Also, these findings reflect that neurotic personalities are more expected to perceive technological development in their work as unfriendly as well as demanding, in addition have commonly unenthusiastic

thinking processes when considering it (Devaraj et al. 2008), thus form the negative beliefs about continuance intention to use EHRs.

A similar explanation for this result has been suggested earlier where it was noted that individuals who go into the nursing field are caring, empathetic, strong communicators, and have high people skills (Carpenter, 1995; Smith & Godfrey, 2002). In addition, unlike other type of employees, nurses are generally faced with certain occupational safety and health hazards in view of the demanding nature of their work environments and due to the high likelihood of working in unsafe areas and the high risk of violence.

Invariably, they are exposed to emotional, psychological and physical stress that might have arisen as a result of threats to their health and safety. This, by extension also affect their responsibility for saving the lives of others, sudden shifts from boredom to alertness and mobilized energy, exposure to people in pain or distress. The work environments became a part of nurse's daily work therefore nurses developed some mechanisms to adapt with it to be able to perform and accomplish their duties, thus, performance expectancy was not significantly able to mediate the relationship between neuroticism and nurse's continuance intention.

5.3.3 The Moderating Effect of Conscientiousness Between UTAUT Dimensions (Effort Expectancy, Facilitating Condition, Performance Expectancy and Social Influence) and Continuance Intention to Use.

In general, a moderator can be a continuance or categorical variable that affects the direction and/or strength of the relationship between a predictor (independent) variable

and a criterion (dependent) variable. In a correlational framework, a moderating effect is said to occur in situations where the direction of the correlation changes. Also, moderator-interaction effect would be said to occur if a relation is significantly reduced rather than being re-versed, for example, if we find no difference under the private condition (Baron & Kenny, 1986).

In this section, four hypotheses (H11, H12, H13, H14) on the moderating effect of conscientiousness on the relationships between effort expectancy, performance expectancy, social influence and facilitating condition, and continuance intention were tested. The results of moderation effect established two hypotheses (H13, H14) were found to be significant. The next two sections discuss the results in detail.

5.3.3.1 Insignificant Moderating Effects

5.3.3.1.1 The Moderating Effect of Conscientiousness on The Relationship Between Effort Expectancy and Continuance Intention to Use

Hypothesis 11 (H11) state conscientiousness will moderate the relationship between effort expectancy and CI to use the EHRs was not supported. The absence of moderating influence of conscientiousness denotes that Jordanian nurses with variance level of conscientiousness do not show any significant impact on the relationship between the nurse's effort expectancy and continuance intention relationship. It can also be said that nurses with high/low conscientiousness in Jordanian health public sector behave similarly while forming continuance intentions deriving from the strong motivation emanating as a result of their effort expectancy formed towards EHRs in public healthcare sector.

In explaining a plausible reason for this result, it is in place to posit that individuals who are conscientious tend to be naturally poised to achieving anything they set to do. Their levels of performance are usually high, in addition to taking actions aimed at improving their job performance especially with the use of the EHRs system. A striking feature of conscientious persons are, amongst others, the ability to control ones' self, which is revealed in their quest for achievement, order, and persistence (Costa et al., 1991). According to Barrick and Mount (2000), these qualities are essential parts of intrinsic motivation at work and high levels of job performance.

Additionally, it is posited that the ever-present nature of this variable in arguing that it is difficult to consider a job in which the traits associated with the conscientiousness dimension would not contribute to job success (Barrick & Mount, 1991 p. 21). This is on the basis that conscientiousness is an indication of intrinsic motivation targeted towards improved work performance. Hence, conscientious nurses were more likely to carefully consider whether EHRs provides an opportunity to further on-the-job successes more than the level of ease of use of the system, and then act based on that assessment. These nurses also gave priority to improving their job performance through using EHRs. Thus, conscientiousness was found not to moderate the relationship between effort expectancy and CI to use the EHRs.

5.3.3.1.2 The Moderating Effect of Conscientiousness on Relationship Between Facilitating Condition and Continuance Intention to Use

Hypothesis 12 (H12): Conscientiousness will moderate the relationship between facilitating condition and CI to use the EHRs was not supported. Conscientiousness was suggested to play an amplifying role in its effect of facilitating condition. This view was grounded on the idea that a high level of conscientiousness entails an inherent enthusiasm to accomplish, as well as accomplish tasks at a high level, and also in taking actions that enhances the job performance of individuals (Devaraj et al., 2008).

The above position is predicated on the notion that conscientious people have a stronger sense of purpose and will, they are accountable as well as meticulous (George & Zhou, 2001). Therefore, conscientiousness will be strengthening the relationship between facilitating condition and continuance intention because conscientious nurses will gain the resources and knowledge necessary to use EHRs to perform in high level, which will lead to improves nurses' continuance intention to use EHRs after utilization.

But the results revealed conscientiousness moderating effect was insignificant on the relationship between facilitating condition and CI to use the EHRs, one explanation is as mentioned before is that people who are conscientious have the natural tendencies to perform at a high level, and take actions to improve their job performance through using EHRs. Therefore conscientious nurses did not perceived that their hospitals provided the enough resources and knowledge to perform at a high degree, due to poor training provided by EHS company, lack of sufficient number of devices and variety of devices availability to access to EHRs, shortage in nurses number, and system consume a lot of

time of nurses time to complete documenting, in another words nurses were not satisfied due to their feel of frustration to level of resources and knowledge provided which did not permit to them to perform in high level.

5.3.3.2 Significant Moderating Effects

5.3.3.2.1 Conscientiousness Moderating Effect on The Relationship Between Performance Expectancy and Continuance Intention

Hypothesis 13 (H13): Conscientiousness will moderate the relationship between performance expectancy and CI to use EHRs was seen supported. Conscientiousness was suggested to play an amplifying role on the effect of performance expectancy. This view was based on the idea that persons who are conscientious usually have the tendency to perform highly, attain greater heights, and in addition to taking actions that boost their job performance. The characteristic of conscientious personality is self-discipline replicated in demand for attainment, order, as well as perseverance (Costa et al., 1991). Accordingly, Barrick and Mount (2000) noted that these characteristics are basic element of inherent motivation at work as well as high degree of job performance.

Barrick and Mount (1991) highlighted the ever-present nature of this element when they opined that it is difficult to note a job that is uncharacteristically connected with the conscientiousness measurement fail to add value to job accomplishment (p. 21). Therefore, since conscientiousness reflects a fundamental drive to enhance job performance, it is expected that conscientious people possibly cautiously believe whether technology offer chances to promote on-the-job attainment as well as react based on that

evaluation; conscientiousness is connected to the depiction of intentions. Furthermore, this dispositional predisposition will boost or reduce the level to which perceived value determines the intention to use technologies. Specifically, individuals with enormous conscientious personality have high chances cautiously consider approaches in which the use of technology can permit them to be more effective as well as perform at a higher degree at work. On the condition, this processing lead to positive beliefs about technology— the technology will promote successful work performance—afterward conscientiousness will enlarge those beliefs as well as boost behavioral intentions.

But the results show conscientiousness moderating effect negatively influence the link between performance expectancy and CI to use the EHRs, one explanation is due to conscientious nurses have the believe that using the system did not assist them to achieve improvements in job performance efficiently and in a more productive manner because nurses are commonly under high demands to perform everyday jobs within unfeasible period, adding pressure to make use of clinical technology, which is take too much time, also lack of sufficient number of devices and variety of devices availability to access to EHRs which will reflect on their performance by preventing them to perform at higher degree, as well as take actions to enhance persons' job performance. Thus, conscientiousness moderating effect negatively influence the link between performance expectancy and CI to use the EHRs.

5.3.3.2.2 Conscientiousness Moderating Effect on The Relationship Between Social Influence and Continuance Intention to Use

Hypothesis 14 (H14): Conscientiousness will moderate the relationship between social influence and CI to use the EHRs was seen to be supported and also consistent with the finding of Devaraj et al. (2008) who noted that conscientiousness moderate's relationship between subjective norms (social influence) and intention to use technology (nearest variable to continuance intention). Conscientiousness interacts with social influence in determining continuance intentions. Since conscientious individuals are basically stimulated to be successful, conscientious nurses cautiously considered and weighted the opinions of depending on others health provider's colleagues as they consider whether to use EHRs. Conscientious nurses believe that majority of others think that the EHRs must be utilize, therefore they formed stronger positive beliefs about continuance intention to use EHRs.

