Predictive Factors to Adopt Integrating Technology into the Teaching Process by Faculty at Al-Qunfudah University College

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This dissertation titled
Predictive Factors to Adopt Integrating Technology into the Teaching Process by Faculty
at Al-Qunfudah University College

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Abstract

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Predictive Factors to Adopt Integrating Technology into the Teaching Process by Faculty at Al-Qunfudah University College

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This study aimed to investigate predictive factors that influence faculty members at Al-Qunfudah University College to adopt integrating technology into the teaching process by applying the initial four UTAUT factors: performance expectancy, effort expectancy, social influence and facilitating conditions to predict the behavioral intention of the faculty to integrate technology in teaching. Barriers that faculty encounter and potential incentives that faculty would receive were highlighted since the college did not have a clear vision toward adopting technology tools yet. A hard-copy survey was distributed among all staff members. Only 142 surveys were collected out of the 185 representing the total size of the faculty. In addition to the survey, ten faculty members were interviewed by the researcher inside the college campus. Multiple regression was used to highlight the influence of these factors on the outcome variable. Pearson correlation coefficient was applied to detect whether or not the initial UTAUT variables are correlated with each other. An independent-samples t-test was used to compare the mean scores of faculty’s behavioral intentions regarding their gender. One-way ANOVA was directed to identify the differences among three divided groups of faculty’s ages on the behavioral intention. As well, it was employed to identify the differences among the three divided groups regarding years of teaching experience on their behavioral intention.
The results of the regression analysis revealed that all independent variables predicted the behavioral intention to adopt technology for education; however, performance expectancy and social influence showed as insignificant predictors after controlling for other variables. Results of the interview supported the significant results of all four predictors which represented the triangulation of the study. Also, there were no differences among faculty’s behavioral intentions to adopt technology integration in the teaching process based on their gender, as revealed by the independent-samples t-test. One-way ANOVA showed no differences in the outcome based on faculty’s ages and years of teaching experience. Lack of technology infrastructure, lack of technological knowledge by faculty, the absence of training programs, and lack of leadership support were the common barriers. Providing ICT facilities and incentives for the faculty are recommended.
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Chapter 1: Introduction

Background of the Study

Throughout the past two decades, instructional technology and computer advancement have been flourishing, as can be seen in different fields in general and in education in particular. The continuous growth of technology and computers have positively affected and facilitated human lives. Thus, in order to meet the demands of leveraging computer technology in educational systems, many countries around the globe started paying more attention to provide their institutions with educational technology tools in order to enhance traditional teaching and learning approaches.

According to Roblyer and Doering (2010), the use of technology tools for educational purposes has been historically evolved, including three main stages of utilizing such tools. Firstly, the use of videos and audio to support other hard copies of the curriculum which did not allow students to effectively interact with their teachers synchronously. The second stage included the computer use for training (CBT), e-mail for communication, and some computer applications to mediate communication via video conference. The role of learners in this stage is moderate regarding to their interaction. Lastly, using the Internet and some computer applications to provide effective learning environment, such as online learning and simulation technology, which increase the role of learners to be more active than in previous stages. For the current study, the intention of faculty al Al-Qunfudah University College to the adoption of computer applications for presentations and other technology tools to facilitate the teaching process is investigated.
Drent and Meelissen (2008) indicated that using technology tools can play critical roles in any educational system by supporting the process of learning that leads to highly improved learners’ skills, such as critical thinking and problem solving. Hence, educators should integrate technology into their classes to support the learning objectives. They also state that technology integration in education cannot be a topic by itself but instead used as supplemental tools to traditional teaching approaches in the classroom, and these tools are capable of creating effective learning environments.

Technology applications can be used to support traditional teaching methods. Examples of such computer applications include presentation programs, online tools, social media, and institution websites (Mangin, 2011). Ball and Levy (2008) defined technology tools in education as a computer usage in conjunction with other electronic resources that meet the needs of any educational system. By applying technology applications in education, learners can access the content outside the school day and they can efficiently communicate with their teachers and classmates (Duffy & Bruns, 2006).

Integrating technology into higher education institutions facilitates learning and administration processes. Marchewka and Kostiwa (2007) indicated that universities and colleges need technology integration to meet the increasing demands of higher education. For example, using the internet to attend online courses and access learning materials is really helpful to meet the need of an increasing number of learners who are from distance areas. Indeed, integrating technology into higher education institutions is crucial to help students in several aspects such as communication, registration for classes, and doing assignments. Nora and Snyder (2009) provided a reason behind utilizing technology
integration, which is the capability of these tools to improve the quality of academic settings compared to traditional educational approaches.

The Kingdom of Saudi Arabia is a developing country that has begun integrating technology into all its universities and colleges. The government of Saudi Arabia encountered several barriers, especially with the building of infrastructures and technology equipment for the learning process. Almalki (2011) stated that the last decade has witnessed changes in information and communication technology development that has been supported by the Saudi government. This development in ICT involved the continuous financial support for universities and colleges in order to compete with the prestigious universities in developed countries around the world by supplying its institutions with updated technology tools and other training programs for faculties in order to enhance the higher educational system. Most Saudi colleges and universities are under the governmental sector that directly connects to the Council of Ministers; therefore, each higher institution is assigned to receive an annual budget based on the plan that has been provided, including the infrastructure and staff members, as needed for teaching and providing professional development for faculty.

In institutions of higher education, each faculty member from various specializations must have the ability to use computer applications and other current technical teaching aids to enhance his/her performance and support students to successfully achieve learning objectives. Therefore, institutions of higher education always hold several workshops and training programs about integrating different technical teaching aids, such as computer applications, to enhance and improve the
performance of the faculty (Macek, 2004). Based on the Pew Research Center’s findings (2011), about 89% colleges and universities employ technology in teaching and learning. For example, these institutions are offering online programs in several majors for graduate and undergraduate students. In addition, about 50% of curricula is digital, and 57% of students use their own portable devices, such as laptops and smartphones, during the class. Thus, faculty members must be equipped with basic technology skills that fit with the needs of the current generation.

In addition to the faculty members, administrators should support and work as a team to systematically collect, analyze and propose solutions to integrating technology into the educational environment. Consequently, they can make decisions about potential modifications in faculty’s teaching approaches and the needs of enhancing the use of technology (Owen & Demb, 2004). However, employing technology in education by faculty is influenced by many factors highlighted in several studies. Understanding and determining the key factors which predict the level of adopting technology tools in the teaching process are essential in order to find solutions that may treat this educational issue (John, 2015).

Ajjan and Hartshorne (2008) identified some serious factors that can limit the technology integration in educational systems. For example, the lack of self-efficacy in utilizing computer applications, technical support, training programs on technology integration, and perceived usefulness in technology affect the adoption of computer technology in teaching practices. Teo and Russo (2012) highlighted additional factors that influence faculty members to use information communication and technology in
undergraduate courses. These factors include positive attitudes toward computer usage, the comfort of use, and technology usefulness. Furthermore, if the faculty member has a positive view of using computer applications, he or she definitely uses it properly in the process of teaching.

Kessler and Plakans (2008) demonstrated that confidence in using computer applications plays a critical role in realistic use in teaching practices. They found that instructors often applied computer usage in teaching based on the level of confidence in using technology. Another study conducted by Shuldman (2004) found that a lack of understanding of how to incorporate technology into curriculum is a major factor that many faculty members experience. In addition, Al Mulhem (2014) asserted that the lack of understanding the process of integrating technology into education is still preventing faculty from using ICT, along with other considerable factors such as the lack of faculty time, the lack of confidence, inadequate computer labs, and the attitude toward technology.

Saudi faculty members’ practices are also affected by these factors. Based on some studies conducted in different regions, the lack of training programs for faculty members is the common factor affecting the use of technology (Aldhahi, 2011). Aldhahi (2011) noted that most of the training programs on how to use technology in education do not meet the needs of the faculty in institutions of higher education. Although the government of Saudi Arabia has been continuously supporting and improving its educational system, investigating factors that affect faculty members is really important because each institution has its own circumstances.
To highlight predictive factors to the adoption of technology, there are some models, such as Technology Acceptance Model (TAM) that can show the level of adopting technology and real practices (Rogers, 2003). Venkatesh, Morris, Davis and Davis (2003) stated that the person’s beliefs and attitudes can effectively influence the adoption of technology in daily practices. There are some factors that influence the acceptance of technology framed in a number of models. One of them is the Technology Acceptance Model (TAM), which is considered the well-known one for predicting factors behind accepting technology. This model has been cited and used in several studies in the educational field. TAM has been modified into the Unified Theory of Acceptance and Use of Technology (UTAUT). According to Venkatesh et al. (2003), UTAUT model comprises four basic components as stated below:

- Performance Expectancy.
- Effort Expectancy.
- Social Influence.
- Facilitating Conditions (p.447).

These four constructs are determinants of human behaviors toward using and accepting technology. Based on the theory, “all these components are moderated by gender, age, experience, and voluntariness” (Venkatesh et al., 2003, p. 450). For this study, gender, age, and teaching experience are investigated regarding the differences of mean scores of faculty in the dependent variable, the intention to use ICT since previous empirical studies introduced the potential effect of these variables on the acceptance of ICT in education. The TAM model in general and UTAUT in particular are considered a
powerful predictor of the use of technology, so it has been used, validated, and extended by many scholars (Liu, Chen, Sun, Wible & Kuo, 2010). Akbar (2013) claimed that examining UTAUT in new settings will contribute to maintaining and supporting its validity.

Statement of the Problem

In general, the Saudi educational system has obviously improved since the establishment of Saudi Arabia in 1932. The government continuously supports and funds the education system in order to compete with developed countries in this field. One of its efforts is providing and improving the communication and information technology in educational practices in both public and higher educational systems. Saudi students can attend the institutions of higher education for free. They are not required to pay any tuition; however, they earn monthly salary until they graduate and are working. In addition, the Ministry of Higher Education brings highly qualified faculty members to teach in all higher institutions. The higher educational environments are also taken into the government’s considerations. For these reasons, buildings and infrastructures are always renovated and supplied with new technology equipment to enhance and inspire learning and teaching processes.

There is an agreement about the potential roles of technology in education that led to better learning consequences. Hence, the Ministry of Higher Education always encourages all universities and colleges to adopt technology in educational practices in order to achieve better outcomes. For this purpose, computer labs and other technology media are provided adequately to each university and college; however, the reality of
incorporating technology in Saudi higher education still encounters several barriers related to institutions’ policies, infrastructures, training programs for faculty members, technical support, and attitudes toward technology use in education.

Al-Qunfudah University College is one of the Saudi higher institutions that was established in 1987 and awarded the diploma degree only (two years). It was called Al-Qunfudah Teachers’ College before it becomes a university college in 2007. In 1989, the college was able to grant bachelor's degrees (Four years after high school) in the following specializations based on the college website (Umm Al-Qura University, 2015):

- Qur’anic Studies.
- Islamic Studies.
- Arabic Language.
- Social Studies.
- Mathematics.
- Sciences.
- Artistic Education.
- Physical Education.
- Computer Science (established in 2004).

From 1987 to 2006, the college was administered by the Ministry of Education. During this period of time, the number of graduate students awarded bachelor’s degrees reached 2,972. These graduate students are qualified with adequate expertise to teach and manage the learning process. The college actually has contributed to meet the annual needs of teachers beside other teachers’ colleges (UQU, 2015). In 2007, Al-Qunfudah
University College witnessed a new era of developing its programs of study by combining all teachers’ colleges under the Ministry of Higher Education and it became a branch of Umm Al-Qura University. This transition positively affected the number of students enrolled each academic year.

According to the current researcher’s experience, the same programs are offered face-to-face on campus and students must take classes in campus. The college does not have any Learning Management System in order to provide some online classes to those who come from distant areas. Moreover, most faculty members still use traditional teaching methods, such as the whiteboard to facilitate learning process in traditional classrooms except for some initiatives of using computers and data shows in some classes. In fact, Al-Qunfudah University College has been equipped with desktop computers in each academic department to facilitate administrative work. Also, there are two computer labs; each of them has 26 computers. In 2013, the college established a new internet network on campus; however, it did not meet the needs of both students and faculty due to the lack of infrastructure in its buildings. This basically led to a lack of employing technology in the educational environment in the college’s campus. The use of internet limited the access only to emails and students’ records (UQU, 2015).

The college has two different campuses, one is for males and the other is for females. Communication between the two campuses is conducted via phone and formal papers for administrative purposes. All these practices, in fact, slow down the learning outcomes. Therefore, it is essential to study the notion of integrating technology into Al-Qunfudah University College to highlight factors that influence faculty members to adopt
technology integration in teaching and learning. In this study, the researcher means by technology integration as computer applications for presentations such as PowerPoint and Prezi, using email to communicate with faculty and students, uploading courses’ materials on Blackboard LMS, using College E-services, employing social media such as Facebook and Twitter as collaborative tools in the educational environment, and introducing some Google collaborative tools such as Google docs and slides.

In addition, technology barriers that encounter the faculty are illustrated and some incentives that they would like to receive regarding this adoption. According to results of this quantitative case study, the researcher will provide this institution with a proposed solution for each effecting factor that prevents faculty members from adopting technology in order to enhance educational performances not only in this institution but also in all newly established institutions of Saudi higher education in the western region since they are less exposure to the western world.

In summary, the researcher believes that Al-Qunfudah University College faces many issues related to the infrastructure and teaching and learning approaches. The number of students is significantly increasing each semester. Thus, integrating technology into teaching and learning is a suitable solution in this institution to be equivalent to the rest of the academic institutions affiliated with the Ministry of Higher Education. Indeed, there is an urgent need to develop a plan for adopting technology tools in the learning environment occurred in this college and also investigating the influencing factors that affect the adoption of technology integration as can be seen by the researcher.
**Purpose of the Study**

This study aimed to examine predictive factors to the adoption of technology integration in faculty’s teaching approaches at Al-Qunfudah University College. It is essential to explore these factors to highlight potential solutions that facilitate and integrate computer applications and technology media in the educational environment of this institution. The framework that was used to conduct the current study is the UTAUT model due to its power to determine the factors that effectively predict the actual use of technology tools for educational purposes. The researcher offers some suggestions and recommendations to assist faculty members on how to effectively integrate technology into teaching practices and possible ways to overcome barriers in this regard within the Saudi Ministry of Higher Education plans.

**Research Questions and Hypotheses**

This case study using quantitative methods aimed to highlight the key factors to the adoption of technology integration in faculty’s teaching approaches at Al-Qunfudah University College by using the established four determinants of the UTAUT model: performance expectancy, effort expectancy, social influence, and perceived facilitating conditions to effectively determine the behavioral intention to use innovative technology. Other variables such as age, gender, and experience are used to highlight their effect on the outcomes. To accomplish the purpose of current research, the following three questions were answered:

1. To what degree do performance expectancy, effort expectancy, social influence, and perceived facilitating conditions predict faculty’s behavioral intention to
adopt integrating technology into the teaching process at Al-Qunfudah University College?

2. Are there statistical differences in faculty’s behavioral intention to adopt integrating technology into the teaching process at Al-Qunfudah University College based on their age, gender, and experience?

3. What are the technology habits of faculty at Al-Qunfudah University College?

The above questions were hypothesized in order to predict the significant role of each factor on the faculty’s intention to technology usages at the current institution based on the established variables that the UTAUT has validated:

H1: Performance expectancy, effort expectancy, social influence, and perceived facilitating conditions predict faculty’s behavioral intention to adopt technology integration in the teaching process at Al-Qunfudah University College.

H2: There are statistical differences in faculty’s behavioral intention to adopt technology integration in the teaching process at Al-Qunfudah University College based on their age, gender, and experience.

Significance of the Study

Like many studies conducted in the educational field, this study contributes to investigating and identifying the factors behind the notion of technology integration adoption in higher education in Saudi Arabia. It is considered the first study conducted in higher education institutions in the western region of Saudi Arabia that focuses on the factors behind the adoption technology for educational purposes since the Saudi western region is less exposure to the western world. This study also applied the established four
variables that at the UTAUT model to predict the behavioral intentions of faculty, which provide knowledge and theoretical aspects of employing technology in education.

The study concluded with some suggestions and recommendations about how Saudi faculty members can overcome the barriers and obstacles that they encounter when they utilize technology tools in teaching students in higher institutions of Saudi Arabia. The recommendations of this study play critical roles regarding to incorporating technology in education, and this study could be transferred to another Saudi established institution especially in the western region. Additionally, possible solutions to overcome the lack of using computers for academic purposes were illustrated.

Benefits and a clear vision of the technology integration notion were demonstrated in literature review of this study. The historical evolution of Technology Acceptance Model was illustrated in many previous studies around the globe that were conducted in this area. In addition, this study introduced a plan for Al-Qunfudah University College related to better teaching performance by using ICT in education. Finally, the findings of the current study will act as a guide for Saudi Universities and colleges intending to adopt technology in their higher educational practices. In addition, the results of this study helps Al-Qunfudah faculty members to have an overall understanding of the current technology integration usage, and what they need to do to improve their skills in order to use it properly, such as faculty training programs on how to effectively use technology in education and faculty professional developments as needed.
Limitations of the Study

According to Nenty (2009), limitations are considered uncontrollable issues that have potential effects on the internal validity of a study. This quantitative case study aimed to investigate factors that encourage faculty members to adopt technology in their teaching approaches at Al Qunfudah University College, Saudi Arabia. The researcher traveled to Saudi Arabia to conduct this quantitative case study in the beginning of the summer semester at Ohio University 2016 corresponding to the end of the spring semester in Saudi Arabia, so many faculty members were ready for the exam period. The researcher printed out the study instrument in order to distribute it by hand because some faculty members do not have computers in the workplace. Before distributing surveys, permission has been taken from the Dean of College in order to inform faculty members to facilitate the researcher’s work. Another main limitation was that there were two campuses, one for males and the other for females. Based on the Saudi religious culture, males are not allowed to enter and have contact with females in work places. In this case, the researcher authorized a female colleague to distribute and collect surveys. The researcher has asked each participant after completing the study instrument in order to make sure that participants understand all sentences of the survey.

For the instrument, the researcher carefully translated the study instrument from English to Arabic then from Arabic to English because most faculty members are not proficient in the English language. Also, the researcher added the study’s purpose section in addition to introducing the UTAUT constructs especially for female faculties who were not allowed to be in touch with the researcher.
According to Gahtani, Hubona and Wang (2007), the UTAUT model is not necessarily flexible when explaining the use and acceptance of technology in different contexts. Thomas, Singh and Gaffar (2013) also indicated that the UTAUT model must have cross-cultural evaluations in order to be stronger. In addition, regarding the relationship among the model constructs, there is a limitation between the two factors: behavioral intention and use behavior; therefore, the target goal of using this model is to investigate the use and acceptance and not just the intention to use (Mayer & Lazer, 2007). For this study, the researcher did not consider the actual use of behavior as the dependent variable. Instead, the behavioral intention variable was the outcome since the college did not adopt the technology integration in its practices; and also this study was conducted in a limited time before introducing the new system to the practice and observing the actual adoption.

It is a fact that the Saudi Arabian culture differs from other countries, such as the USA. Hence, there could be people who are resistant to using technology in the workplace. Otherwise, there could be a lack of understanding the four UTAUT constructs that could affect the study results. In anticipation of that, the relationships among variables and moderating the effect of the correlation among them were not studied as they were in the original UTAUT model. Instead, the researcher studied how could the established four variables predict the behavioral intention of faculty and what differences among them in the outcome variable regarding the age gender and experience, so the entire UTAUT theory was not applied here. Finally, the prediction model, UTAUT, does not include all possible factors that predict integrating technology in education by faculty;
however, it is considered a good model due to its robust validity even though it was based on the North American context.

**Delimitation of the Study**

This study intended to examine and study influencing factors that predict the use of technology for educational purposes at this institution. The target audience were all faculty members at both campuses. In fact, the target population was limited since there were only 185 faculty members working on two campuses. There were non-responses, missing data, and outliers that could affect the results of the current investigation. Hence, the researcher believes that the most important findings based on this investigation were to enhance the idea of adopting technology integration in this institution, and highlighting the most important factors that help leaders in this institution to work on intensively.

The time, also as mentioned earlier, could affect the results due to only two weeks for collecting data at the end of the spring semester 2016. Since we are living in the digital age, the college might obtain new technological facilities during the year or faculty training programs that affect this investigation; nevertheless, the researcher believes that the majority of faculty members were available in their offices and free of teaching loads before exams periods at the end of spring semester 2016.

In sum, the current study should be applicable to other newly established institutions in Saudi Arabia. The results of this study generated a conclusion of the factors behind integrating technology at this institution based on the four main UTAUT constructs.
Definition of Terms

The definition of terms, as stated below, is to provide a clear understanding of the study’s context.

- **Adoption:** It means the process of accepting and using something new and making it a part of the current situation (Merriam-Webster Dictionary, 2015). Here, adoption refers to the employing of computer technology in faculty’s teaching methods at Al Qunfudah University College.

- **Behavioral Intention:** it is the probability of a person to perform a certain desirable behavior (Venkatesh et al., 2003). In this study, this term as a dependent variable, is considered the faculty’s intention to use technology innovations to facilitate their teaching approaches.

- **Effort Expectancy:** It is the level of ease that the adopted system or approach is associated with (Venkatesh et al., 2003). Here, the effort expectancy variable is basically around the faculty’s perceptions about whether utilizing technology tools in teaching at Al-Qunfudah University College is easy or tough for their decisions to adopt this approach in their academic practices.

- **Facilitating Conditions:** Venkatesh et al. (2003) state that facilitating conditions are environmental features such as technical support and other infrastructures that support users to adopt and use the new system. Here, facilitating conditions refer to technology resources, technical support and knowledge required to utilize technology tools that offered by the institution that support the faculty’s decisions to adopt and use them.
• **Factor:** Factor is defined as a component that contributes to an accomplishment or an effect (Longman Dictionary, 2015). In this study, factor means a combination of elements that affect the actual use of technological equipment in education by faculty members at Al Qunfudah University College.

• **Performance Expectancy:** It is regarding a person’s beliefs in the adopted system that is capable to assess users to perform tasks (Venkatesh et al., 2003). In this study, performance expectancy relates to the faculty’s beliefs in the effectiveness of employing technology applications in teaching undergraduate student at this institution, and how technology is capable to facilitate faculty’s academic jobs.

• **Social Influence:** It is regarding how important people to the system user think he/she is able to perform a certain task using the innovative system or approach (Venkatesh et al., 2003). In the context of study, it is about important individuals to the faculty such as college’s Dean, Department Chair, and colleagues that they think he/she is able to use and adopt technology in teaching at this college.

• **The teaching process:** It is defined as an array of approaches that instructors use in order to facilitate instruction and lead to improving students’ achievement (Coe, Aloisi, Higgins & Elliot, 2014). Here, the teaching process refers to the faculty members’ approaches to deliver and convey content to students at Al Qunfudah University College.

• **Technology Integration:** This term in educational environment is technology applications that well-support traditional teaching methods (Weston, 2005). In this study, integrating technology includes PC applications, and other
technological tools that employed by faculty members in their teaching practices to fill the gap of traditional teaching approaches at Al-Qunfudah University College.

- **Technology:** Technology as defined by Yidana (2007) is computer-based tools that can be used by instructors in order to enhance educational environments. These tools could be computer software, the internet, and other technological multimedia (Yidana, 2007). Here, by technology, the researcher means applications of computer software, email, LMSs, College E-services, social media, and some Google collaborative tools.

**Organization of the Study**

This quantitative case study is structured on five chapters. The first one includes the study background and the introduction, theoretical framework, study problem, purpose and significance of the study, research questions and hypotheses, and limitations and delimitations. In chapter two, the literature review is presented, including relevant topics such as technology integration in education, Technology Acceptance Model (TAM), a historical overview of the education system in Saudi Arabia, and faculty usage of technology in teaching, and some factors affect this process based on literature. Research design and methodology are introduced in chapter three. Results and data analysis are offered in chapter four. Finally, after analyzing the data, chapter five has the study discussion, recommendations, and suggestions concluded from the study results.
Chapter 2: Literature Review

The Historical Evolution of Technology Acceptance Model (TAM)

Technology Acceptance Model (TAM) is, indeed, considered the most common model used in the field of accepting technology. Lala (2014) defines TAM as a theory that can be used and developed to determine and predict the use of technology based on some determinants that influence the technology user. Several researchers have cited this model and its updated versions, such as TAM2, TAM3, and UTAUT due to its power to predict and determine predictive factors to the adoption of technology innovation in education. TAM mode has been modified by several researchers around the world. In this context, the researcher provides an overview of TAM emergence and historical evolution according to the literature review, in order to understand how its constructs have been modified based on the reasonable facts.

In 1985, TAM model was proposed and presented by Fred Davis to obtain his PhD degree from MIT Sloan School of Management. It was proposed to explain the factors that influence the user’s behavior to employ computer applications for work. In this first step of the emergence of TAM, Davis (1985) stated that the use of technology in any system is influenced by some external factors such as the motivation of users. He also indicated that the motivation of users in any system is influenced by external stimulus. He provided some examples of external stimulus such as the features and capabilities of the system. Figure 1 below is the first conceptual model of TAM to explain the determinants behind using technology:
Figure 1. The First Proposed Model for Technology Acceptance (Davis, 1985, p.10).

Basically, the TAM model was generated and extended from the Theory of Reasoned Action (TRA) which offered by Fishbein and Ajzen (1975), which indicated that the individual’s earlier intention along with beliefs of any behavior lead to actual performances of any individual by influencing his or her attitude as shown in Figure 1 (Davis, 1985).

Figure 2. The Theory of Reasoned Action (Davis, Bagozzi & Warshaw, 1989).

Davis (1985) states that by providing the TRA, Fishbein and Ajzen argued that the actual behavior of people is determined by their prior intention in addition to their beliefs. Fishbein and Ajzen (1975) defined the behavioral intention of someone as a measure of the intention level of people to do or perform the specific task. Based on TRA, the person’s behavioral intention is determined by two components:
• The attitude of a person toward the desired behavior. In this case, the attitude refers to a feeling toward something that leads to performing the actual behavior. This feeling could be negative or positive and basically reflects the person’s behavior (Davis, 1986). In addition to that, Chuttur (2009) stated that Fishbein and Ajzen suggested that the attitudes toward performing and generating behavior could be influenced by the person’s beliefs in performing behavior and evaluations of the behavior results as identified above in Figure 2.

• Subject norm that is related to the person’s action. Fishbein and Ajzen (1975) defined the subject norm as the perception of a system user that significant individuals to him/her think that he or she can act or perform a specific behavior (Chuttur, 2009). The subject norm is basically influenced by the normative beliefs of a person and the motivation as well as shown in Figure 2.

In fact, TRA is considered a useful model that explains the individual behavior and determinants towards the adoption of specific behavior. It was crucial to explaining the increasing needs of technology in 1970s.

According to Chuttur (2009), Davis, in his model, relied on TRA to refine his first proposed model shown in Figure 1. It becomes an extension to TRA by making some changes as seen in Figure 3:
Davis (1985) believes that the individual’s motivation could be explained and determined by the following factors:

- **Perceived Ease of Use**: The degree of ease that is expected by the user in the target system.
- **Perceived Usefulness**: The degree of utility that will increase an individual performance when they apply an adopted system.
- **Attitude toward the adoption of technology**.

Based on the original TAM shown in Figure 3, the attitude of any person plays a critical role to determine if the person accepts or rejects the actual system (Chuttur, 2009). The attitude of the system user is influenced by two main factors:

- **Perceived Ease of Use**.
- **Perceived Usefulness**.

These two factors that impact the attitude have a relationship which is by considering the perceived ease of use, the perceived usefulness will be directly influenced. Davis (1986)
states that both two significant factors: perceived ease of use and perceived usefulness are influenced by some external factors represented by X1, X2, X3.