5.4 Contributions of the Present Study

5.4.1 Theoretical Contributions

The current study makes several important theoretical contributions to the literature on health management information system and innovation post usage. It contributes to the Health Information System literature through incorporating post-adoption of health information system with personality traits to predict nurse's attitudes, cognitions, and behaviours to use EHRs. Also, investigate the role of top management support in health information system post adoption as well as its impact in developing country such as Jordan. To the best of knowledge of the researcher, the present study is the first to either

empirically or theoretically incorporate the five-factor model (FFM) of personality, top management support and post adoption of health information system in explaining phenomena.

As stated earlier in the literature review chapter of this report, notwithstanding that a great deal of attention has been directed towards the adoption (pre and post)/usage of several IS/IT applications, very little has been related specifically to the Health Information System context. Consequently, the current study enhances this knowledge by suggesting a broad conceptual model grounded on strong models and theories (UTAUT theory, FFM model and ECT theory) that can be used to explain how several interrelated factors influence nurses' decisions in public sector hospitals to use EHRs. By doing so, the explanatory and predictive power of merging the UTAUT theory, FFM and ECT increases and produces findings that serve both practitioners and academicians.

Furthermore, the current study was designed to fill the gap in Health Information System post adoption literature by incorporating five-factor model (FFM) of personality which a dominant theory used in psychology, ECT theory and UTAUT theory which are two main theories used in IS study to understand the attitudes and beliefs of nurses, and examine the effect of the nurse's personality on continuance intention to use technology in health care context from the perspectives of UTAUT.

Furthermore, in investigating the effect of top management support on nurse's continuance intention to use EHRs, the present study draws attention to the fundamental differences between acceptance and continuance behaviors. Information technology

acceptance and eventual use is critical to obtaining its full advantage. However, from a theoretical point of view, little empirical endeavours have made a difference between individuals' pre-adoption and post- adoption (continued use) beliefs as well as attitudes. This difference is significant in recognizing, as well as managing this process over time.

The researcher investigated the relationship between personality and the UTAUT for a number of reasons. First, the use of the UTAUT is well-noted and has been vastly applied in IS research (Venkatesh et al., 2012). Besides, the fundamental idea essential to the user acceptance model reserves important attention on individual response to technology, with the role of personality plausibly noted. Lastly, the Theory of Reasoned Action that is noted to be the base for technology acceptance framework, openly integrates personality as an external factor influencing individual's beliefs.

In addition, and in relations to the above, the Expectation-Confirmation Model (Bhattacharjee, 2001) provides a successful conceptualization of user continuance intention to use which is comparable to how attitude to the system has been evaluated, however it has not been applied with the TAM or the UTAUT (Maillet et al., 2015). Sequel to the above, and based on previous empirical submissions (Maillet et al., 2015; Venkatesh, Thong, Chan, Hu, & Brown, 2011; Tao Zhou, 2011; Bhattacharjee, 2001), this study fill this gap by examining the nature of such use to sustain users' activities as well as sense making of the information. In view of this, this study uses continuance intention in UTAUT model instead of intention as a dependent variable.

In addition, this study offers strong empirical evidence for the applicability of integrating UTAUT, ECT and FFM to the context of health information system, as a guide to understand the individual continuance intention to use health information system in general, specifically EHRs and its impact. It offers researchers a validated model of health information system continuance intention and impacts that identifies significant antecedents of continuance intention. As such, the current study confirms the usefulness of the UTAUT theory, ECT theory and FFM model for individual level research. Combining these frameworks could be beneficial to authors interested in studying health information system continuance intention at an individual level.

In further contributing to the present study, top management support (TMS) was introduced as an independent variable, and due to its crucial role in the successful implementation of new innovation in institutions (Kwon & Xcmud, 1987; Leonard-Barton & Deschamps, 1988; Jarvenpaa & Ives, 1991; Purvis, Sambamurthy & Zmud, 2001). The level of commitment of top management and their attendant active engagement in the development and execution of technological systems in an organization guarantees continuance intention to use of EHRs by nurses. Where there is a lack of management's support to motivate and influence the nurses about the capabilities of EHRs, the continuance intention to use the EHRs might be challenging (Terry et al., 2008; Thakur et al., 2012).

The researcher examined IS continuance intention in the context of EHRs technologies among nurses in addition integrated important contextual belief in extending the IS continuance framework. In so doing, the researcher acted in response to the call by IS researchers who advocated for empirical examinations into how individuals use technological systems (Orlikowski & Iacono, 2001). Understanding the environment is very critical especially in theory development other empirical frontiers (Johns, 2006; Alvesson & Kärreman, 2007). The findings revealed that the environment can be significant for recognizing important factors. In sum, this study showed the significance of the UTAUT, ECT as well as the FFM in IS studies. It also further boosts the knowledge of post-adoption elements as well as behaviours, added value to the increasing body of knowledge on technology adoption with the contribution to study emphasizing the importance of setting in IS researches.

The results of this study were consistent with the prediction of the UTAUT, ECT and FFM theories, although not all covariates were significant. Specifically, previous studies focused on the relationship between effort expectancy, performance expectancy, facilitating condition, as well as social influence on continuance intention (Venkatesh, Thong, Chan, Hu, & Brown, 2011; Tao Zhou, 2011). Unfortunately, the link between top management support on continuance intention seem to be neglected. Thus, a key component of this study focused on the relation between TMS and CI. Also, investigated in this study is mediation effect of performance expectancy in the relationship between FFM variables and continuance intention, which was seen to be neglected. Therefore, this study focused on this relation. Finally, this study investigated the moderation effect

of conscientiousness in the relationship between effort expectancy, performance expectancy, facilitating condition, and social influence on continuance intention which seemed was neglected.

5.4.2 Practical Implications

The findings also provide numerous important implications to healthcare system leaders and managers, government agencies, health information system consultants or vendors, and the hospitals. The findings of this study may also contribute to technology uptake in the health industry at individual and organizational level. Health information knowledge can aid hospitals on an uncountable number of benefits and functionalities in the form of effective healthcare services delivery, improved management functions, reduced overhead and operational costs, better sickness management and less (Goldzweig, Towfigh, Maglione, & Shekelle, 2009; Herricck, Gorman, & Goodman, 2010; Buntin, Burke, Hoaglin, & Blumenthal, 2011).

The empirical results of this study offer ample evidence for corroborating the relationships identified among the constructs of this study along with the mediating and moderating effects. These relationships have been proved or disproved statistically and explained in previous sections. This section draws attention of managers and offers practical implications by highlighting the overall perception and attitude of nurses with regard to EHRs usage in hospitals. The results of this study add value to practice in significant ways. The study identifies numerous elements that can influence continuance intention.

Unfortunately, the fact that support for the influence of top management support on continuance intention was not found in the present study, which is against the literature review, it is however important to note some implications. To ensure the adoption of the EHRs by the nurses, top management in the healthcare industry needs to be actively involved in the planning and the implementation of technological systems within hospitals (Thong et al., 1996).

Boonstra and Broekhuis (2010) argued that the belief of management in the workability of the HIS and the level of support it shows will certainly influence the adoption of EHRs by healthcare staff. If top management does not support and eventually motivate employees to continuance use the HIS, the adoption and use of EHRs might become challenging (Terry et al., 2008; Thakur et al., 2012). On another note, it has been posited that lack of management support can lead to the unfulfilling of the realistic needs and requirements for their staff and the job-tasks and effectively discontinuance use of technological systems (Davidson & Heslinga, 2006; Ludwick & Doucette, 2009). Also, the character of top managers plays a critical role in encouraging the adoption of technological systems in healthcare institutions (Yusof et al., 2008; Cresswell & Sheikh, 2013; Escobar-Rodríguez & Romero-Alonso, 2013) and her/his knowledge and familiarity about the HIS can minimize the uncertainty about those innovations and as a result encouraging its implementation by the organization and its adoption by the staff (Thong & Yap, 1995; Thong, 1999; Abdul Hameed & Counsell, 2012).

Top management support is an intervening element affecting continuance intention in EHRs technology usage in health sector settings. An important issue encountered by managers in charge of implementing IS innovations is developing successful as well as well-organized strategies for effective implementation (Sharma & Yetton, 2003; Markus & Keil 1994; Sauer 1993). Top manager's behaviours have a direct effect on EHRs implementation. That is actions speak louder than words. The findings of this study offered fundamental understanding for choosing an efficient as well as effective portfolio interventions to fit the need of EHRs implementation. First, records like organizational bulletin possibly will be helpful for communicating evidence.

However, actual transformation as well as vision sharing was certainly affected by practical, active relational behaviour's by managers. This is an indication that top managers are required to energetically display helpful actions (for example, search for feedback, address nurse's concerns in addition to questions) to make sure strategic visions are internalized. Secondly, the results revealed that effective implementation was more expected to take place as soon as top managers energetically sought out as well as pay attention to feedback from end users with middle managers. In so doing, their helpful behaviours are adjusted accordingly. Because significant system implementations have a propensity to introduce predictable as well as unforeseeable organizational transformation (Davenport, 1998; Markus & Tanis, 2000), top managers are required to adjust their level as well as content of support to match what is required, instead of depending exclusively on standardized training as well as technical assistance programs.

The two points earlier noted can be achieved via enlisting nurses in every stage of the organizational change process. The nursing staff needs to be involved in decisions concerning workflow, in developing programs. This leads to building staff loyalty and by extension bridging the gap between nurses and IT use. Furthermore, it is critical to establish documentation committee made up of volunteers, which can be used to build nursing EHRs team to run front-line contact with all clinical staff. This can be done from the on-set of the system design, training, implementation, as well as IT support processes. These steps will motivate nurses to engage better in system usage and reinforce them to continue using the system. Many business reports indicate the utilization of EHRs as a requirement to enhance patient safety as well as decrease medical mistakes which directly influence the quality of health services.

Thus, designing a user-friendly system that does not consume nurse's time and helping them to perform better and increase their productivity is critical. If nurses note that using EHRs enhances their performance, it will eventually increase their productivity, and decrease medical error without adding new work burdens to them, and by extension reinforce them to keep using the system. Unfortunately, Jordanian top management did not take note of the above position. In the facilities, the results obtained proves that top management ignored nurse's role in decisions concerning workflow, in developing programs and/or in activities that makes them add value to systems that should help them perform their tasks successfully. This stance of top management is a plausible reason that greatly skewed nurses' perception to the negative.

Furthermore, the result showed the significance of ensuring top manager's visibility all over the whole EHRs implementation process. Top managers need not presume that employees have understanding of their support. However, they should openly show their will-power, vision, as well as positive reception through a stable implementation of tangible action and communication (Fox & Amichai-Hamburger, 2001). The above point can be attained through interaction specifically focusing on the big picture. Also, management should offer incentives for a job well-done, which is lacking in public sectors in Jordan. In as much as organizations encourage professionalism, for nurses to function effectively, incentives and compensation plays a key role in ensuring such. This further enhances the image of top management among the nurses.

By implication, nurses get serious with the use of the system and remains committed thereafter. Another key point of this study is that it also proves that solid training as well as support are important strategies as well. The study also provides nurses an apparent understanding of the continuum care and how they are matched. The study showed the significance of information systems and their capabilities all over the continuum of care in order for nurses to have a comprehensive view of how they add value to the use of the electronic health record, in addition to the bigger picture of the patient's care. This is important to help nurses involved in the EHRs. Nursing supervisors and management personnel need to build a functional system that will practical help as well as improve nurse's workflow, unlock means of communication, as well as open doors for functional information as a top preference, in addition to a well-designed, automatic system interface.

Besides, this study offers sufficient justification to engage nurses in the design as well as development process, gathering their response on how to guarantee that the interface sustains the workflow. In real terms, top management did not provide sufficient training for nurses before using the EHRs, training program was only five days provided by electronic health solution company which was designed to teach them how to utilize the new system. Thus, reflect negatively on their perception about top management role in their hospitals.

Fourth, the research recommended that management should utilize methods to handle users who are at divergent stages of 'readiness' (Roberts, Jarvenpaa & Baxley, 2003). For instance, users who are before now positive about implementation majorly require top management to offer needed resources (such as information technology support and training) in order for them to successfully master the novel technology in addition to relating it to their jobs. However, users who are unwilling required better support in terms of resource from top managers. They should likewise perceive their leaders as extremely helpful to the execution as well as successfully disseminating their vision for the reason as well as advantage of the system.

Fifth, top managers ought to diversify their leadership types according to resource availability, modify management, as well as vision sharing. In particular, TMS resources protect essential resources to sustain the achievement of the implementation. TMS change reduce opposition while cheering, rewarding, as well as helping users to surmount

information difficulty. TMS vision draw closer middle manager buy-in (Dong, Neufeld, & Higgins, 2009).

Hence, top management will garner nurses' continuance intention to use of technology, it is significant to distinguish as well as tackle the difficulty they face, to assist them identify the advantage of undertaking such a huge transformation, as well as connect them about the concept in the long run, EHRs will facilitate them to enhance the value of care delivery. With ongoing studies with regards to the above positions, nurse leaders will keep on enhancing the collective awareness of contributing factors, as well as build up even more effective plans to earn nurses sustained continuance intention to use the system.

Consequently, it can be summarized that the findings of the present research affirm that understanding the significance of EHRs by top management as well as the level of their participation in EHRs execution will boost nurse's possibility to continue to use EHRs. Managers require working intimately with end users to direct, discuss, win them over, inspire, as well as help them in implementing EHRs. Management support is recognized to be important for reconceptualising work processes in addition for transforming existing routine as well as processes that are important in strengthening nurses' constant usage of EHRs.

On the other hand, putting into practice important steps being a component of a major transformational management program smoothens the process for nurses. It also assists

them to make EHRs more attractive, as well as stimulating nurses to identify the value suggestion that the system provides. Since the system is a critical purpose of organizations, managements need to offer nurses the reason to embrace EHR in addition to strengthening communication throughout training processes in addition to incentives and compensation for job well-done.

Furthermore, some nurse's resistance to continue using the EHRs do begin from the basic disparity between documentation of information on a piece of paper as well as entering it by electronic means. Majority of the seasoned nurses are knowledgeable on the use of paper charts, and ease of carrying could also be an important issue. Nurses are addicted to paper since it is suitable, tactful, touchable as well as moveable.

On the other hand, the use of computers in nurses' routine tasks is a welcome development. Therefore, designing suitable, discreet, tangible as well as moveable devices that helps nurses in using EHRs is critical. This is because nurses found that using EHRs on the new devices is suitable, prudent, tangible as well as portable, it will strengthen the nurses to continuancely use the system. Moreover, moveable small devices will result to enlargement of nurse's capability to access the system which is a significant issue. Similarly, it likewise makes different devices accessible in suitable places to boost accessibility. Thus, a good location provides a convenient access. Similarly, there is need to offer different choice on devices that will work well. A number of individual's desire to sit down, while others need to turn around laptop, at the same time as others desire to hold a note pad or tablet. Thus, there are different choices that hospitals can offer for

nurses the more nurses latch on to what they believe to be comforting. Therefore, designing work place simple to access to EHRs is significant for nurses.

Moreover, while the use of computers in the health care system is of great importance, when they make usage visible to patients, nurses will feel uncomfortable using the system, especially with the use of large screens. Hence, when nurses feel uncomfortable using the systems, their productivity is affected. In overcoming the above challenge, management could provide portable devices like tablets to ensure convenience and comfortability. If EHRs allow nurses to performing their jobs efficiently and increase their productive in convenience and comfortable manner, nurses will certainly have higher continuance intentions to use EHRs.

Finally, concrete training as well as support should be an important part of management strategy because hospitals have to use EHRs as they integrate electronic patient records.

It is an essential requirement to make use of EHR in delivering services in the health care sector. Hence, the need for training and re-training cannot be over-emphasized. EHRs should serve as a tool that openly make significant contribution to nurses by utilizing the system as an entryway to information. This is in addition to other clinical assets, together with policy as well as procedural manuals, medication information resources, patient teaching materials, journals with texts. The entire features work jointly to improve nurse's usage as well as strengthen them to constantly to use EHRs.

The electronic health solution company should ensure the creation of libraries of expert rules. This will act as a reservoir of information base that can be referred to by the nurses on a routine basis in handling various cases in their work places. The system's ability may perhaps improve with the information base or to the set of policy. EHR system might encompass machine learning ability that permits nurses to enhance their performance subject to experience based on experience. Nurses in addition to other healthcare experts use libraries of expert rules to put in order a diagnosis as well as to re-examine the diagnosis as a way of enhancing the last outcome. Data mining can be carried out to investigate the patient's medical history together with important clinical study. Such examination may assist in predicting possible events, which can range from drug interactions to disease symptoms. Professional rules were significant mini-programmed modules that assist to attain evidence-based practice out within the functioning EHRs (Brokel, Shaw & Nicholson, 2006).