There were some changes were conducted by Davis to refine his proposed model shown in Figure 1 to be rooted to the TRA. These changes are below:

- Eliminated the subjective norm as a predictor of actual behaviors of any individuals and merely considered individual attitude in TAM model to predict actual behaviors.
- Relied on the two constructs, perceived usefulness and perceived ease of use to determine the attitude toward the innovative or a new system shown in Figure 3.

Later, TAM has been developed by Davis, Bagozzi, and Warshaw in 1989, and they involved the behavioral intention as illustrated in Figure 4.

![Figure 4. First TAM Modified by Davis, Bagozzi and Warshaw (1989, p.985).](image)

Davis et al. (1989) concluded with the above model, based on their study’s findings, that focuses on the influence of person’s intention on the actual system use. The results revealed that there is a relationship between the behavioral intention to use the system and the actual use of that system with the perceived usefulness. The main findings
that Davis et al. (1989) relied on were two determinants, perceived usefulness and perceived usefulness, that directly affect the behavioral intention of system users. Based on this significant finding, the attitude factor was removed.

By eliminating the variable of attitude because it seems to Davis et al (1989) as not a major factor that predicts the actual use of any system based on their performed study, and by introducing behavioral intention, the actual use of any system could be directly predicted from the perceived usefulness as demonstrated in Figure 5 (Venkatesh & Davis, 1996):

![Figure 5. Final Version of TAM (Venkatesh & Davis, 1996, P.453).](image)

According to Venkatesh and Davis (1996), making an allowance for the other factors was also a change in this model, such as considering the features of systems, training on how using the system, and the designing of participation. The final version of TAM was considered a valid prediction of accepting and using a new system.
TAM 2.

TAM 2 is a significant extension of TAM 1, offered by Venkatesh and Davis in 2000 due to the limitations of TAM in explaining and identifying the reasons that identify the user that perceive the usefulness. They suggested that by adding some extra variables to the factor perceived usefulness in the preceding model and named the current model TAM 2 as shown in Figure 6 (Chuttur, 2009). Venkatesh and Davis applied this model on a study with workers from different systems. Results revealed that TAM 2 was more helpful in offering more explanations for why users find the system they adopted helpful. In addition, they found a significant result that this model can be applied whether in voluntary or compulsory settings. Also, the extra added variables to the factor “perceived usefulness” were the following (Venkatesh & Davis, 2000):

- Subjective Norm.
- Image.
- Job Relevance.
- Output Quality.
- Result Demonstrability.
Figure 6. TAM 2 (Venkatesh & Davis, 2000, p. 451).

TAM 3.

Correspondingly, there is another extension of TAM 2 by Venkatesh (2000) that identified some factors that influence the perceived ease of use variable. Two sets were added to the perceived ease of use factors which are anchors and adjustments groups. Each of these groups has specific determinants as following:

1- Anchors: Which refer to the user’s beliefs in computer technology and its usage (Venkatesh, 2000). This group has these determinants:

   - Computer Self-Efficacy: The capability of people to do a certain task in a workplace by using computer applications.

   - Perceptions of External Control: The individual beliefs about the ability of a current workplace that support the users with facilitating conditions.
- Computer Anxiety: The degree of fear encountered by users when they use a computer to perform the target work.

- Computer playfulness: The level of subjective suddenness in microcomputer associations (Venkatesh, 2000).

2- Adjustments: Which refer to the user’s beliefs shaped by the experience with the adopted system (Venkatesh, 2000). This group has these determinants:

- Perceived Enjoyment: The level of enjoyment perceived by individuals when they perform a specific task.

- Objective Usability: A correlation of frameworks in view of the genuine level of exertion required to finish particular tasks.

TAM 3, as shown in Figure 7, is considered a critical extension of TAM 2 proposed by Venkatesh (2000) that mainly identified two groups for the perceived factor, the ease of use. The two groups are anchors and adjustments. TAM 3 was tested three times with different organization systems by Venkatesh et al. (2000). Results revealed that there was adequate evidence of explaining the perceived ease of use by added variables in three different systems.
TAM limitations.

Even though this model is able to predict the determinants of the actual acceptance and use of a system, some studies indicate that TAM has some limitations. For example, Chuttur (2009) introduced the TAM limitations in three categories stated below:
• Limitations based on the methodology of testing this model.

• Limitations related to the variables relationship.

• The main foundation of TAM.

In the first category, limitations based on the methodology of testing this model, Yousafzai, Foxall and Pallister (2007) stated that the data collected to determine the variables that influence the use of the systems was measuring the system use as an alternative of the real data related to the actual use. They just criticized the aspect of self-reported use data that is not considered to be representative of the actual-designed system. Other researchers considered how the participants’ circumstances play critical roles to accept and use the system because in some studies, participants get rewards or extra advantages for experimental systems (Legris, Ingham & Collerette, 2003).

For the second category, since the attitude factor has been removed from the final version of TAM and other developed two versions, TAM 2, and TAM 3, some researchers argue that the attitude of users can play an essential role in accepting and using the new system. Hence, the attitude should be restored in the TAM model (Yang & Yoo, 2003). Another study by Burton and Jones (2006), replicated the TAM model, found that two determinants, perceived ease of use and perceived usefulness, were not mediating all positive effectiveness to use the system. They stated that other external variable might affect the use and acceptance of innovative systems. These external variables could be the age, the level of training, and the user experience to deal with the current system.
Regarding limitations of the TAM model foundation, the theoretical relationship among the model variables was not strong enough when formulated (Bagozzi, 2007). He illustrated that the intention to do a specific behavior is not always considered a determinant of the actual use. In this case, he explained that there is a time period between the intention to do something and the actual use of that thing. Therefore, there could be other influencing factors affect the adoption of the system. In his study, Bagozzi concluded that the TAM model is not suitable to predict the acceptance of a new system.

**Theoretical framework: The Unified Theory of Acceptance and Use of Technology (UTAUT).**

Regarding the technology usage and acceptance in educational fields, Venkatesh, Morris, Davis and Davis (2003) introduced the UTAUT model to shed light on reasons that encourage people to adopt technology in different workplaces. Venkatesh et al. (2003) mainly unified UTAUT depending on the Social Cognitive Theory and eight following models:

- The Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975).
- The Technology Acceptance Model (TAM) by Davis (1989).
- The Motivational Model (MM) Davis et al. (1992).
- The Innovation Diffusion Theory (IDT) by Rogers (1962).
• Social Cognitive Theory (SCT) by Bandura (1986).

To explain UTAUT, Venkatesh et al. (2003) indicated that this model is basically has four possible components that predict the acceptance of utilizing technology in workplaces as stated below:

**Performance expectancy.**

It is regarding a person’s beliefs in the adopted system that is capable to assess users to perform tasks (Venkatesh et al., 2003). They indicate that this component is made up of five construct that related to the previous eight models which are “perceived usefulness, extrinsic motivation, job-fit, relative advantage, and outcome expectations” (p.447). When individuals believe in the desired value of the new system adopted, they will highly adopt and use it.

**Effort expectancy.**

Effort expectancy, as defined by Venkatesh et al (2003), is the level of ease that the adopted system or approach is associated with. This construct was captured from three components related to eight models that they unified which are perceived ease of use, complexity and ease of use. In fact, If the individual feels that he or she will not encounter complications in using a new system, the adoption of that system would be higher than those who are facing problems with a new system because they will be reluctant and return to the previous one.

**Social influence.**

According to Venkatesh et al. (2003) social influence, as a factor that predict the use of a system, is regarding how important people to the system user think he/she able to
perform a certain task using the innovative system or approach. Social influence was made up of three different constructs which are the subjective norm in, social factors, and the image. To illustrate that, when the system users feel that other important people to them appreciate their work, users will highly gain self-confidence

*Facilitating conditions.*

Venkatesh et al. (2003) stated that facilitating conditions are environmental features such as technical support and other infrastructures that support the use of systems. Three different constructs were represented this construct from previous models which are perceived behavioral control, facilitating conditions and compatibility. Indeed, when individuals realize that the infrastructures and technical support exist, they will be highly influenced to use a new environment.

The above four components of UTAUT are predominant factors that predict the behavioral intention to use of technology in the educational environment. According to Venkatesh et al. (2003) behavioral intention is the probability of a person to perform a certain desired behavior.

Based on their findings, Venkatesh et al. (2003) stated that the UTAUT includes four factors that moderate the relationship between the main constructed components stated below in Figure 8. These four additional factors are below and shown in Figure 8:
Figure 8. The UTAUT (Venkatesh et al., 2003, p.447).

**Age**

It moderates the impact of three UTAUT constructs: performance expectancy, effort expectancy, social influence and facilitating conditions on the individual’s behavioral intention to accept technology applications. Based on Venkatesh et al. (2003), the performance expectancy for younger users was higher in predicting the behavioral intention to adopt technology. For effort expectancy, social influence and facilitating condition, the effect was high for older workers to adopt technology.

**Gender**

In performance expectancy, the effect was higher for males than females to adopt technology in a workplace. In effort expectancy and social influence, females highly predicted the intention to use technology (Venkatesh et al., 2003).
Prior experience in using technology

This factor highly predicted the effect of two factors which are effort expectancy and social influence on the users’ behavioral intentions to accept technology especially for those who had limited experience. Regarding perceived facilitating conditions, experienced users highly adopted technology tools in their new system (Venkatesh et al., 2003).

Voluntariness of technology use

It means that perceiving that the use of innovation is not mandatory. Social influence basically influenced the use of technology especially for those who were required for employing the innovative technology tools for doing their tasks (Venkatesh et al., 2003).

In the current investigation, the researcher is going to rely on the four established variables that this model has validated, which are performance expectancy, effort expectancy, social influence and facilitating conditions. All these variable are working together to predict the behavioral intention to employ technology applications in the teaching process by the faculty at this institution. Therefore, the faculty’s beliefs in the effectiveness of technology integration in education that enhance them to do their tasks, in addition to their beliefs in the ease of these tools that associated with, contribute to the influence on their intention to adopt this approach. Also, important people to the faculty such as the Dean and Department Chair who appreciate the capability of technology tools that enhance the educational environment beside providing technology resources and support at the institution are really predictive to the technology adoption by faculty
members. According to these aspects of UTAUT, the dependent variable, the intention to use technology apps in education, is sufficiently predicted. The other moderating variables, such as age, gender, and faculty teaching experience are also going to be investigated to highlight the differences among faculty in their intention to adopt this new teaching approaches regarding these variables. In fact, it is not easy to apply the entire model in this study since there is one factor, which is the voluntariness to use, is not convenient in this study because the whole Saudi educational system does not require integrating technology in faculty practices. And due to the limitation of this model that is not flexible when explaining the use and acceptance of technology tools in different contexts, the researcher will only use the four validated constructs of the UTAUT to conduct this study and will see if this works.

**Validity and reliability of the UTAUT.**

The UTAUT has been widely tested and applied in different domains. The results revealed that this model is more robust than other previous technology acceptance models (Venkatesh et al., 2003). Validity and reliability of UTAUT have been confirmed; however, the relationship among the UTAUT factors is not always accomplished (Thomas, Singh & Gaffar, 2013).

According to Taiwo and Downe (2013), Venkatesh et al. (2003) mainly unified UTAUT depending on the Social Cognitive Theory and eight models that have been validated to use and accept technology innovations also the construct validity were greater than .70 for each construct. According to Venkatesh, Thong and Xu (2012), UTAUT has the ability to explain 70 % and 50 % of the population variance in
behavioral intention and the use of technology respectively. Saadé, Nebebe, and Tan (2007) indicated that the validity of technology acceptance model is solid, and it can be extended to explain the acceptance of technology innovations in several educational settings.

Taiwo and Downe (2013) investigated the validity of this model according to the results of 37 selected studies by the authors that conducting UTAUT. The relationship among the UTAUT variables was tested using a large sampling of 11,000 in all empirical literature in this area. The findings of this study corresponded to the Venkatesh et al, (2003). Results in determining all constructs was significant although the relationship among them was weak, except for the correlation between Performance Expectancy and Behavioral Intention which was strong.

Alkhasawneh and Alanazy (2015) carried out a study at Aljouf University in Saudi Arabia in order to investigate the essential factors that contribute to enhance faculty members’ usability of information communication and technology by applying the UTAUT that determines the level of ICT adoption. To achieve this purpose, they designed a questionnaire according to the initial UTAUT instrument that offered by Venkatesh et al. (2003). Sixty faculty members at Aljouf University participated in this investigation from different faculties including both genders. The researchers analyzed their data based on Pearson correlation analysis to highlight the level of correlation between the UTAUT variables. Also, an independent sample t-test was used to measure the differences between males and females in their scores of intention to use ICT. One-way ANOVA was applied to study the effect of ages among the four established
constructs. Results showed that there was positive relation between all independent variables and the dependent variable which is faculty’s intention to adopt ICT at Aljouf University. For moderating variables, age and gender, there were not statistical differences among the divided groups in this study due to the idea that technology tools are considered a part of regular life.

Additionally, Attuquayefio and Addo (2014) investigated the issues and circumstances around students’ adoption of ICT at Methodist University College Ghana, which has four colleges. They adequately defined the ICT and its potential to enhance the learning environment; however, they relied on old references that exceeded ten years old. 400 students participated in this study from only two colleges, social studies and business administration, which represent 4484 of the actual population size. Other two colleges were not included in this investigation without any reasons for the exclusion. 345 questionnaires were returned from the total numbers of their sampling. The researchers indicated that they used purposive sampling method, and they did not provide any evidence of conducting this approach and how they accessed them. UTAUT model was applied to highlight factors surrounding students’ adoption of technology with excluding moderating variables such as age, gender, and experience from the original model which may impact the result and relationship among these factors. A survey that composed of two sections was distributed to gather responses. It was about demographic information and established UTAUT constructs. To analyze the data, the researchers utilized structural equation modeling to evaluate the theoretical model they used. The findings showed that the factor effort expectancy is the only factor that influenced the students’
intention to utilize ICT in their study. Social influence and performance expectancy variables did not influence students to use ICT. Additionally, the behavioral intention variable was statistically insignificant to predict the actual use of ICT by MUCG students.