Therefore, libraries of expert rules can be shared between health care organizations to help strengthen their functionality in providing clinicians access to online clinical resources through the EHRs. These types of plans will reverberate with nurses in search of more information in the environment of care delivery. In addition to building expert rules that correctly recommend suitable nursing involvement, electronic health solution corporation are require to develop algorithms that is capable of describing intervals for captivating important symbols or other interventions, subject to precise patient's circumstance, nursing with medical diagnoses. The expert rules capabilities will provide more comfortable work environment to nurses and increase quality of health services,

thus reflect in positive manner on nurse's performance and reinforce them to keep using the system.

On personality, another practical implication in respect of this study is that it helps to understand the kind of individuals who positively believe in the functionality of the system. The UTAUT model recommend that these beliefs are connected with purpose of using the technology and, majorly to genuine usage. Consequently, for work where use of a joint system is a significant component of success, organizations can take advantage from the understanding of the kind of individual who are expected to have positive beliefs toward the jointly system (Devaraj et al., 2008). The big five characteristics are frequently incorporated as ingredient of a selection system, due to their direct as well as indirect relationship with job performance as well as other job-related behaviors (Barrick et al., 2001).

Training also has significant implication: individual who are disposed to hold unenthusiastic attitude toward well-structured systems due to their personality may benefit from training which can eventually help in shaping their perceptions into making better choices. The result recommends result-oriented training programs that is well-planned not only to teach users about the technology but make the value of the technology noticeable, particularly to people with definite personality characteristics. However, for the reason that individuals possessing definite personality dimensions such as value usefulness could be make use of by hospitals to gain a better continuance intention to use

of EHRs. In the same vein, additional effort may be needed to convince specific personality type concerning the value of technologies.

Incentive systems possibly will likewise be planned to target those individuals with a natural predisposition to avoid using the system. This research suggested that on the possibility that the personality of users may slow them down from using the system continually, appropriate reward systems may be required to stimulate them to technology as well as experience its value. Incentives are an influential instrument for transforming behavior as well as encourage individuals to engage in responsibility they would oppose where there is lack of an incentive system (Steers & Porter, 1991).

Similarly, in organizational change management programs, all factors that enhances the use and continuance use of a new technology should be taken seriously. Unarguably, it is in an environment of the introduction of new technologies that organizational apathy to change is usually noticeable. Consequently, what this situation implies is that it is improbable that “one size will fit all” with regards to effecting the appropriate technological changes in organizations. Hence, it is important to factor the personality of the individual users in all the processes. Furthermore, having an understanding management concerns about the different kind of personalities as well as how they perceive technologies can generally result to designing improved change management strategies (Devaraj et al., 2008).

Finally, introduce the study of information systems in nursing schools. Having adequate understanding of technology within the environment of education can be significantly beneficial. There are more than a few Bachelors of Science of nursing programs as well as related degree programs intended to be practiced in public hospitals. This is in addition to providing pills and related job roles as staff nurses. On the condition that they use the system, as well as perceive their teacher practicing similar activities, it will make a big disparity for the students' decision in chosen the hospital they'll work for, likewise they will gain experience on how to handle the system, therefore making training uncomplicated in addition to complying with the system without difficulty. This is consistent with Staggers, Thompson, and Snyder-Halpern (2001) that clinicians require to go further than foundational computer ability and pay attention to information synthesis as well as analysis. The researchers further argued that well-structured programs are needed that should move attention from providing training on foundational computer skills to paying attention to high level of cognitive operations to run clinical information with technology.

The American Nurses Association (2001) has identified that "informatics capabilities are required by all nurses, notwithstanding their specialization in nursing informatics. As the context of nursing turn out to be universal computing settings, all nurses are required to be both information as well as computer educated. Likewise, the IOM in its 2003 asserted that Health Professions Education: A Bridge to Quality, states, "All health professionals ought to have knowledge to deliver patient centered care as members of an

interdisciplinary team, highlighting evidence-based practice, quality improvement approaches, as well as informatics”.

5.5 Limitations and Future Research

As always is the case in doing research work, the current research has limitations that should be considered when interpreting the findings. On the other hand, these limitations also offer opportunities for future research to consider. Though, this research made several contributions as mentioned in the previous sections of this chapter, the researcher is of the view that there are some limitations that abound.

First, the sample of this study which includes the hospitals that fully implemented EHRs in public sector. Future studies may include hospitals in private sector. Furthermore, the use of nurses only as sample for this study without including other healthcare providers like physicians, dentists, pharmacists, physiotherapists, and laboratory technicians in hospitals call for concern. Nurses represent the largest group of health care providers in Jordan 65% (Khammash, 2012) and their intention to continuance use of the system is curial for success. However, investigating other health care providers’ perception and what factors affect their continuance intention to use EHRs is important. This is in view of the role they play in the health care services chain. Future research could involve other healthcare providers that using the system. Also, future studies may include nursing students in nursing schools. Having the understanding of technology in the educational environment will create enormous influence.

Second, the survey method typically suffers from several shortages some of which may include response bias and social desirability of responding to satisfy an author, misinterpretation and misunderstanding of the respondents with respect to the questions asked or false response to questionnaire items. These are all problems common in social science surveys (Zikmund, 2013). In order to minimize these occurrences, the questions formulated followed an extensive assessment procedure including an expert review to ensure that the instrument was as understandable and clear as possible to the targeted respondents. Additionally, respondents were reassured of the anonymity and confidentiality of their responses and participation in order to elicit their objective and reliable opinions.

Nevertheless, because the threat may not be fully eliminated and may likely affect findings, future research may take into consideration combining survey with other qualitative approaches such as case studies and interviews to carry out further in-depth insights and provide superior support regarding the findings. This study has used quantitative approach to study the continuance intention to use EHRs and the role of personality traits of nurses. In order to have an in-depth understanding of the role of personality traits and how effect on continuance intention to use EHRs, qualitative research could be adopted by future.

Third, this research employed a cross-sectional design which does not permit causal inferences to be made from the population. The relationships identified and tested in this research are intended to signify only the relationship connecting variables as well as not

causal relationships. Consequently, a longitudinal study is encouraged to look into the variables at different points in time to validate the results of this research. The present research also submits that the theories integrated to examine individual differences such as personality plays a significant role in the study of MIS, particularly health informatics. Future studies may incorporate the adoption styles of early adopters against late adopters, as well as ascertaining how personality influences the UTAUT in a much more comprehensive framework.

Fourth, other personality factors can as well be productively investigated within the environment of the UTAUT. Personality has been basically neglected in the studies of MIS over a long period of time. On the other hand, within the context of personality psychology, considerable improvement in addition to the FFM has ignited changing theory as well as empirical examination in other disciplines (Devaraj et al., 2008). It is the belief of the researcher that future researches connecting the big five elements to other MIS factors may help to improve the accuracy of IS theories.

Fifth, in the IS continuance research area (e.g. Bhattacharjee, 2001; Bhattacharjee & Premkumar, 2004), the present study employed continuance intention as the dependent variable as an alternative to intention to use. While behavioral intention is noted to be extensively investigated as a key determinant of behavior that mediates the influence of other factors on behavior (e.g. Venkatesh et al., 2003), future studies can gather real usage data to further improve the validity of the IS continuance framework. Also, due to the increasing concern, the nexus of human computer interaction (HCI) as well as IS studies,

future examinations are required to design as well as test interventions in addition to its effects on IS continuance use using the framework provided in this study.

5.6 Summary

EHR system became a hot topic of in the Jordanian health context, mainly considering the Jordanian government 's plan to move towards a modern digital Healthcare system. The EHRs is critical for healthcare industry. EHR is acclaimed to be a technological breakthrough that is capable of significantly changing the future of the healthcare industry in terms of improved service delivery and systems quality through ease of accessibility to information and services, interconnectivity aimed at error-reduction and cost-saving technologies, streamlining health care data-flow using an interoperable and standardized taxonomy, improved quality by encouraging accurate communication among providers, computerization of adverse events and medical error disclosure, in addition to facilitating reliable and evidence-based data for research purposes.

The current study has provided additional evidence to the growing body of knowledge concerning the continuance intention to use EHRs and its impacts in Jordanian public healthcare sector, where there is absence of the studies investigates EHRs post adoption in general and continuance intention to use the system specifically. The study enhanced and improved the understandings of the factors influencing EHRs continuance intention to use among Jordanian public health sector. In addition, this study investigates the moderating role of conscientiousness on the relationship between the four UTAUT

variables and continuance intention. Also, the mediating effect of performance expectancy on the relationship between the five FFM factors and continuance intention.

The analysis of survey data revealed that insignificant negative relationship between top management support and continuance intention. While significant positive relationship between effort expectancy, performance expectancy, facilitating condition and social influence with continuance intention. On the mediating effects of performance expectancy two hypotheses were significant. In particular, performance expectancy mediates the relationship between agreeableness, openness to experience and continuance intention

to use. Also, the moderating effects of conscientiousness two were significant. In particular, conscientiousness moderates the relationship negatively between performance expectancy and continuance intention, and positively between social influence and continuance intention. In addition, this study draws attention to the substantive differences between acceptance and continuance behaviors. IT acceptance and continuance are conceptually and temporally distinct behaviors, in that continuance can occur only after acceptance.

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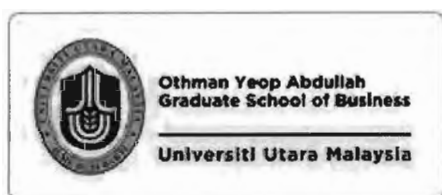
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UUM
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APPENDICES

Appendix A Research Instrument (English Version)



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Dear Nurse,

I am currently PhD student from University of North Malaysia (UUM) conducting a study designed to investigate the continuance intention of Jordanian Nurses to use EHRs in Public Hospitals in Jordan.

EHR Experts define it as an information system which sought as the standard of documentation for tracking patient information and patients visits. EHR system cannot be considered successful if its usage is not sustained by users, under-utilization and/or abandonment of the system. Thus, it is important to recognize factors affecting EHR continuance intention to us. Therefore, current study investigates your intention to continue use EHRs in your hospital.

Your cooperation and efforts are highly appreciated, your answers will be kept confidential. If you have any inquiries please contact me at the address shown below

Thank you for your cooperation and your participation in this study.

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PART (1): UTAUT Variable Measure for PE, EE, SI, FC, and CI

The following questions ask you to indicate your opinion about EHRs in your hospital. This questionnaire designed to determine the factors contribute to make you continue use EHRs. For each item please rate your confidence about your first judgment, by ticking a number from (1 to 5), where (1) indicates Strongly disagree, (2) indicates Disagree, (3) indicates Neither agree nor disagree, (4) indicates Agree, and (5) indicates Strongly agree.

Continuance Intention.

		Strongly disagree 1	Disagree 2	Neither agree nor disagree 3	Agree 4	Strongly agree 5
1	I intend to continue using EHRs in my work in the future.	1	2	3	4	5
2	I plan to continue using EHRs to accomplish my work duties.	1	2	3	4	5
3	I will encourage other nurses to continue using EHR.	1	2	3	4	5
4	I will encourage other health care providers (physicians, pharmacist, lab technicians) in my hospital to continue using EHR.	1	2	3	4	5
5	I will continue using EHR.	1	2	3	4	5
6	I would like to learn more about electronic health records.	1	2	3	4	5

Performance expectancy

		Strongly disagree 1	Disagree 2	Neither agree nor disagree 3	Agree 4	Strongly agree 5
1	Using EHRs would be useful in my job.	1	2	3	4	5
2	Using EHRs would make me accomplish my tasks quickly.	1	2	3	4	5
3	Using the EHRs would enhance my productivity.	1	2	3	4	5
4	Using the EHRs would increase my chances of getting higher salary.	1	2	3	4	5
5	Using the EHRs would increase my chances of getting a promotion.	1	2	3	4	5

PART (3): Effort Expectancy

		Strongly disagree 1	Disagree 2	Neither agree nor disagree 3	Agree 4	Strongly agree 5
1	It would be easy for me to become skillful at using EHRs at work.	1	2	3	4	5
2	I would find EHRs is easy to use at work.	1	2	3	4	5
3	Learning to use EHRs at work would be easy for me.	1	2	3	4	5
4	I understand how much effort I would have to expend to use the EHR.	1	2	3	4	5
5	I would be able to understand how to accomplish my tasks using the EHR application.	1	2	3	4	5

PART (4): Social influence

		Strongly disagree 1	Disagree 2	Neither agree nor disagree 3	Agree 4	Strongly agree 5
1	People who influence my behavior think that I should use EHRs.	1	2	3	4	5
2	People who are important to me think that I should use EHRs.	1	2	3	4	5
3	Nurses who are in my department think that I should use EHRs.	1	2	3	4	5
4	The other Nurses in the hospital think that I should use EHRs.	1	2	3	4	5
5	Doctors in the hospital think that I should use EHRs.	1	2	3	4	5
6	The management in the hospital think that I should use EHRs.	1	2	3	4	5
7	The senior management of the hospital has been helpful in the use of EHRs.	1	2	3	4	5
8	In general, the hospital has supported the use of EHRs.	1	2	3	4	5

PART (5): Facilitating condition

		Strongly disagree 1	Disagree 2	Neither agree nor disagree 3	Agree 4	Strongly agree 5
1	I would have received the necessary training to use the EHRs.	1	2	3	4	5
2	I would have received sufficient information regarding the EHRs.	1	2	3	4	5
3	The hospital has sufficient computer equipments to run the system.	1	2	3	4	5
4	I would have the resources necessary to use EHRs.	1	2	3	4	5
5	I would have the knowledge necessary to use EHRs.	1	2	3	4	5
6	The EHRs <u>was not</u> compatible with other system I use.	1	2	3	4	5

PART (2): Top management support

The following questions ask you to indicate your opinion about TMS to use EHRs. (This measure incorporated two wide-ranging types of support namely, application development support and general support.) For each item please rate your confidence about your first judgment, by circling a number from 1 to 5, where 1 indicates Strongly disagree, 2 indicates Disagree, 3 indicates Neither agree nor disagree, 4 indicates Agree, and 5 indicates Strongly agree.

Top management support

		Strongly disagree 1	Disagree 2	Neither agree nor disagree 3	Agree 4	Strongly agree 5
1	I am convinced that management is sure as to what benefits can be achieved with the use of EHRs.	1	2	3	4	5
2	There is always a person in the organization whom we can turn to for help in solving problems with the EHRs system.	1	2	3	4	5
3	A central support (e.g. information centre) is available to help with problems.	1	2	3	4	5
4	Training courses are readily available for Nurses to	1	2	3	4	5

	improve themselves in the use of EHRs.					
5	I am always supported and encouraged by my boss to use the EHRs in the performance of my job.	1	2	3	4	5
6	Management has provided most of the necessary help and resources to get nurses used to the EMR quickly.	1	2	3	4	5
7	Nurses are constantly updated on new software that can help them to use the EHRs more effectively.	1	2	3	4	5
8	Management is really keen to see that we are happy with using EHRs.	1	2	3	4	5

PART (3): Personality Factors (Neo-five-factor inventory-NEO-FFI)

Neo-five-factor inventory (NEO-FFI): Refers to five personality domains, which are (a) conscientiousness, (b) extraversion, (c) neuroticism, (d) openness to experience, and (e) agreeableness. This part consists of 60 items. For each item please rate your confidence about your first judgment, by circling a number from 1 to 5, where 1 indicates Strongly disagree, 2 indicates Disagree, 3 indicates Neither agree nor disagree, 4 indicates Agree, and 5 indicates Strongly agree.

According to the contract between the research and PAR company the researcher is not allowed to address the instrument in the study due to copy right.

PART (4): Demographic Data

This section relates to personal information, and the other about working in your hospital. The following are some of the questions on personal background and work.

The following questions are intended solely for the purpose of analysis. Please choose or write your answers when needed.

1. Please indicate your gender:

- 1. Male*
- 2. female*

2. Please write how old are you? ----- year.

3. Please indicate your highest level of education:

- 1. Diploma*
- 2. Bachelor Degree*
- 3. Master 's Degree*
- 4. PhD*

4. How long have you been in nursing profession? ----- years

5. what is the name of the current hospital you work now? ----- hospital.

6. In which department does you work in your hospital? ----- department.

7. How long have you been working in the current hospital? -----Year.

Thank you for participating in this survey.

Appendix B Research Instrument (Arabic Version)



عزيزي الممرض،،،،،

يقوم طالب الدكتوراه عدي السيوف من كلية ادارة الاعمال في جامعه شمال ماليزيا (UUM) بعمل دراسة تهدف الى استكشاف نية الممرضين الاردنيين بالاستمرار باستخدام السجلات الصحية الالكترونية في القطاع الصحي العام.

يعرف الخبراء السجلات الطبية الالكترونية على انها نظم معلوماتية ينظر لها كمعيار لتوثيق و تتبع معلومات المرضى و مواعيد زياراتهم.