Marchewka and Kostiwa (2014) explored the students’ perceptions toward utilizing the course management system software, Blackboard, by applying the theory of UTAUT. Also, the researcher sought to highlight the reasons behind better understanding to make decisions regarding using such technology tools for undergraduate and graduate students at Midwestern University in USA. The researchers distributed an online questionnaire which was the original UTAUT instrument designed by Venkatesh et al, (2003). 132 students were engaged in this investigation; however, the actual size of the study population was not identified and the method of selecting the sample was not demonstrated which impacted the external validity. The researcher spent seven months to collect the data. The reliability analysis showed that Facilitating Conditions, Self-Efficacy and Anxiety were lower than .70. To measure the relationship among UTAUT factors, Spearman correlation analysis was used to study the relationships between independent variables and the dependent one. Results indicated that performance expectancy did not predict students’ behavioral intention to accept Blackboard software which contradicts with the established results of UTAUT model. Effort expectancy and social influence factors had a significant relationship with the dependent variable. For moderating gender and age, results showed that these two variables did not affect the relationship among variables. In this study, the facilitating conditions factor was not
reported in the finding section due to the lack of reliability; Alpha Cronbach was .452. Even though UTAUT is considered a significant model in predicting the use of technology tools, findings of this study did not recommend using this model for technology tools due to the limitation regarding the Sample size. The researcher claimed that the UTAUT does not always determine factors behind employing technology in education.

Tan (2013) carried out a study regarding the factors that affect the use of English websites by Taiwanese undergraduate students that should be highlighted. The researcher only relied on the main four constructs of UTAUT to predict the behavioral intentions of students to use e-learning websites. Moderating variables were not taken into account in this study because the researcher argued that all college students are in the same level of all moderating variables. A survey has been translated from English to fit with the study context. The researcher indicated that after translating the survey, it was reviewed by two foreign language professors. The researcher tested the reliability of this instrument and did not rely on the results’ internal consistency with the initial UTAUT that was conducted in 2003. There were 176 students that participated in this investigation from ten different colleges in this Asian country. Results indicated that all four independent variables of UTAUT have a significant relationship with the students’ intention to accept e-learning websites based on Pearson correlation analysis. Also, performance expectancy, effort expectancy and social influence significantly predict the intention to use these websites. The use of these websites by learners was influenced by students’ behavioral
intentions and the other variable that directly influences the use which is facilitating conditions.

Oye, Noorminshah and Rahim (2011) conducted a study to explore the extent of the UTAUT model to explain the adoption of ICT among in Nigerian tertiary institutions. The researchers focused on one university as pilot study which is the University of Jos Plateau State. To obtain the study purpose, Oye et al. (2011) distributed a survey among one hundred faculty members at the same university and it has been tested for reliability, so Cronbach’s Alpha was .786. They also provided clear evidence of how the UTAUT model has evolved, and they also explained the resources of each variable derived from the eight models that were unified. The researchers did not introduce how they designed their instrument or even the resource of the original instrument that was adopted from the UTAUT model. The method by which they selected the sample was not explained. Further, the population size was not provided in the current investigation. For the analysis, Regression was applied to assess the relationship between the UTAUT constructs. Results showed that the performance expectancy factor predicted the behavioral intentions of academic staff in this institution to use ICT. It explained 5% of the variation of the dependent variable. The Effort expectancy was also a predictor of their intentions to use ICT. The Social influence variable was not statistically significant to predict the faculty’s intentions to practice ICT. The Facilitating Conditions variable influenced the adoption of ICT in University of Jos Plateau State. Multiple regression analysis was used to examine the effect of all UTAUT variables to influence the behavioral intention. The overall regression including predictors was statistically
significant $R = .776$, $R^2 = .602$, adjusted $R^2 = .585$, $F(4, 95) = 35.907$, $p < .001$. Finally, the researchers concluded that the UTAUT model is reliable and capable of predicting the ICT among academicians.

Sundaravej (2009) carried out a study to explore participants’ acceptance of educational technology tools at a Midwestern University. 262 undergraduate students were surveyed to find out what the determinants that influence them to accept Blackboard platform based on applying the UTAUT model. This study revealed and provided evidence about the validity and reliability of UATUA to measure individual behaviors toward using educational technology. He also indicates that UTAUT constructs reached a high Cronbach’s Alpha reliability, and UTAUT constructs are significantly correlated each other. He recommended that the four mediated constructs, gender, age, experience, and voluntariness, are essential to be considered in further research. Interestingly, Serben (2014) stated that there were not any inclusive instruments that could predict accepting technology before developing the UTAUT model.

**Technology Integration in Education**

**The definition of technology integration in education.**

During the last two centuries, technology has been widely used due to the advancement of the computer and its various applications that facilitate our daily routines. To define technology, Yidana (2007) stated that technology is computer-based tools that can be used by instructors in order to enhance the educational environments; these tools could be computer software, the internet, and other technological multimedia. Technology integration in education was also defined as computer applications that are
mainly used in classrooms to effectively enhance learning and instructions and also apply technology skills to the learning process (Weston, 2005). He posed that this integration of technology widely covers class activities, lessons, and the use of computers applications to facilitate learning activities. Su (2009) indicates that technology integration is mainly using technology in teaching and learning processes in order to enhance traditional methods, which occur in educational institutions.

**Impacts and benefits of technology integration in education.**

It has proven that using technology applications plays significant roles in enhancing the processes of teaching and learning due to the continuous advancement of technology that will facilitate and support the learning environment. For example, Yu-Feng and Hien (2007) indicated that technology integration can bring up advanced tools to institutions that affect students’ learning and communicating with good manners, and facilitating teachers’ jobs as well. These tools provide effective teaching approaches for teachers and safe experimental environments for students. For this reason, many schools and universities around the globe established and expanded their online programs to provide sufficient learning opportunities for students.

Students from different fields can learn independently via the World Wide Web to acquire knowledge in a virtual world (Brain & McNaught, 2006). In addition to the significant roles of the internet in education, it can be an enjoyable tool that offers many entertaining websites besides the valuable information offered. According to Yu-Feng and Hien (2007), learning using technology integration in the curriculum can offer many opportunities besides study. For example, students may find a job while they are
attending online classes. Indeed, technology provides many chances to meet the students’ needs, even those who have learning difficulties. Moreover, Witt and Schrodt (2006) stated that technology applications are capable to support the lack of traditional daily approaches occurring in the classroom by providing other supplemental resources and additional proper communicating tools that enhance motivation.

As a part of researchers’ continuing efforts to provide evidence for supporting the approach of utilizing technology in education, Saba (2009) summarized the benefits of utilizing this approach by investigating research from all over the world, as outlined below:

- Technology helps learners to improve their achievement on assessments.
- Technology helps learners to increase the quality of study.
- Technology offers safe learning environments such as simulation.
- Technology positively improves learners’ attitudes for learning.
- Technology supports learning individually.
- Technology acts as a catalyst for change.
- Technology helps learners to become confident and conscious of their future lives.

Lim, Lee, and Hung (2008) illuminated that much more research revealed that incorporating technology into instruction leads to success in teaching and learning. Students can use these tools to enhance learning as a supplemental aid. Educators can employ several approaches to communicate and moderate the learning by incorporating technology into curricula as well.
In general, technology integration is important for learning. Learners can be more social and confident due to the use of technology that indorses learning independency and learning collaboratively as well. Also, via technology, learners can communicate with each other effectively in different learning processes and become active learners and critical thinkers.

**Advantages of technology integration in education.**

To illustrate this part, Bushati, Barolli, Dibra, & Haveri (2012) conducted a descriptive study to highlight the advantages of integrating Information and Communication Technology (ICT) into the processes of teaching and learning in higher education. They conclude with some advantages and as stated below:

- Improve learning skills.
- Meet the needs of students.
- Provide suitable teaching approaches.
- Encourage students to learn effectively.
- Reduce the cost of teaching compared with traditional education.
- Reduce the cost of traditional materials.
- Provide students with simulative experiences.
- Provide flexibility in learning regardless of the time or place.

**The importance of technology integration in higher education.**

Using technology in higher education is crucial and faculty members should be required to have at least basic skills to deal with ICT due to the 21st century learning needs and the importance of technology in higher education. Alturise and Alojaiman
(2013) and Bingimlas (2009) introduced the importance of technology in higher education in general and in Saudi Arabia in particular as below:

- Integrating technology into higher education can help both students and faculty members to conduct online courses and meet the needs of increased numbers of students. In this case, distance learning is a solution for those who cannot attend in-campus courses or due to the time availability. Therefore, by utilizing technology in higher education, colleges and universities increase the capacity of accepting students in academic programs.
- Technology can facilitate the work of students and faculty by getting information needed for academic purposes faster than before.
- Overcoming the cultural barriers. For example, in Saudi Arabia males are separated from females in the educational system.
- By integrating technology, some universities can connect their branches and overcome the deficit of teaching competence.
- Facilitating the academic atmosphere.

**The History of Saudi Higher Education**

Saudi Education in general and higher education institutions in particular have been gradually evolving since the country was founded in 1932 by King Abudulaziz Al Saud. Due to the exploration of oil in 1938, the Saudi educational system rapidly developed (Al-Hamid, 2007). At that time, there were no higher education institutions except some scholarships to neighbor countries, such as Egypt, in order to achieve the
highest level of education for some Saudi students. According to the Ministry of Higher Education report (2013), higher education has improved in three main stages of time:

During the first stage (1949-1960), the first college in Saudi Arabia was established in Makkah called College of Islamic Law in 1949. After that, Teachers’ College was opened in 1952 followed by the College of Islamic Law and the College of Arabic in 1953 and 1954 respectively. In 1957, King Saud University was established, the top development in this stage (MOHE, 2013).

The second phase of development was during 1960-1980. In this period of time, six new universities including women’s colleges, were established in different regions of Saudi Arabia based on the population density areas. This phase of development in higher education witnessed expansions of branches of these universities in Saudi provinces to meet the need for higher education. Most faculty members were brought from outside the country to teach in these universities and their branches (MOHE, 2013).

Lastly, during the stage of comprehensiveness (1981-2012), the Saudi government planned to spread higher education institutions in all Saudi cities gradually to give the opportunities for Saudi students in towns and villages to pursue their higher education without moving to big cities. In this stage, the first university was established in 1998 in Abha and the last one was Saudi Electronic University in the capital city. The Ministry of Higher Education also supported private colleges and universities to expand the learning opportunities for Saudis. According to the MHE (2013), by the end of 2012, there were 33 public and private universities, with 543 colleges, including 2,393
academic departments, offering various graduate and undergraduate programs, equally distributed around the Saudi regions.

In addition, the Saudi government established a new program for scholarships sponsored by King Abdullah in 2005 for students to pursue their higher education abroad; this program includes the degree of bachelors, master and PhD (Saudi Arabian Cultural Mission to Washington DC, 2012). The reason for establishing this program was to qualify more Saudi people for the labor market, and also to qualify faculty members to teach in Saudi colleges and universities. Based on MOHE (2013), the program aimed to do the following:

- Meet the needs of the Saudi market.
- Qualify Saudi faculty members to work and teach in Saudi universities.
- Explore the top universities’ programs all over the globe.
- Exchange cultural experience.
- Enhance the professionalism of Saudi students.
- Obtain a high level of academic degrees.

**Technology integration in the Saudi's educational system.**

Since Saudi Arabia was established in 1932, and there are many challenges related to the desert environment, which covers most of the regions of Saudi Arabia, ICT infrastructures have been slowly evolving. Within the last two decades, most of the Saudi population were not using computers for their work or their daily life. In the early 2000s, Saudi people started using the internet for both education and governmental purposes (Ministry of Communication and Information Technology, 2015). According to MCIT
website (2015), mobile network services established in 1995 and then, the internet services were available in 1998 in accordance with the decision of Saudi Council Minsters that admitted using internet in Saudi Arabia in 1996.

Based on the survey conducted by the Saudi Central Department of Statistics in 2007, about 70% of Saudi houses did not have internet services. Consequently, the Saudi government paid more attention to providing and extending the internet services to all Saudi households and educational higher institutions (Almalki, 2011). The Ministry of Plan in Saudi Arabia proposed a five-year plan to be implemented between 2005-2010 that the government should consider the following:

- Train Saudi employees to use information communication and technology.
- Provide schools, universities, and government buildings with adequate PCs.
- Introduce computer courses to all educational levels in schools and open new computer departments in all high education institutions.

By 2011, more than seven billion dollars had been spent for this plan resulting in the 27% growth of ICT usages (CIT Commission, 2011).

To evaluate the use of technology integration in Saudi education, Al-Rashed (2012) studied and explored the current use of technology in Saudi institutions and training needed for faculty and teachers. The results showed that instructors lacked training, and the unavailability of technology tools in many Saudi educational institutions played critical roles in preventing integrating technology into education. He also indicated that Saudi schools have an insufficient number of PCs.
According to Al-Saif’s study (2006), the lack of computer software and access to internet reduces the use of technology in schools. In addition, Al-Maghlouth (2008) highlighted instructors’ perceptions of using ICT in education. He concluded that the learning resources center that equipped with ICT tools do not have a suitable location inside educational institutions.

In 2010, Oyaid explored the students’ usage of ICT inside and outside schools in Riyadh. Participants indicated that the majority of instructors did not use technology tools and computer software in their teaching methods. Based on his study, Oyaid (2010) also found that the computer facilities are not sufficient for both students and instructors.

Al-Jarf (2005) implemented a study in Saudi colleges and universities to find out whether or not integration technology improves ESL college students’ achievement and attitudes. Al-Jarf’s study concluded that technology tools were not sufficient on campus to promote learning; instead, using supplemental online material at home helped ESL students to improve their achievement and attitudes.

Al-Qahtani (2008) carried out a study to evaluate the reality of instructional technology courses and practices that occurred in Saudi teachers’ colleges. Results indicated that instructional technology courses are only taught theoretically and the current computers do not match the increasing number of students. In addition, teachers’ colleges need qualified faculty members in instructional technology in order to well prepare students for suitably integrating technology into their future academic jobs.

There is a relationship between the teaching workload and the acceptance of using ITC in education. When teachers have an increased workload, they do not have time to
prepare and practice by using ICT (Abuhmaid, 2011). Teaching workload is a factor that influences teachers in high schools. One of several studies carried out by Al-Senaidi (2009) indicated that technology reliability affects the adoption of any technology innovation by faculty members in any higher education institution. He also identified some technological issues that might affect the reliability of technology such as low internet connection, and some incompatible technology applications that do not operate on computer operating systems.

In the Kingdom of Saudi Arabia, Al-Mulhim (2014) conducted a study that aimed to identify factors and barriers affecting the integration of technology in Saudi education based on the literature review. The study revealed that three main barriers can be considered significant factors affecting technology adoption. These factors are lack of technology access, lack of training programs focusing on technology uses in the educational field, and lack of instructors’ time. Each selected factor has some considerations as stated by Al-Mulhim (2014) below:

- **Lack of technology access.**

  According to Al-Mulhim (2014), unavailability of technology is considered a key barrier that affects the instructors’ usage of technology tools in their practices at schools. The lack of technology could be inadequate computers, non-updated software, low quality of hardware, and lack of technology media. For this factor, Al-Mulhim (2014) indicated that most Saudi schools are still suffering from the lack of internet infrastructures and technology media.

- **Lack of training Programs.**
The lack of training programs for teaching on using technology in teaching methods was also indicated as an important factor that prevents instructors from utilizing technology attributes in classrooms. Al-Mulhim (2014) also confirmed that professional development for those who lack in pedagogical skills is considered a sophisticated way to reach the schools’ desired goals for education process. Training programs for instructors include training teachers on utilizing and incorporating technology in classrooms as effective tools to engage and motivate students in learning. Training programs for instructors also include providing instructors with critical pedagogical skills that are compatible with the 21st century learning skills.

Al-Mulhim (2014) proposed two suggestions in order to overcome the dominate educational position in Saudi Arabia by applying the following:

1- Providing training programs for Saudi instructors on how to use technology in educational practices and enhancing their pedagogical skills.

2- Providing teachers with workshops to be computer literate especially with primary school teachers because many of them are computer illiterate.

• Lack of instructors’ time.

Lack of instructors’ time is a vital factor which negatively affects employing the diffusion of technology tools not only in the Saudi educational system, but also in global educational systems. In her study, Al-Mulhim (2014) indicated that instructors in Saudi Arabia and also the middle East countries face difficulties in utilizing technology in teaching due to the lack of time in schools and overload of teaching work. In the Saudi educational system, a school class takes only 45 minutes. For this reason, schools’
instructors are less likely to use technology in teaching because there are many learning practices that should be covered within the short period of class time (Al-Mulhim, 2014).

Eventually, Al-Mulhim (2014) stated some recommendations that should be applied in order to help Saudi instructors adopt technology tools in their practices. She recommended that the Ministry of Education must consider the class period time that caused a lack of using technology in teaching. Al-Mulhim (2014) claimed that class time should be extended and instructors should have enough time to engage in training workshops and professional development. Providing Saudi institutions with up to date technology tools and internet could improve the learning process and inspire students and instructors to work harder than they do in traditional classrooms.

**Faculty's Use of Technology Tools in the Teaching Process**

Higher education institutions have started using technology in their educational practices to encounter the needs of graduate and undergraduate students by leveraging technology tools to promote teaching pedagogy of faculty members and also by providing them with professional development training to improve their performance in using digital technologies (Mayer & Xu, 2009). For example, Pedro (2009), based on his survey, indicates that many faculty members in many different institutions have attended high-skill trainings in using the Web in teaching approaches and conveying instruction.

According to Groff (2013), by understanding the notion of adopting technology in education, faculty members can determine which technology tool can be appropriately employed to convey a particular learning experience to their students. Some research asserts that knowledge and utilization of technology integration in education among
students’ behaviors correlated to the way that they previously have been received by instructors in classes (Groff, 2013; Conole & Alevizou, 2010).

Ma, Wan and Lu (2008) illustrated that students and instructors can meet through online classes in an open atmosphere and overcome being in the physical structure of traditional classrooms. Hence, integrating technology into educations can effectively solve the problems of admitting a big number of new students in learning environments by employing alternative forms of teaching. Yu-Feng and Hien (2007) indicated that faculty members can use different technology tools, such as E-learning, in conjunction with the regular lecture in traditional courses to reach various locations that are not on the university campus.

Lin and Lu (2010) concluded that helping students to become lifelong learners is a result of utilizing technology for delivering instructions that basically improve faculty members teaching performance and give opportunities for students to achieve new technology skills as well. Georgina and Hosford (2009) examined the effect of technology literacy and integrating technology training for faculty members of their later pedagogy. Participants in this study were from different 15 institutions. Results show that there is a major link between the previous technology literacy to prepare faculty members and future pedagogical practices.

Whale (2006) stated that motivation plays critical roles in integrating technology in faculty teaching performance. Thus, he suggests that to promote motivation, faculty members should be assessed on employing technology integration in the teaching as a part of performance evaluation. Whale (2006) also indicated that faculty members in each
higher institution have the prime role of implementing technology in education. Therefore, higher institutions all over the world carry the responsibilities of qualifying their faculty in using technology in teaching.

Ocak (2011) focused on the challenges that faculty encounter with using technology for learning, such as LMSs. He indicates that the lack of technical support in many institutions is considered an obstacle affecting the technology adoption. In addition, the faculty’s beliefs and attitudes toward using technology are very important factors to adopt technology innovations in higher education.

Johnson, Wisniewski, Kuhlemeyer, Isaacs and Krzykowski (2012) developed a model of training for faculty "Bootcamps" in order to overcome the difficulties that they encounter in online teaching. This program, designed for faculty, was helpful to adopt technology in their teaching practices beyond the physical structures. This program also can be implemented in other institutions for training faculty.

**Strengths and weaknesses of Saudi faculty’s use of ICT.**

The use of technology in Saudi higher institutions by faculty members depends on the majors and the knowledge of using technology in teaching. Otherwise, the institution policy about technology integration influence faculty members to effectively use it within their courses. Al-Shawi and Al-Wabil (2013) illustrated that faculty members whose majors are related to the computer and technology spend less time to prepare and incorporate technology in teaching rather than those who are not. For example, Al Mulhem (2014) stated that faculty members from religious study are using less technology in their practices due to the lack of technical skills received in their graduate
programs that reflects on their current practices. They also lack in technical experiences due to the inadequate professional development on technology (PD).

Aljarf (2007) indicated that some Saudi faculty members fail to effectively moderate online courses due to the lack of training. In addition, old faculty feel shy when they use the internet in front of their students due to the lack of knowledge in ICT. Al-Shawi and Al-Wabil (2013) posed that the majority of faculty members only use emails and Microsoft Office apps to carry out the policy of integrating technology and showed positive attitudes toward utilizing them in education. Al Zebidi (2011) stated that most Saudi faculty members do not have the ability to create interactive computer software based on instructional design strategies due to the lack of knowledge in the instructional design.

On the other hand, some faculty members attend training programs in their free time in order to effectively employ technology tools in teaching approaches. For example, Al-Malki (2013) highlighted the strengths and weaknesses of ICT use in Saudi Arabia. He indicates that some instructors prepare their lessons by using online resources and also using video to demonstrate different aspects of lessons. Otherwise, instructors encourage graduate students to share their ideas and educational concerns in bogs and forums. Students’ communication and collaboration are also conducted online such as in Saudi Electronic University. He also addressed the main barriers that diminish the use of faculty members such as lack of computer literacy, lack of technology infrastructure and absence of applying copy rights laws in Saudi institutions.
In general, the current use of instructional technology by Saudi faculty members depends on the technical resources’ availability in their institution beside the knowledge of how to use technology. There are several workshops and training programs held in Saudi higher institutions to improve faculty performance; however, these programs are not required. Therefore, the adoption of integrating technology by faculty varies based on their desired goals to enhance teaching performance and the motivation they received in salary.

**Barriers facing Saudi faculty members and students in integrating technology into education.**

Like many developing countries, Saudi Arabia still does not have enough ICT infrastructures such as buildings and internet networks that meet the increased numbers of Saudi students seeking to gain their higher education. Most Saudi faculty members lack technology skills, so they are hesitant before integrating technology in their teaching practices. In addition, faculty members in Saudi Arabia do not have enough time to cover course topics during class time (Bingimlas, 2009).

Al-Zahrani (2014) identified obstacles that are encountered by the faculty in Saudi colleges and universities when integrating technology. The results revealed that policymakers’ decision about utilizing technology in higher education plays a critical role is using technology in Saudi universities; however, they indicated that there are three main obstacles that face their decisions. These obstacles, including the lack of financial resources, lack of technical support, and the popularity of traditional teaching methods, occurred in Saudi colleges and university.
Another study conducted by Almalki (2011) examined the use of websites by the faculty at Umm Al-Quraa University, as a technology tool for blended learning, to teach undergraduate students. Findings show that both students and faculty members valued the use of blended learning due to the flexibilities that it offers. In addition, they both indicated that there are some issues related to the university infrastructures and technical support based on the interview conducted in this study. Almalki (2011) recommended that blended learning in Saudi higher education is promising, but there are some barriers that should be taken in The Ministry of Higher Education’s consideration. These barriers are the change of Saudi education policy and culture to accept distance learning as an effective learning approach and the lack of infrastructures in most Saudi universities.

Moukali (2012) investigated the attitudes of Saudi faculty members toward integrating technology in their teaching environment and highlights barriers in using ICT in Jazan University. Based on the results, Saudi male faculty members showed positive attitudes toward technology rich-environment; however, female faculty were less than males in experiencing technology tools in their courses. The study shows that male faculty members have ICT skills more than females. In addition, technical support and faculty professional development are necessary to enhance the faculty ICT skills. The majority of Saudi faculty members showed that they are willing to integrate technology if they provided with the skills needed to implement blended or online learning.

Alturise and Alojaiman (2013) stated that the lack of faculty time in Saudi universities hinders the use of ICT in teaching methods in addition to insufficient technical support. This study indicates that Saudi faculty members know how to integrate
technology in instructional strategies, which is a sight of strength in this area; however, they do not implement this approach in their courses due to the lack of technology resources and insufficient technical skills. In addition, the lack of ICT motivation for faculty members to adopt technology limits the use of basic computer applications in teaching. Alturise and Alojaiman (2013) also identified some barriers that students encounter in utilizing ICT in their higher education. First, Saudi students do not trust in ICT and think that are not reliable, in addition to the expenses of computers that are unaffordable. The issue of ICT culture and its potential are also not clear for Saudi students.

Even though higher education is Saudi Arabia is free and students receive monthly rewards that help them to peruse their education, most of them actually do not have extra money to buy advanced computers and software. Also, most Saudi students, like others in developing countries, lack technical skills. In this case technical support and technical services in higher institutions should facilitate and support them to overcome the ICT problems (Alturise & Alojaiman, 2013). Saudi students encounter that lack of accessing the internet at homes when they try to access online materials because internet infrastructures do not meet the expansion of Saudi householders. Language issues also affect non-native students dealing with English computer applications and software. In this regard, Mehra and Bilal (2007) claimed that students should learn some basic English terms to facilitate the use of English computer applications, and faculty members do not have to teach students how to use ICT in application due to the
workshops and courses in basic ICT skills that students can engage in and participate inside and outside their institutions.

The importance of faculty's training and professional development.

Training is defined as a short term procedure that designed to solve problems and improving the present employees’ activities by providing them with basic skills needed for their job enhancement. On the other hand, professional development, which is a long term procedure, aims to provide employees with new skills and knowledge related to the highest bloom’s taxonomy levels that should be acquired for the future influences in order to improve their abilities (Aguinis & Kraiger, 2009). Hirsh (2009) stated that “professional development is a comprehensive, sustained, and intensive approach to improving teachers’ and principals’ effectiveness in raising student achievement” (p.12). Celik, Cepni and Ilyas (2013) illustrated that training programs are considered the preparatory programs for pre-service instructors while professional development is a containing of efforts to develop instructors’ skills that come after training programs.

Clearly, professional development programs for teachers on using technology integration are crucial for adoption of technology innovations. This is due to the knowledge and technology skills acquired by teachers about how to properly use technology to promote learning and inspire students (Levin & Wadmany, 2008). Lawless and Pellegrino (2007) asserted that when teachers are given qualified training programs related to technology adoption, they are easily affected by using technology in teaching practices. Thus, teachers’ professional training is considered a stronger factor to adopt technology applications successfully.
According to Mueller, Wood, Willoughby, Ross, and Specht (2009), providing instructors with professional development and training on how using technology leads to effective ICT integration in their courses. Similarly, Brainkerhoff (2006) claimed that the high quality of training programs that focus on utilizing technology in education help instructors to effectively implement technology in teaching methods. In fact, instructors need to understand the content they teach and the way that they can easily convey the content to their students. In this case, implementing technology tools in teaching practices helps learners to achieve the learning outcomes (Plair, 2008). He also indicated that by having an expert in professional development and training, educators gain confidence and positive attitudes toward technology that support the learning process. Chen (2008) claimed that professional development for educators should not be confined to the technology integration training; other teaching aspects should be taken in consideration, such as pedagogical aspects, educational policies, and the syllabus design. Therefore, professional development is critical even for those who are eligible to use technology in their classes because the development could apply to improving performance in a workplace.

Celik et al. (2013) conducted a study to investigate the attitudes of Turkish faculty members toward the role of professional development in improving faculty teaching performance. They found that professional development is really important for improving faculty and mirror on enhancing students’ achievement. Similarly, Mizell (2010) asserted that ongoing professional development for instructors is necessary in order to understand the best teaching approaches.
According to Mundy, Kupczynski, Ellis and Salgado (2012), newly hired faculty members should take ongoing professional development chances in order to become effective instructors. This area must provide faculty with adequate instructional practices and pedagogical theories in order to gain teaching experiences that facilitate their jobs and basically enhance students’ learning skills such as collaboration and participation. Scott (2006) pointed out that professional development should be presented for both newly hired faculty and veteran faculty members due to the idea that most veteran faculty members tend to lecture in their classes without paying attention to the 21st century learning skills. He also indicates that in addition to the traditional teaching approaches, there are some effective avenues; for example, a faculty member can use instructional technology to support his/her lecture. In addition, writing a research paper, discussions, seminars, and working in groups can be used to engage students in learning. All these avenues should be addressed and described in faculty training and development under the assumption of constructivism.