تهدف الدراسة الحالية تقييم وجهة نظركم لإستخدام السجلات الطبية الإلكترونية في المستشفى الذي تعمل به. ان تعاونكم و جهودكم التي تبذلونها هي محط تقدير وعرفان. علما بان اجاباتكم ستحاط بالسرية التامة. إذا كان لديك أي استفسارات يرجى الإتصال بي على العنوان المبين أدناه.

شكرا لكم على تعاونكم ومشاركتم لي في هذه الدراسة.

د. اوانيس كو اسحاق كلية الادارة جامعة شمال ماليزيا ولاية كدح- ماليزيا awanis@uum.edu.my	عدي السيوف كلية الادارة جامعة شمال ماليزيا ولاية كدح- ماليزيا Adisyouf@gmail.com
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الاستبانة

الجزء الاول :

يهدف هذا الجزء من الاستبانة الى تحديد العوامل تساهم في جعلك تستمر في استخدام السجلات الصحية الالكترونية. الرجاء الاجابة على جميع العبارات بالدقة الممكنة. الرجاء وضع دائرة حول الرقم المناسب بجانب العبارة التي تمثل معتقداتك بالنسبة لسجلات الطبية الالكترونية. حيث (1) يشير الى لا اوافق بشدة , (2) يشير الى لا اوافق, (3) يشير الى اوافق جزئيا, (4) يشير الى اوافق, (5) يشير الى اوافق بشدة.

1. النية في الاستمرارية

يقيس هذا العامل نية الممرضين للاستمرار في استخدام السجلات الطبية الإلكترونية في عملهم.

	غير موافق بشدة 1	غير موافق 2	غير متأكد 3	موافق 4	موافق بشدة 5
1	أرغب في مواصلة استخدام السجلات الطبية الإلكترونية في المستقبل.	1	2	3	4
2	سوف استمر في استخدام السجلات الطبية الإلكترونية في عملي دائماً.	1	2	3	4
3	سوف أشجع زملائي الممرضين على الاستمرار في استخدام السجلات الطبية الإلكترونية.	1	2	3	4
4	سوف أشجع مقدمي الرعاية الصحية الآخرين في المستشفى (الأطباء، الصيادلة، فنيي المختبرات) على الاستمرار في استخدام السجلات الطبية الإلكترونية.	1	2	3	4
5	سوف استمر في استخدام السجلات الطبية الإلكترونية.	1	2	3	4
6	أرغب في تعلم المزيد حول السجلات الطبية الإلكترونية.	1	2	3	4

2. الأداء المتوقع

يقيس هذا العامل درجة اعتقاد الممرضين بان استخدام السجلات الصحية الإلكترونية سوف يحسن ادايتهم في تأدية عملهم.

	غير موافق بشدة 1	غير موافق 2	غير متأكد 3	موافق 4	موافق بشدة 5
1	الاستمرار في استخدام السجلات الطبية الإلكترونية مفيد جدا عملي.	1	2	3	4
2	الاستمرار في استخدام تطبيق السجلات الطبية الإلكترونية يساعدني على تنفيذ المهام بسرعة أكبر.	1	2	3	4
3	الاستمرار في استخدام تطبيق السجلات الطبية الإلكترونية سوف يزيد إنتاجيتي في العمل.	1	2	3	4
4	الاستمرار في استخدام تطبيق السجلات الطبية الإلكترونية يزيد فرصتي في الحصول على زيادة بالراتب.	1	2	3	4
5	الاستمرار في استخدام تطبيق السجلات الطبية الإلكترونية يزيد فرصتي في الحصول على ترقية.	1	2	3	4

3. الجهد المتوقع

يقيس هذا العامل درجة السهولة المرتبطة باستخدام الممرضين لتطبيق السجلات الطبية الإلكترونية

	غير موافق بشدة 1	غير موافق 2	غير متأكد 3	موافق 4	موافق بشدة 5
1	سيكون من السهل علي اكتساب المهارات اللازمة للاستمرار في استخدام تطبيق السجلات الطبية الإلكترونية	1	2	3	4
2	سيكون من السهل علي الاستمرار في استخدام تطبيق السجلات الطبية الإلكترونية.	1	2	3	4
3	سيكون من السهل علي تعلم تشغيل تطبيق السجلات الطبية الإلكترونية.	1	2	3	4
4	أدرك حجم الجهد الذي سببته للاستمرار في استخدام تطبيق السجلات الطبية الإلكترونية.	1	2	3	4

5	سوف أكون قادراً على فهم كيفية تنفيذ مهماتي باستخدام تطبيق السجلات الطبية الإلكترونية.	1	2	3	4	5
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4. التأثير الاجتماعي

يقيس هذا العامل مدى أهمية اعتقاد و آراء الآخرين في التأثير على الممرضين في استخدام السجلات الطبية الإلكترونية.

	غير موافق بشدة 1	غير موافق 2	غير متأكد 3	موافق 4	موافق بشدة 5	
1	يعتقد الأشخاص المؤثرون على سلوكي أنه يتوجب عليّ الاستمرار في استخدام تطبيق السجلات الطبية الإلكترونية.	1	2	3	4	5
2	يعتقد الأفراد المهمون بالنسبة لي أنه يتوجب عليّ الاستمرار في استخدام تطبيق السجلات الطبية الإلكترونية.	1	2	3	4	5
3	يعتقد الممرضون في القسم الذي أعمل فيه أنه يتوجب عليّ الاستمرار في استخدام تطبيق السجلات الطبية الإلكترونية.	1	2	3	4	5
4	يعتقد الممرضون في الأقسام الأخرى في المستشفى أنه يتوجب عليّ الاستمرار في استخدام تطبيق السجلات الطبية الإلكترونية.	1	2	3	4	5
5	يعتقد الأطباء في المستشفى أنه يتوجب عليّ الاستمرار في استخدام تطبيق السجلات الطبية الإلكترونية.	1	2	3	4	5
6	تعتقد إدارة المستشفى أنه يتوجب عليّ الاستمرار في استخدام تطبيق السجلات الطبية الإلكترونية.	1	2	3	4	5
7	قدمت الإدارة العليا للمستشفى المساعدة اللازمة للاستمرار في استخدام السجلات الطبية الإلكترونية.	1	2	3	4	5
8	المستشفى الذي أعمل به شجع على الاستمرار في استخدام تطبيق السجلات الطبية الإلكترونية بشكل عام.	1	2	3	4	5

5. الظروف المساعدة

يقيس هذا العامل إدراك الممرضين للموارد والدعم المتوفر لاستخدام السجلات الطبية الإلكترونية.

		غير موافق بشدة 1	غير موافق 2	غير متأكد 3	موافق 4	موافق بشدة 5
1	حصلت على التدريب اللازم للاستمرار في استخدام تطبيق السجلات الطبية الإلكترونية.	1	2	3	4	5
2	تلقيت معلومات كافية حول تطبيق السجلات الطبية الإلكترونية.	1	2	3	4	5
3	لدى المستشفى معدات حاسوبية كافية لتشغيل التطبيق.	1	2	3	4	5
4	لدى الموارد اللازمة لاستخدام تطبيق السجلات الطبية الإلكترونية.	1	2	3	4	5
5	لدى المعرفة اللازمة لاستخدام تطبيق السجلات الطبية الإلكترونية.	1	2	3	4	5
6	تطبيق السجلات الطبية الإلكترونية غير متوافق مع نظام آخر استخدمه.	1	2	3	4	5

6. دعم الإدارة العليا

يقيس هذا العامل مستوى الدعم المقدم من الإدارة العليا لاستخدام السجلات الطبية الإلكترونية.