The role of the mentor and mentee in the process of faculty learning to use technology for teaching.

Technology has established a pervasive presence throughout society. As a result, integrating technology into classrooms has become a necessity to use as a teaching tool. Mentoring programs are commonly used in educational settings to assist new faculty members with adjusting to the demands of teaching. Research indicates that these programs can also be used to assist old instructors with learning how to use technological tools and how to integrate them into the classroom.
Mentoring programs are designed to provide assistance to new faculty with higher levels of support at the onset of their careers. Veteran faculty serve as mentors to share their expertise with novice instructors through “authentic learning experiences complemented by personal relationship” (Larson, 2009, p. 121). As the new faculty become more skilled and their knowledge increases, this support is gradually reduced as the necessity diminishes. The effectiveness of mentoring programs has proven results as indicated through higher grade point averages (GPA) for student teachers and decreased dropout rates. The demonstrated successes led to the development of the framework for several mentoring programs. More recently, this has included implementing reverse mentoring programs to assist veteran teachers with learning technology and how to integrate technology into the process of teaching (Larson, 2009).

Larson (2009) introduced a study which applied quantitative methods to select participants to interview as well as qualitative methods to examine the effectiveness of mentoring programs in learning technology integration from the perceptions of the mentees. In addition, the role of the mentors and mentees was highlighted regarding the faculty learning to use technology. This study applied the Higher Education Faculty LoTi Questionnaire and the Mentee Interview Guide (MIG) for data collection. The LoTi was directed through an on-line questionnaire to identify the level of expertise the participants had with integrating technology. The MIG was utilized to obtain qualitative data concerning the effectiveness of strategies for integrating technology based on the perceptions of the participants and consisted of video- and audio-taped interviews with the participants. The participants were selected from the faculty of California State
University (CSU) who were members of the Teacher Education Department (TED) and each had volunteered for the Preparing Tomorrow’s Teachers to Use Technology (PT³) program. This study limited participation to individuals who taught methods courses.

In his study, the mentees were also members of the teacher education department, which provided them with the ability to provide their perspectives as both teacher and student. The mentees were in agreement that the mentor presented the most effective teaching strategy, followed by guided, or hands-on, practice, mentors providing encouragement for independence, and supplying resources, such as web sites, tutorials about technology uses, and computer software, or other references related to the projects, interests, or research of the mentees. In the area of technology integration, the mentees with the least amount of experience requested that their mentors attend a minimum of one class session to provide support and to assist with modeling strategies. However, the majority of the mentees indicated that the mentor provided the most effective teaching strategy in addition to providing guidance and advice to the mentees (Larson, 2009).

The study identified six factors that were determined to be critical variables for the success of mentoring programs. These factors consist of a reality check, individualized learning, mentee control, content expertise, the development of a personal relationship, and co-mentoring. The reality check provided the opportunity for the mentees to discover that discussing the goals and deadlines of their projects with their mentors were important aspects of the project to develop an understanding of the complexity of the project while learning how to set realistic goals that can be achieved. This also provides the mentor the opportunity to assess the mentee’s skills with
technology to determine if the project and goals are realistic. Additionally, the mentor provided guidance for the mentee based on the level of their expertise. Individualized learning allowed the mentor and the mentee to progress at a pace that was suitable for the mentee to ensure they were provided the opportunity to fully develop their skills and increase their level of expertise without being overwhelmed by the amount of material presented. Mentors, in this case, should provide time for mentees during the development in order to give them the opportunity to participate and enhance their technological skills.

Mentee control provided the opportunity for the mentees to adjust their current schedules to comprehend the demands of the project development required by the mentoring project. These additional projects were selected by the mentees and often reflected the immediate needs and interests of the mentees; however, with guidance, support, and feedback provided by the mentors, technology did not require altering the invaluable resource of time for those who were struggling in this area. Mentees indicated that having mentors who were knowledgeable in similar areas of instruction in addition to their technology integration expertise. This provided the mentor the ability to provide guidance to the mentee in the development of course content as well as technology and technology integration. Many of the participants indicated that the development of a relationship with their mentor contributed to their success in the mentoring program. In some situations, these relationships continued after the conclusion of the mentoring program. These relationships allowed for the development of learning communities in which the members could discuss personal experiences, discuss perceptions, solve problems collectively, and develop new concepts. In addition, these relationships have the capacity to evolve into
mutually beneficial experiences where the strengths of each individual contribute to the interactions. Even though the structure of the mentoring program was established in the traditional, mentor-mentee model in when the mentee learns from the mentor, in many instances, these roles were reversed as the relationship became reciprocal and the mentee was able to impart knowledge in certain areas. This provides both the mentor and the mentee the ability to learn from each other (Larson, 2009).

**Instructional designers’ roles in Higher Education.**

The success of mentoring programs on technology integration in faculty teaching approaches has been demonstrated repeatedly since the implementation of the practice. In most situations, the mentee has gained benefits from the participation in these programs. As such, the mentor also serves in the role of instructional designer as a result of altering the material presented and addressed in the mentoring program to suit the specific needs of the individual mentee (Larson, 2009).

Several studies indicated the essential roles of instructional designers in education, especially in colleges and universities. For example, a study was carried out by Schwier, Compell and Kenny (2007) to identify the role of instructional designers in designing programs for faculty development. Findings revealed that the instructional designer in higher education plays an essential and political role in improvement changes. In addition, the study concluded that by providing instructional design plans and professional development designed based on any instructional models, faculty members as learners gain knowledge, pedagogical and technological skills that support their performances.
Instructional designers are considered supportive by providing advice, detailed training program plans, and designed instructional materials that fit with the needs of higher education demands. For faculty development programs, the role of instructional designers is centered on guidance and leadership during and after training programs regarding instructional materials (Simeon, Brickell & Ferry, 2007). Schwier et al. (2007) asserted that an instructional designer can effectively work with the faculty in order to have them think critically about their urgent necessities that meet students’ desires in addition to academic issues and the cultural implications of utilizing educational technology in the process of learning and teaching. Instructional designers also help faculty to think about the development of institution policies development that could be positively modified.

Regarding the faculty development, Hanna, Yap, Fong, Fletcher and Bancroft (2009) indicated that the role of the instructional designer is comprehensive, starting from the need assessment until the final project evaluation. He/she provides consulting skills for faculty professional development and also effectively participates in the processes of the change management and project management. Further, other financial considerations for development are clearly identified and allocated in each ID stage.

**Factors Influencing the Adoption of Technology Integration in Education**

There are several studies studied factors that predict and influence the adoption of technology in the teaching approach occurred in educational institutions. First of all, the definition of adopting technology in teaching and learning processes should be clarified in order to understand how factors can influence or affect the process of adopting
technology integration in education. According to Buabeng-Andoh (2012) three main factors were introduced according to his review of several articles that focused on factors behind technology adoption in education. These factors were categorized based on personal, institutional and technological aspects which affect the instructors’ uses of technology in their practices as below:

**First category: Personal factors.**

Under this category, Schiller (2003) identified some individual characteristics such as the instructor’s gender, age differences, the years of teaching practice, teachers’ attitudes and the academic levels that influence teachers to adopt technology in teaching approaches. Buabeng-Andoh (2012) presented six factors under personal characteristics as below:

*Gender.*

It has been reported that gender differences are essential to adopt technology applications by instructors in the educational field (Buabeng-Andoh, (2012). According to Kay (2006) males use technology in their teaching practices more frequently than female teachers due to their interests. Markauskaite (2006) investigated the effect of the gender differences factor in using ICT by pre-service teachers. Findings reveal that there were remarkable gender differences in using ICT in teaching approaches. Males were higher than females in using ICT. On the other hand, Kay (2006) found, in his study, that gender differences are not a significant predictor of adopting technology in teaching approaches. According to Al-Shawi and Al-Wabil (2013), gender differences currently do not play a critical role in the use of technology tools, science males and females have
equal chances to use them especially in educational environments. The results of their study showed that there were not gender differences in using technology tools at Saudi higher educational institutions. In fact, the researcher believes that there is no difference regarding the gender for technology adoption.

Teachers attitudes towards technology.

Instructors’ attitudes toward employing technology tools in education are considered a critical factor to accept using technology. Teachers’ positive attitudes toward technology lead to high levels of adoption, and negative attitudes lead to the reluctance of using technology in teaching (Keengwe & Onchwari, 2008). To illustrate that, Demici (2009) explored how can instructors’ attitudes influence the real use of ICT for teaching Geography. Results indicate that instructors with positive attitudes toward technology can successfully leverage them in their lessons and this leads to enhance teaching performance.

Drent and Meelissen (2008) investigated the influencing factors for using technology innovations by Dutch teachers. One of the influencing factors was positive attitudes toward using technology innovation. Similarly, in Singapore, another study conducted by Teo (2008) that surveyed pre-service teachers on their attitudes toward teaching by using computers in classrooms. They showed highly positive attitudes toward computers due to the observed usefulness of computer applications.

Teaching experience.

The teaching experience factor, in fact, influence the frequent use of ICT that is used in classrooms as indicated by most research. For example, Goder (2008) stated that
experienced teachers are more likely use computer and technological tools to support their lessons at a school. Similarly, in their study, Lau and Sim (2008) explore the adoption of ICT in education in Malaysian high schools. The results revealed that old teachers with educational experience are usually integrating ICT in their teachings. Further, in their study, Russell, Odwayer, Bebell and Tao (2007) claimed that the years of teaching practice can predict employing ICT in schools effectively.

**Teacher workload.**

Clearly, there is a negative correlation between the teaching workload and the level of utilizing technology in the teaching process. For example, when teachers have an increased workload, they do not have time to prepare and practice by using ICT (Abuhmaid, 2011). Teaching workload is a factor that affects teachers in high schools. According to his quantitative study conducted in Australia to study the factors that influence using technology in teaching, Neyland (2011) found that the increased work in schools limits the ICT practices according to the interview with teachers.

**Technology competence.**

Technology competence is defined as the aptitude of computers or any technology tools to handle many applications or software for learning purposes (Braak et al, 2004). It is, certainly, considered a determinant of using technology in teachers’ approaches in classrooms. According to Peralta and Costa (2007), ICT competence influences the teachers’ acceptance of using them in teaching students in Europe.
Computer and technology self-efficacy.

To define self-efficacy, Buabeng-Andoh (2012) stated that it is the confidence of individuals being able to do something desired. Several studies have shown that computer self-efficacy can significantly predict the use of technology by teachers and faculty (Liaw, Huang & Chen, 2007). In addition, integrating technology tools in teaching methods depends on the perceived teachers’ self-efficacy and the ease of computer apps as illustrated by Yuen and Ma (2008).

Second category: Institutional characteristics.

Institutional characteristics have been divided into four factors as illustrated by Buabeng-Andoh (2012) based on his review of the literature. The four institutional factors are leadership support, professional development, accessibility, and technical support.

Leadership support.

Leadership support is considered a major factor that predict the use of technology in teachers’ educational behaviors. Wong and Li (2008) carried out a study to investigate influencing factors to the adoption of technology innovation in two countries, Hong Kong and Singapore. They found that the reality of technology practices in selected schools is basically influenced by the leadership decision which adopted the technology in education.

Professional development.

Clearly, professional development programs for teachers on using technology integration are crucial for adoption technology innovations. This is due to the knowledge
and technology skills acquired by teachers about how to properly use technology to promote learning and inspire students (Levin & Wadmany, 2008). Lawless and Pellegrino (2007) asserted that when teachers are given qualified training programs related to technology adoption, they are easily affected by using technology in teaching practices. Thus, teachers’ professional training is considered a stronger factor to adopt technology applications successfully.

**Accessibility.**

The availability of technology at educational institutions is necessary for incorporating technology in teaching processes. Technology accessibility includes the ability to access the technology resources such as computers and software, hardware and educational devices (Plomp, Anderson & Quale, 2009). They also indicated that without access to technology resources, teachers cannot use them in their daily practices.

**Technical support.**

Besides the accessibility to technology resources, technical support should be provided to teachers working in educational systems. Teachers can be assisted and supported by specialized technical assistants in order to solve some technical issues such as repairing computers or other technical errors that might interrupt using technology tools in classes (Jones, 2004). In many educational institutions that do not provide technical support, the predominant teaching styles are not using ICT due to the lack of solving technical issues especially with a large number of computers connected to the World Wide Web (Tong & Trinidad, 2005). Yilmaz (2011) carried out an exploratory study to evaluate the technology used in Turkish schools. He found that technology
includes computers connected to the internet is very important for learning and also suggested that by providing schools with technical support sections, using ICT in education would be increased by teachers.

**Third category: Technological characteristics.**

In this category, the technological factors play critical roles in adopting technology innovation. Smarkola (2007) claimed that the observed usefulness and the ease of using technology apps are main elements to the acceptance of innovations which was indicated by the TAM model. In addition, the old version of technology tools negatively affects the use of technology. For example, in their study, Peralta and Costa (2007) indicated that old technology tools slightly prevent teachers from using them in the classroom, in addition to other factors such as the lack of technical support and large classes.

From another perspective, Afshari, Bakar, Su Luan, Samah, and Foo (2009) conducted research to study the critical factors that inspire instructors to employ technology in teaching by reviewing many corresponding studies. In this research, they identified two groups of factors based on the distinction between two categories, non-manipulative and manipulative factors related to the schools and teachers. Afshari et al (2009) stated that non-manipulative factors are not directly subjective by educational institutions such as the age of instructors, computer skills, and the policy of the country. Otherwise, manipulative factors are the factors that associated with individuals, for example, their opinions about the benefits of using technology and also technology
knowledge and required skills. It can be also the schools’ commitment to provide ICT facilities. Following are some details about each factor as stated by Afshari et al (2009):

The First Group: Non-Manipulative Factors:

- Teachers characteristics: includes teachers’ ages, the gender differences, their teaching experience and the academic levels achieved.
- Family and community support.

The Second Group: Manipulative Factors:

- Technology vision and plan to be integrated into education.
- Technology infrastructure and accessibility:
- Time availability for teachers.
- Technical support
- The school culture: Technology integration can be valued by school members if they believe in utilizing computer technology and understand how to implement the innovation diffusion.
- Computer attributes: By observing the benefits of using computers to facilitate the teachers’ job, they can be more used in different manners.
- The level of training programs for teachers.
- Teachers’ attitude toward integrating technology: According to Drent and Meelissen (2008), positive attitudes toward technology innovation influence teachers to use them frequently.
- Computer competence: High quality computer hardware and updated software can be influenced by the teachers’ decision of using them.
• Professional development: It is important to enhance instructors’ pedagogical skills. These programs can be workshops that prepare them to enhance teaching skills by using supplemental technology tools.

• Technology integration models in training programs for educators.

  Suebsin and Gerdsri (2009) identified and discussed five main factors that affect the technology use and then lead to successful technology adoption by faculty members based on reviewing the literature. These factors are the range of technology reliability, technology usefulness that perceived by faculty members at higher education institutions, technical support in higher education institution, barriers in implementing technology, and finally, goals designed to develop technology uses.

  • The range of technology reliability.

    For this factor, one of several studies carried out by Al-Senaidi (2009) indicated that technology reliability affects the adoption of any technology innovation by faculty members in any higher education institution. He also identified some technological issues that might affect the reliability of technology such as the low internet connection, and some incompatible technology applications that do not operate on computer operating systems.

  • Technology usefulness that is perceived by faculty members at higher education institutions.

    Several studies cited TAM proposed by Davis (1989) indicated that the usefulness which is observed by instructions influence the level of technology acceptance and
adoption. The ease of use determinant also facilitates adopt technology innovation process.

- Technical support in higher education institutions.

To demonstrate the effect of these determinant on faculties’ decisions to adopt technology tools in their teaching usage, Wang and Wang (2009) surveyed 269 faculty members from different higher institutions to assess the use of online technology for offering online courses. Based on the results, there is a real need for technical support for delivering online courses by using any learning movement systems (LMS). Technical support is also considered a major factor that affects faculties’ adoption of technology.

- Barriers in implementing technology tools and applications.

One of the most common factors that constrain implement technology innovation is the time availability for faculty members. The lack of time limits the use these technology innovations (Surrey, 2009). Gavanaugh (2005) observed that many faculty members spend more time on preparing for online classes compared to traditional classes in physical constructions. He also illustrated that time required is a main major factor that affected faculty based on the interview with them.

- Goals designed to develop technology uses.

Indeed, technology itself cannot transform content without designing or faculty interventions. Thus, it requires knowledge and comprehension by faculty members in order to be effective tools for learning. Faculty members must be qualified in using ICT by providing them with training programs that enhance their understanding and skills of technology. Based on a study carried out by Ertmer (2005), faculty members
demonstrated some of their technology concerns that centered around the misunderstanding on how using online tools that convey the learning goals and contents to distant learners. The study suggested that, by providing faculty members with teaching training programs that focused on including teaching goals whether from pedagogical perspectives or technological competency, faculty members would highly adopt online tools in their classes.

Another study was conducted by Bandyopadhyay (2013) to cast the light on common barriers regarding applying technology tools in their teaching methods. Bandyopadhyay (2013) introduced and classified the barriers (factors) into four aspects as following:

**Personal factors.**

In this aspect, Bandyopadhyay (2013) claimed that instructors’ characteristics influence technology uses in teaching such as their attitudes toward technology, years of experience and ages. Several studies confirmed that male instructors use computers more than females do. In addition, having more experience in teaching decreases the use of incorporating technology applications in a classroom (Inan & Lowther, 2010).

**Infrastructural factors.**

Educational institutions must offer suitable technology infrastructure to support the learning practice and help educators to use them properly such as providing adequate internet access and computer labs.
**Cultural factors.**

These factors include the culture surrounding technology approaches for the teaching process such as confidence using technology in front of students, computer phobia, and beliefs in technology as a reliable tool to enhance learning (Bandyopadhyay, 2013).

**Institutional factors.**

Institutional factors include offering adequate professional development training, technical support, clear vision of adopting technology, and lack of teachers’ time due to the overload of work during a school day. Huong, (2009) carried out a qualitative study to highlight factors that influence technology adoption in Vietnam. 12 Vietnamese English instructors, from the English Department at Thai Ha University, were interviewed to determine the main factors affecting English instructors’ decisions to implement technology tools in their teaching methods in classrooms. Findings revealed that there were three main factors: pedagogical, professional and technical factors that influence instructors to implement technology tools in teaching English classes. Below are factors that were stated by Huong, (2009).

**Pedagogical factors.**

- Technology adoption was driven by administrators and students’ learning.
- Perceived Teaching pedagogy that was linked to technology.
- Computer applications were adopted in lessons by instructors.

**Professional factors.**

- Perceived the effectiveness of technology adoption from Teachers’ beliefs.
• Perceived the technology comfort of use by instructors.
• Confidence in using ICT by instructors.
• Offering professional development in technology innovations to instructors.
• Offering professional development to improve instructors’ skills in teaching methods.

**Technical factors.**

• The availability of computers and other technology equipment for instructors.
• Technical support during courses’ time for instructors.

In her study, Donna (2011) examined the faculty members’ attitudes at Southeastern University toward using technology in their teaching approaches. She also studied their perceptions about the required professional development training that was needed for highly implementing and adopting technology in teaching lessons. Factors that enhance faculty’s attitudes to accept technology were highlighted in this study. According to a survey distributed in this study, 212 faculty members responded. Findings show that there are needs for technology training, and pedagogical professional development in order to assess faculty members for adopting technology in teaching. The age is also considered a significant factor that affects faculty members in using technology. Younger faculty were adopting and using technology more than older faculties according to their responses. In addition, the results indicate that faculty members who have had more professional developments are highly adopting technology.

A current study was conducted by Dougherty (2015) to provide factors that motivate faculty members at University of Ontario to adopt Web technology in teaching
students. The study depended on the mixed method approach to collect data. Results revealed that there are some motivating factors that lead faculty members to effectively adopt Web technology as below:

- Provide faculty with opportunities on how to use Web technology for learning.
- Encourage faculty members to collaborate with their peers to have exchanging technological experience.
- Reward faculty members on using technology.
- Provide technical support at the university.
- Identify the Perceived ease of use.
- Identify how technology is useful.
- Self-efficacy.

Kajuna (2009) implemented a case study at one of Tanzanian universities in order to evaluate technology practices and uses by students and faculty members. He also explored the barriers that affect the adoption of technology. 24 students and 10 faculty members participated in this investigation. The findings highlighted the barriers that affect the adoption of technology including the following inadequacies:

- Inadequate computers for teaching and learning.
- Lack of computer skills for both students and faculty members.
- Absence of training programs on technology for faculty members.
- The absence of technology plans to be adopted in this institution.

The author found that the university does not meet the diffusion of innovation conditions on adopting technology according to interviews.
Another current study was conducted in the Asian region including some Asian eastern countries such as Thailand, Indonesia, and India by John (2015) to cast the light on the influencing factors affecting the attitudes of faculty toward integrating ICT in teaching at higher institutions. An online questionnaire was distributed among 261 lecturers working at different higher institutions in Asia. Results highlight factors that affect the resistance or acceptance adopting technology in teaching which are faculties ages, academic levels, years of teaching experience, prior computer skills, technology infrastructure, institutional technical support, technology self-efficacy, computer attributes (John, 2015).

Another important study carried out by Zhen (2008) that shed the light on the factors that influence faculty decisions in the United States in general to accept teaching online via LMSs or not. The selected sample was faculty members at University of Maine located in the Northeast of America. According to his qualitative method exploited, interviews, Zhen (2008) investigated six factors in this study that influence the decision of faculty members to implement using LMSs in online courses. Results indicated that firstly, there was a major association between the self-efficacy factor and the decision of accepting teaching online courses. Secondly, the factor of class- innovation did not affect the faculty members’ decision toward teaching online. Thirdly, the abundance of the time related to faculties slightly affected the decision of them to teach online. Similarly, the fourth factor, which was peer pressure, also slightly affected their decision to accept teaching online. The fifth factor, which was prior technology experience, did not affect the faculty members’ decision. Finally, the time- related challenges factor was not
considered an independent factor that could affect their decisions based on the survey exploited.

Peansupap and Walker (2005) identified eleven influencing factors to the ICT adoption and diffusion in Australia. These factors that were categorized under three main categories:

- Factors that pertain to individuals.
  This category includes four factors:
  1. Personal characteristics such as age and gender.
  2. Benefits perceived from using technology.
  3. Positive attitudes toward utilizing ICT in working.
  4. Negative feeling toward technology practices.

- Factors that pertain to the environment.
  This category has two factors:
  1. Supporting coworkers’ assistance.
  2. Supporting open discussion environment.

- Factors that pertain to management.
  There are three factors under this category:
  1. Institutional support
  2. Professional development and technical support.
  3. Rewarding ICT usage

- Factors that pertain to technology.
  Two factors fall under this category:
1. Supporting ICT


According to the responses of participants, Peansupap and Walker (2005) noticed that factors related to individuals and environments are statistically significantly higher than factors related to technology and management on the decisions to adopt and diffuse the technology integration within Australian institutions.

Another study was carried out by Gautreau (2011) to identify factors that affect faculty members at California State University on utilizing LMS in teaching classes. The first study instrument was a survey distributed among 42 faculty members at the College of Communication. The second study method was a needs assessment evaluation to specify factors that encourage faculty to accept LMSs in educational practices. Results revealed that faculty members need motivation to use LMS in teaching university students. The author, based on the data analysis, identified factors that effectively motivated faculty on using LMS. These factors are improving faculties’ salary, a sense of responsibility, achievement, technology advancement, and university policy in using LMS by faculty members. The author noticed that factors including salary achievement and responsibility are the most important for motivating faculties responses. Based on the motivating factors identified in this study, Gautreau (2011) recommended that based on these motivated factors, professional development programs for faculty members should be designed.

Lambić’s (2014) highlighted six factors that affect teachers’ adoption of educational computer software based on his study conducted in Sombor College of
Education that located in Serbia. The sample included 133 undergraduate students, both males and females, in the fourth year of their program. Participants were surveyed to identify factors that predict the adoption and use computer software in their future teaching practices. After collecting 114 valid surveys, results indicated that there are six factors that affect their future adoption of educational computer software. These factors are orderly stated as following:

- The required effort.

  This factor included the future teachers’ time and efforts to find and prepare educational software for the learning process. Results indicated that there was a negative impact on adopting this kind of technology tool because future teachers do not prefer spending time to prepare and design educational software.

- Personal innovativeness.

  According to the data collected, the author found that adapting educational computer software is positively influenced by the factor, personal innovativeness.

- Perceived Ease of use.

  This factor predicted the use of computer software.

- Perceived usefulness.

  This factor has a positive influence on adopting and using computer software by future teachers.

- Previous technical training.

  Receiving technical trainings in general and in using educational software in particular by future teachers influences the adoption of this kind of technology tool.
• Enjoyment in helping others (Altruism).

This factor was significant in order to adapt computer software in teaching methods (Lambić’s, 2014, p.815).

The researcher also found that gender differences, which played a critical role on their opinion about the future uses of software in education, could be related to the computer self-efficacy.

Al-Ammary (2011) explored the real use of technology in public schools and the factors behind technology adoption in Kingdom of Bahrain. Findings showed that there were four main factors that influence Bahraini instructors to use instructional technology in public schools. The factors are technology self-efficacy, previous computer experience, and motivation for employing instructional technology. He recommended that Bahraini Ministry of Education must consider these factors in order to apply new technology innovations in its schools.

Summary

In this chapter, the theoretician framework, UTAUT model, was introduced with the relationship among its variables and the effect of moderating variable on the outcomes. The historical evolution of TAM also was illustrated gradually. This section in this chapter provided more understanding of why the researcher adopt this model in the context because this model was unified based on different models and how its established components were made up based on previous significant components from other models. The broad term of technology integration in education was discussed in details, in addition to the impact and benefits of this term in education in general and in higher
education in particular. Then, how Saudi higher education has evolved was illustrated in different stages in addition to the current study context which is Al-Qunfudah University College. This institution was introduced in order to elaborate the current situation and why the researcher needs to conduct this quantitative case study. Generally, the researcher provided a summary of technology integration in Saudi Educational system according to several studies in this field. In this chapter, the researcher focused on the faculty use of technology tools in higher institutions and the strength and weakness of Saudi faculty use of technology. Barriers that encounter Saudi faculty in this regard were highlighted based on the literature and how could Saudi system deals with these issues. At the end of this chapter, the researcher focused in depth on factors that could predict the technology practices in the field of education. These factors were identified based on the literature that could be linked to the study findings as introduced in the following chapters.
Chapter 3: Methodology

In this chapter, the researcher introduces and describes the methods that were employed to predict the behavioral intention of Saudi faculty members at Al-Qunfudah University College to adopt and utilize computer and technology tools in their teaching approaches by using the established variables that at the UTAUT model. This chapter includes and explains the procedures to conduct this study such as receiving permission to use the study instrument and conducting the research in Saudi higher education institution. It consists of the research questions and hypothesis. The research design and target population are discussed as well. In addition, the study instrument and how it is distributed are illustrated. The instrument’s validity and reliability are described in this chapter in addition to the data collection and analysis.

This quantitative case study aimed to highlight key factors that predict the adoption of technology integration in the teaching practices by the faculty at Al-Qunfudah University College. This study was basically guided by research questions and hypotheses as stated below:

- To what degree do performance expectancy, effort expectancy, social influence, and perceived facilitating conditions predict faculty’s behavioral intention to adopt integrating technology into the teaching process at Al-Qunfudah University College?