		غير موافق بشدة 1	غير موافق 2	غير متأكد 3	موافق 4	موافق بشدة 5
1	أنا مقتنع بأن الإدارة واثقة من الفوائد الممكنة تحقيقها من استخدام تطبيق السجلات الطبية الإلكترونية.	1	2	3	4	5
2	يوجد دائماً في المؤسسة شخص معين نستطيع أن نلجأ إليه للمساعدة في حل المشكلات في نظام السجلات الطبية الإلكترونية.	1	2	3	4	5
3	يوجد دعم مركزي (مركز معلومات مثلاً) للمساعدة في حل المشكلات.	1	2	3	4	5
4	الدورات التدريبية أصبحت متوفرة للممرضين كي يطوروا أنفسهم في استخدام السجلات الطبية الإلكترونية.	1	2	3	4	5

5	يدعمني مديري ويشجعني دائماً على استخدام السجلات الطبية الإلكترونية في أداء عملي.	1	2	3	4	5
6	قدمت الإدارة كل ما يلزم من مساعدة لتعويد الممرضين على استخدام السجلات الطبية الإلكترونية بسرعة.	1	2	3	4	5
7	الممرضون على اطلاع دائم بالتحديثات على البرمجيات الجديدة التي تساعدهم على استخدام السجلات الطبية الإلكترونية بفعالية أكبر.	1	2	3	4	5
8	الإدارة حريصة على رؤية الممرضين راضين عند استخدام السجلات الطبية الإلكترونية.	1	2	3	4	5

77. قائمة العوامل الخمسة الكبرى في الشخصية

تشير إلى خمسة مجالات شخصية تتمثل في (أ) الاجتهاد، (ب) الانبساط، (ج) العصائية، (د) الانفتاح على التجارب، (هـ) الوداع.

وفقاً للعقد المبرم بين الباحث و شركة المالكة لحقوق الملكية لا يسمح للباحث ادراج الاستبانة لضمان حقوق الملكية.

الجزء الثاني : البيانات الديموغرافية

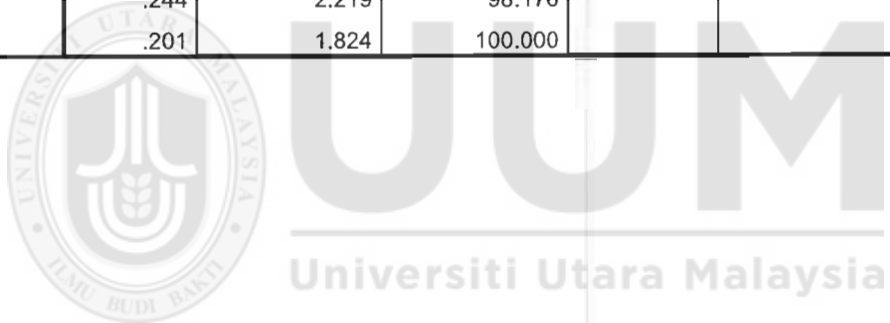
هذا القسم يتعلق بالمعلومات الشخصية، والآخر حول العمل في المستشفى الخاص بك. وفيما يلي بعض الأسئلة على الخلفية الشخصية. الأسئلة التالية مخصصة فقط لغرض التحليل. يرجى اختيار أو كتابة إجاباتك عند الحاجة

يتعلق هذا القسم بمعلومات شخصية و أخرى حول العمل في مؤسستك وفيما يلي بعض الأسئلة على خلفيتك الشخصية والعمل. وتهدف الأسئلة التالية فقط لغرض التحليل. يرجى وضع علامة (X) أو الكتابة إجاباتك عند الحاجة.	
1	الجنس : ☐ ذكر ☐ أنثى
2	العمر : _____ سنة
3	مستوى التعليم: ☐ دبلوم ☐ بكالوريوس ☐ ماجستير ☐ دكتوراه
4	كم عدد سنوات الخبرة لديك في مهنة التمريض؟ _____ سنة
5	ما اسم المستشفى الذي تعمل به؟ _____
6	في اي قسم تعمل في داخل المستشفى ؟ _____
7	كم عدد السنوات التي خدمتها في المستشفى الذي تعمل به حالياً؟ _____

شكراً جزيلاً

Appendix C CMV (Harman Single Test)

Total Variance Explained						
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.301	48.190	48.190	5.301	48.190	48.190
2	1.841	16.740	64.930			
3	.851	7.735	72.665			
4	.769	6.995	79.660			
5	.472	4.290	83.950			
6	.424	3.851	87.801			
7	.323	2.933	90.734			
8	.295	2.679	93.413			
9	.280	2.544	95.957			
10	.244	2.219	98.176			
11	.201	1.824	100.000			



Appendix D University Letter for Data Collection



OTHMAN YEOP ABDULLAH
GRADUATE SCHOOL OF BUSINESS
Universiti Utara Malaysia
06010 UUM SINTOK
KEDAH DARUL AMAN
MALAYSIA



Tel: 604-928 7101/7113/7130
Faks (fax): 604-928 7160
Laman Web (Web): www.oagbsb.uum.edu.my

KEDAH AMAN MAKMUR • BERSAMA MEMACU TRANSFORMASI

UUM/OYAGSB/K-14
14 June 2015

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

LETTER FOR DATA COLLECTION AND RESEARCH WORK

This is to certify that **Adi (M. Ramzi) Abed Al Majid Al-Syouf (Matric No: 94595)** is a bonafied student of Doctor of Philosophy (PhD), Othman Yeop Abdullah Graduate School of Business, Universiti Utara Malaysia. He is conducting a research entitled **"Intention to use Electronic Medical Records among Nurses in Public Sector"** under the supervision of Assoc. Prof. Dr. Norazuwa Bt Mat.

In this regard, I hope that you could kindly provide assistance and cooperation for him to successfully complete the research. All the information gathered will be strictly used for academic purposes only.

Your cooperation and assistance is very much appreciated.

Thank you.

"SCHOLARSHIP, VIRTUE, SERVICE"

Yours faithfully

ROZITA BINI RAMLI

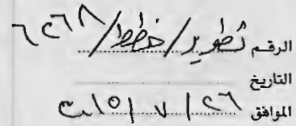
Assistant Registrar
for Dean

Othman Yeop Abdullah Graduate School of Business

c.c - Supervisor
- Student's File (94595)



[illegible]



..... مدير مستشفى الملكة رانيا العبدالله

أرفق طياً صورة عن كتاب مدير مستشفى البشير / رئيس لجنة أخلاقيات البحث العلمي رقم م ب أ / لجنة أخلاقيات / ١٠٩٠/٨ تاريخ ٢٠١٥/٧/٢٢ بخصوص السماح لطالب الدكتوراة عدي محمد رمزي السيوف اجراء بحث بعنوان :-

عن طريق توزيع الاستبيان المرفق صورة عنه على المرضى في المستشفيات الحكومية التابعة لوزارة الصحة .

وتفضلوا بقبول فائق الاحترام ،،

الدكتورة فدوى الشوابكة

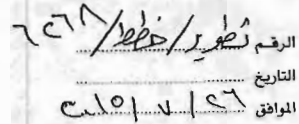
مسعود مديري
تطوير الموارد البشرية
الدكتور أمين المعاينة

مستشفى الملك سعود
الرياض - ١١٥١١
١٤٣٥ هـ

عليه من قبل الله واليه المرجع والمآب

المملكة الأردنية الهاشمية

هاتفه ٥٢٠٠٢٢ ٩٦٢٢ فاكس (٩٦٨٢٢ ٥ ٩٦٢٢ ص.ب ٨٦ عمان ١١١١٨ الأردن الموقع الإلكتروني www.moh.gov.jo



18/11/2019

أرفق طياً صورة عن كتاب مدير مستشفى البشير / رئيس لجنة أخلاقيات البحث العلمي رقم م ب أ / لجنة أخلاقيات / ١٠٩٠٨ / تاريخ ٢٠١٥/٧/٢٢ بخصوص السماح لطالب الدكتوراة عدي محمد رمزي السيوف اجراء بحث بعنوان :-

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أرجو التكرم بالإيعاز لمن يلزم تسهيل مهمة اجراء البحث اعلاه .

وَتَفَضَّلُوا بِقَبُولِ فَائِقِ الْإِحْتِرَامِ،،

مدير تطوير الموارد البشرية

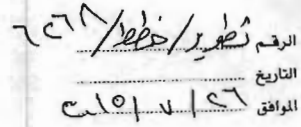
الدكتورة فدى الشوابكة

مسلم مدير
تطوير الموارد البشرية
الدكتور أمين المعايطة

- الاموال
 - المصارف
 - رتبة التفتيش
 - رتبة المصارف

[illegible]

المملكة الأردنية الهاشمية
 هاتف: ٢٠٠٢٣ ١٦٦٢٢٢٢٢ فاكس: ٦٨٨٣٧٢ ١٦٦٢٢٢٢٢ ص.ب: ٨٦ عمان ١١١١٨ الأردن الموقع الإلكتروني: www.moh.gov.jo



تَحِيَّة طَيِّبَةٌ وَعَدٌ،،

(Intention to Use Electronic Medical Records among Nurses in Public Sector)

أرجو التكرم بالإيعاز لمن يلزم تسهيل مهمة اجراء البحث اعلاه .

وتفضلوا بقبول فائق الاحترام ،،

مدير تطوير الموارد البشرية

الدكتورة فدى الشوابكة

مسلمة قدير
تطوير لتوارد البشرية
الدكتور أمين المعاينة

١١١١

(۲۰۱۰ ب. ت. ۹)

البريد: انوار

المملكة الأردنية الهاشمية
السلطة الوطنية

الملكية الأردنية الهاشمية

ملف رقم: ٢٠١٦ / ٩٦٢٦ + فاكس: ٥٦٨٨٣٧٣ + ص ب: ٩٦٢٦ ع ١١١١٨ الأردن الموقع الإلكتروني: www.moh.gov.jo



الرقم ٦٤٦٨ / تطوير / خط

التاريخ

الموافق ١٤٦٨ / ٧ / ١٥

مدير مستشفى. مصالحة الجبوري...المستشفى...

تحية طيبة وبعد ،،،

أرفق طياً صورة عن كتاب مدير مستشفى البشير / رئيس لجنة أخلاقيات البحث العلمي رقم م ب أ / لجنة أخلاقيات / ١٠٩٠٨ / تاريخ ٢٠١٥/٧/٢٢ بخصوص السماح لطالب الدكتوراة عدي محمد رمزي السيوف اجراء بحث بعنوان :-

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وتفضلوا بقبول فائق الاحترام ،،،

/ مدير تطوير الموارد البشرية

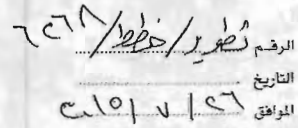
الدكتورة فدوى الشوابكة

مساعد مدير
تطوير الموارد البشرية
الدكتور أمين المعايطة

الملكة الاردنية الهاشمية
وزارة الصحة
مستشفى عمان العسكري
شؤون الموظفين

المملكة الأردنية الهاشمية

هاتف ٥٢٠٠٢٣٠ ٦ ١٦٢٢ ٦ ٥٦٨ ٣٣٣٣ ص.ب ٨٦ عمان ١١١١٨ الأردن الموقع الإلكتروني www.moh.gov.jo



مدير مستشفى الرئيس الجمهوري المحترم

أرفق طيباً صورة عن كتاب مدير مستشفى البشير / رئيس لجنة أخلاقيات البحث العلمي رقم م ب / ١ لجنة أخلاقيات / ١٠٩٠٨ تاريخ ٢٠١٧/٧/٢٥ بخصوص السماح لطالب الدكتوراة عدي محمد رمزي السيواف اجراء بحث بعنوان :-

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أرجو التكرم بالإيعاز لمن يلزم تسهيل مهمة إجراء البحث اعلاه .

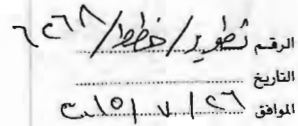
وتفضلوا بقبول فائق الاحترام ،،

مدير تطوير الموارد البشرية
Amir
 الدكتورة فدى الشوابكة

مساعد مدير
تطوير الموارد البشرية
الدكتور أمين المعايطة

مجلس الوزراء
الجمهورية العربية السورية
الرياض ١٤٣٥ هـ

المملكة الأردنية الهاشمية
هاتف: ٠٢٢. ١٦٢ ٦ ٠٢٢٠٠٠٠ فاكس: ٠٢٢. ١٦٢ ٦ ٠٢٢٠٠٠٠
www.moh.gov.jo البريد الإلكتروني: ١١١١٨ الأردن



مدير مستشفى
 ٢٠١٥ -

أرفق طياً صورة عن كتاب مدير مستشفى البشير / رئيس لجنة أخلاقيات البحث العلمي رقم م ب أ / لجنة أخلاقيات ١٠٩٠٨ / تاريخ ٢٠١٥/٧/٢٢ بخصوص السماح لطالب الدكتوراة عدي محمد رمزي السيواف اجراء بحث بعنوان :-

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أرجو التكرم بالإيعاز لمن يلزم تسهيل مهمة اجراء البحث اعلاه .

وَيَفْضَلُوا بِقَبُولِ فَائِقِ الْإِحْتِرَامِ،،

مدير تطوير الموارد البشرية
الدكتورة فدوى الشوابكة

مساعد مدير
تطوير الموارد البشرية
الدكتور أمين المعايطة

- الموان
 - الموان
 - الموان
 - الموان

البيت، وادخلوا الى البيت

المملكة الأردنية الهاشمية
هاتف: ٢٣. ٥٢. ١٦٢ ٦ فاكس: ٦٨٨٢٧٢. ١٦٢ ٦ ص.ب ٨٦ عمان ١١١١٨ الأردن الموقع الإلكتروني www.moh.gov.jo



CODE : MOH REC 150084

الرقم

لتاريخ

الموافق

قرار لجنة أخلاقيات البحث العلمي

اجتمعت لجنة أخلاقيات البحث العلمي بتاريخ 6 / 7 / 2015 لمناقشة ودراسة
البحث العلمي المقدم من قبل الطالب/عدي محمد رمزي السيوف.
بعنوان :-

Intention to Use Electronic Medical Records among Nurses in Public Sector

وقد قررت اللجنة بالاجماع الموافقة على اجراء البحث المشار اليه اعلاه .
وعليه تم التوقيع من قبل اعضاء اللجنة حسب الاصول .

عضو اللجنة
رئيس قطيعة الاشعة العلاجية
الدكتور / رسمي مبيضين

عضو اللجنة
رئيس قسم الجراحة
الدكتور / فاضل العجمي

عضو اللجنة
المساعد لشؤون التمريض
هاني القضاة

عضو اللجنة
رئيس قسم التمريض
هاني القضاة

عضو اللجنة
رئيس قسم العناية بالمرضى
الدكتور / عبد المتع السليمات

عضو اللجنة
رئيس قسم الباطني
الدكتور / وسيم حموده

عضو اللجنة
رئيس قسم الاطفال
الدكتور / وسيم حموده

عضو اللجنة
رئيس قسم العناية بالمرضى
الدكتور / وسيم حموده

رئيس اللجنة /
مدير مستشفى البشير
الدكتور / احمد قطيحات

الدكتور / عبد العزيز حمود
المساعد الطبي

لجنة الأخلاقيات

www.moh.gov.sa : ٩١٢ ٦ ٥٨٨٢٧٢ فاكس : ٩١٢ ٦ ٥٨٨٢٧٢ ص ب ٨٦ الرياض ١١١١٨ : ٩١٢ ٦ ٥٨٨٢٧٢



م ب ا / لجنة اخلاقيات / ١٠٨٠٨٠٨

الرقم

٢٠١٥/٧/٢٢

التاريخ

الموافق

مدير تطوير الموارد البشرية

تحية طيبة وبعد ،،،

اشارة لكتابكم رقم تطوير /خطوط 4267/ تاريخ 2015/6/25 بخصوص البحث المقدم من قبل الطالب/عدي محمد رمزي السيواف.

ارفق بطيه قرار لجنة اخلاقيات البحث العلمي والمتضمن الموافقة على إجراء البحث العائد للمذكور أعلاه .

للتكرم بالاطلاع واجراءاتكم لطفا

واقبلوا الاحترام

مدير مستشفى البشير

الدكتور احمد قطيحات

المستشار عبد العزيز شمعة
المساعد الفني

ص ب

مديرية تطوير الموارد البشرية

٢٠١٥ - ٢٣

الرقم ٢٠١٥/٧/٢٢

١١/٢٢/٢٠١٥

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الرقم / تطوير / خط / ٢٤٦٨

التاريخ

الموافق ٢٦ / ٥ / ١٤٤١ هـ

مدير مستشفى (المرفق الحيوي) المسمى

تحية طيبة وبعد ،،،

أرفق طياً صورة عن كتيب مدير مستشفى البشير / رئيس لجنة أخلاقيات البحث العلمي رقم م ب أ / لجنة أخلاقيات / ١٠٩٠٨ / تاريخ ٢٠١٥/٧/٢٢ بخصوص السماح لطالب الدكتوراة عدي محمد رمزي السيوف اجراء بحث بعنوان :-

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أرجو التكرم بالإيعاز لمن يلزم تسهيل مهمة اجراء البحث اعلاه .

وتفضلوا بقبول فائق الاحترام ،،،

/ مدير تطوير الموارد البشرية

الدكتورة فدى الشوابكة

مسلمة مدير
تطوير الموارد البشرية
الدكتور أمين المعاينة

المملكة العربية السعودية
وزارة الصحة
مستشفى البشير
الرياض
١٤٤١
٢٤٦٨