- Are there statistical differences in faculty’s behavioral intention to adopt integrating technology into the teaching process at Al-Qunfudah University College based on their age, gender, and experience?
What are the technology habits of faculty at Al-Qunfudah University College?

H1: Performance expectancy, effort expectancy, social influence and perceived facilitating conditions predict faculty’s behavioral intention to adopt technology integration in the teaching process at Al-Qunfudah University College.

H2: There are statistical differences in faculty’s behavioral intention to adopt technology integration in the teaching process at Al-Qunfudah University College based on their age, gender, and experience.

Research Design

In the current quantitative case study, the researcher used a quantitative survey design to investigate and underline predictive factors that influence faculty members at Al-Qunfudah University College, Saudi Arabia to adopt technology integration in teaching methods by utilizing the original survey of the UTAUT model. According to Haagensen (2015), a case study is basically studying a real example of a case in a certain situation for in-depth examining the case in a real-life context. It can be a quantitative case study by collecting and analyzing measurable data about the case to obtain the results. Creswell (2012) stated that a survey design approach is defined as utilizing a survey or a questionnaire in order to find the population’s views, manners, or characteristics. This study applied the established determinants of the UTAUT model to study how these variables can explain the variance of faculty members at this college regarding the adoption of technology integration in the teaching process.

According to Venkatesh et al., (2003), this theoretical model comprises of four determinants (Independent variables): performance expectancy, effort expectancy, social
influence, and facilitating conditions. It also has a dependent variable which is the intention of users’ behavior to adopt computer applications for presentations such as PowerPoint and Prezi, using email to communicate with faculty staff and students, uploading courses’ materials on Blackboard LMS, using College E-services, employing social media such as Facebook and Twitter as collaborative tools in the educational environment, and introducing some Google collaborative tools such as Google docs and slides. In addition, there were three variables including: gender, age, and experience that were investigated to highlight the significant differences in the outcome variable. The performance expectancy variable relates to the faculty beliefs in the effectiveness of technology integration in teaching in higher education and the effect of performance expectancy in their academic jobs. The effort expectancy variable is the faculty perceptions about whether utilizing and integrating technology into teaching at Al-Qunfudah University College is easy or tough for their decisions to adopt this approach in their practice. The social influence variable relates to important individuals to the faculty that they positively affect them to use and adopt technology. Facilitating conditions are the resources that support faculty’s intentions regarding the adoption of technology.

This study is considered one of ongoing research that focuses on the factors and barriers that affect the adoption and integration of instructional technology into higher education institutions due to the importance and the ability of technology tools to convey the content and provide inspiring learning environment.
Population and Sample

A study population is the total number of individuals that could possibly be involved in a researcher’s study and they have similar characteristics (Creswell, 2012). The population of this quantitative case study was the entire faculty members at Al-Qunfudah University College, who were teaching for the academic year 2015/2016 for both campuses, males and females. According to the college website, the total number of faculty members was 185 including 107 males and 78 females from all academic departments in both college campuses.

Table 1.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
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<tbody>
<tr>
<td>Male</td>
<td>107</td>
<td>57.8</td>
</tr>
<tr>
<td>Female</td>
<td>78</td>
<td>42.2</td>
</tr>
<tr>
<td>Total</td>
<td>185</td>
<td>100</td>
</tr>
</tbody>
</table>

In this college, there are eleven academic departments which are Islamic studies, Arabic language, Education, Mathematics, Chemistry, Physics, Computer Science, Artistic education, Physical education, English Language, and Home Economics (UQU, 2016). Faculty members differ in age, gender, years of teaching experience and also in the academic ranking starting from teaching assistants until professors. There were also some faculty members are hired from neighbor countries such as Egypt, Jordan, Syria and Sudan in order to meet the need for qualified faculty in this institution. All faculty members were surveyed with ensuring confidentiality of data, and they were included in
the analysis excepting missing data and outliers. Therefore, the study instrument, a
survey, was distributed among the entire population of faculty members in both college’s
campuses because the number of this population is small. This study aimed to collect
their valuable responses in order to determine predictive factors to the adoption of using
technology tools in faculty’s teaching approaches at Al-Qunfudah University College by
distributing hard copies of the survey. Only 142 surveys (n=142) were collected out of
185 that represents the total population.

In addition to the questionnaire, the researcher interviewed ten faculty members,
nine males and one female, who were willing to participate in this investigation for in-
depth understanding of their perceptions of technology integration in education. The ten
faculty members were selected based on their willing to participate during distributing the
questionnaire by researcher himself. Therefore, the researcher selected them from all
different academic department and set an appointment schedules for the interview with
each of them in different time and location in campus.

The Study Instruments

To complete this investigation and achieve results, the researcher used a
questionnaire that was composed by Venkatesh et al. (2003). There were minor
modifications in order to fit with the current context that was examined by the researcher.
All survey items were separated in three parts. The first one contained some questions
regarding faculty’s demographic information such as their ages, gender, academic
ranking, the department, years of teaching experience and their experience with
technology. In the second part, there were 18 items that related to the initial UTAUT
established constructs that determine the level of adopting technology in the workplace by users. The third part included four open-ended questions about technology barriers, incentives for faculty, and future anticipation of using such tools in this institution.

The 5-point Likert-type scale will be used to indicate the level of faculty agreement as the following:

- 1 = Strongly disagree
- 2 = Disagree
- 3 = Undecided
- 4 = Agree
- 5 = Strongly agree

The gender, age, and experience, were considered, in this quantitative case study, to determine the differences in the dependent variable, integrating technology into this college by faculty. The moderating variable voluntariness to use was not considered here because integrating technology tools in the teaching process at this institution is not mandatory. A permission has been taken from the survey’s authors. Before distributing this instrument, the researcher translated the UTAUT instrument from English to Arabic language by himself, and then he gave it to two faculty members from English Department at the same institution to make sure that it is free of errors. They also translated it back to English language for better understanding the same context of this instrument. The researcher provided hard copies for faculty members in both campuses. The study instrument and consent form are attached in the appendix section. In addition to the questionnaire, the researcher interviewed ten faculty members who were willing to
participate in this investigation for in-depth understanding their perceptions toward technology integration in education, and possible urgent solutions that should be applied in this institution. The interview questions are attached in the appendix D.

Bogdan and Biklen (2006) stated that the triangulation in the social science field can be used by distributing two approaches or more to obtain and rely on the same results. Here, the triangulation technique was used for this study by triangulating the results of the open-ended questions with results of other forms of data collection, such as a UTAUT survey and the interview to check the validity of the results regarding the predictive factors to adopt technology tools in this institution at Al-Qunfudah.

Reliability and Validity of the Study Instrument

According to Singleton and Straits (2004), reliability is the level of accuracy when reapplying the study instrument and collecting data for research purposes. They also pointed out that in technology use and acceptance models, reliability refers to the effectiveness and stability of indicators or determinants to measure what they are intended for.

Based on the UTAUT instrument results that conducted by Venkatesh et al., (2003), the reliability coefficients were higher than 0.70, which corresponds to the idea that Cronbach’s alpha should be at least 0.7 among the constructs in order to rely on the study instrument (Hair et al., 2006). For the UTAUT study’s instrument, Cronbach’s alpha value for the performance expectancy predictor was 0.90, 0.92 for effort expectancy predictor, 0.91 for the social influence predictor, and 0.87 for the facilitating
conditions predictor. Here, reliability analysis was computed for all variables by using Cronbach’s coefficient alpha.

Creswell (2012) stated that the instrument validity is the level of accuracy in measuring what any instrument intended to be measured. UTAUT model has been examined several times in order to confirm its constructs’ validity; it has been validated and considered a robust model to predict technology innovations (Saadé et al., 2007). Indeed, UTAUT model is an extension of TAM, and it has been tested for its instrument validity. Venkatesh et al. (2003) reviewed and unified UTAUT depending on the Social Cognitive Theory and eight models that have been validated to use and accept technology innovations. Additionally, Serben (2014) states that there were not any inclusive instruments that adequately contribute to explain the adoption of a new technology application before developing the UTAUT model. Additionally, construct validity was examined according to Exploratory Factor Analysis (EFA).

**Data Collection**

At the beginning, permission has been received from the Dean of Al-Qunfudah University College in order to facilitate the researcher’s work in this college. To gather the data, hard copies of the study instrument were distributed among the faculty members by the researcher himself for male faculty and by a female colleague in the other college campus due to the Saudi religious culture that males are not allowed to have contact with females in all governmental buildings.

For the first basic instrument, participants in this study completed the survey. The UTAUT survey took approximately between 15-20 minutes to be completed. After
surveys were completed during the two weeks at the end of Spring semester 2015/2016, corresponding to the beginning of the summer semester at Ohio University, the researcher manually entered the data to SPSS version 22.0. Before running the data analysis by using SPSS, the researcher conducted the data cleaning process to identify and eliminate missing data and outliers, due to its important effects on the study’s results.

Secondly, ten faculty members were interviewed by the researcher himself. The interview lasted 20 minutes with each of faculty member, face-to-face meeting in campus, and all interviews were voice recorded. They were selected randomly, and they were informed by email and phone to schedule the place and time for the interview. The researcher wrote down the interview transcripts from the voice records to identify the answers for each question, and then analyzed the data through the content analysis that allow qualitative data to be a quantitative by coding the data into themes.

**Data Analysis**

According to Creswell (2009), to conduct quantitative research, the researcher essentially has to consider descriptive and inferential statistic for the data analysis. Here, the researcher used SPSS version 22.0 to analyze the collected data into descriptive analysis, such as the means, standard deviations and correlations between determinants and the outcome, and inferential statistics such as multiple regression. Multiple regression analysis was used to explain and evaluate the correlation between only a single dependent variable and many independent variables (Rovai, Baker & Ponton, 2013). In addition, Creswell (2012) indicated that multiple regression can predict the consequence of separate or combined independent variables on the outcome.
In this context, a descriptive statistical analysis was conducted to give a clear vision of faculty’s demographic information. Then, for the study questionnaire, reliability analysis was examined for all items under each variable by using Cronbach’s coefficient alpha; and construct validity was also investigated according to the techniques of exploratory factor analysis (EFA). Since the dependent variable was faculty’s behavioral intention to employ technology applications in their teaching approaches at Al-Qunfudah University College and independent variables were performance expectancy, effort expectancy, social influence and perceived facilitating conditions, multiple regression analysis was utilized to answer the first research question that investigates the effect of all independent variable to predict the outcome. Also, the relationship between each independent variable and dependent variable was analyzed by using Pearson correlation coefficient. Explaining the influential consequence of the four determinants on the behavioral intention of faculty members to use technology at Al-Qunfudah University College was based on accepting or rejecting the null hypotheses identified earlier with 95% confidence interval. Data were tested in order to make sure that they meet the regression assumptions and identifying the potential outliers.

According to Howell (2014), an independent sample t-test is for comparing means of two groups whereas one-way ANOVA is utilized when a researcher compares means of three different groups or more. Here, the independent-samples t-test was used to answer the second research question about identifying the mean differences between males and females regarding their scores in the dependent variable which is faculty’s behavioral intention to integrate technology in their practices. Since there were three
different groups of ages, one-way ANOVA was utilized for the second research question to identify the differences among participants, divided into groups, in the dependent variable which is faculty’s behavioral intention to integrate technology in their practices. Likewise, there were three groups based on years of teaching experience, 1-5, 6-10, and 11- above that are divided based on years of teaching experience; therefore, this test was applied to measure the mean differences regarding of years of teaching experience in the dependent variable. Finally, the third research question was answered based on the descriptive analysis of faculty’s demographic information via content analysis.

**Summary**

In this chapter, the researcher introduced the study methodology that will be followed to obtain research results. The methodology chapter included the introduction, restating the research questions and hypotheses. The characteristics of the study target population were identified in addition to the procedures to conduct this study. The study instrument and also its validity and reliability were identified in detail. Further, how distributing a study instrument to faculty members in both campuses was explained. Eventually, the approaches of collecting and analyzing data of this investigation are stated in this chapter in order to explain how the researchers will obtain and analyze data to achieve the study’s outcomes.
Chapter 4: Results

This chapter presents and discusses the results of this study including descriptive statistics that are related to the demographic information about the study sample. Furthermore, reliability and validity results regarding the study questionnaire are introduced, in addition to checking outliers, missing data, and regression assumptions. Results about each research question are introduced in this chapter. For the open-ended questions in the questionnaire and interview questions, there are two separate sections in this chapter regarding results for each one in detail.

Descriptive Statistics

A hard copy questionnaire was distributed among all faculty members at this institution. There were 185 male and female faculty working at this university college for the academic year 2016. Only 142 completed questionnaires were collected and entered to SPSS for the analysis (N=142). The response rate was 76.76%. This section includes participants’ demographic information related to their gender, ages, the country of citizenship, academic ranking, years of teaching experience, academic department, having a computer in the workplace, access to the internet, receiving professional development, the level of ICT knowledge, and the routine of using computer or tablet.

Participants’ gender.

As shown in Table 2. below, 142 faculty members at Al-Qunfudah University College participated in this investigation. There were 82 males who represent 57.7% of the total size of this sample and 60 females who represent 42.3% of this collected data.
This means that both male and female faculty members responded equally 77% to this study based on the number of each gender population.

Table 2.

*Participants’ Gender*

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>82</td>
<td>57.7</td>
</tr>
<tr>
<td>Female</td>
<td>60</td>
<td>42.3</td>
</tr>
<tr>
<td>Total</td>
<td>142</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Participants’ age.

Table 3. below provides the percentage of each group of ages of participants in this study. First, the percentage of 35 years old and less was 34.5%. For the second group, 36 to 45 years old, it was 43.7%. Finally, 21.8% represented faculty members who are 46 years old and above.

Table 3.

*Participants’ Age*

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35 and less</td>
<td>49</td>
<td>34.5</td>
</tr>
<tr>
<td>36 to 45</td>
<td>62</td>
<td>43.7</td>
</tr>
<tr>
<td>46 and above</td>
<td>31</td>
<td>21.8</td>
</tr>
<tr>
<td>Total</td>
<td>142</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Participants’ countries.

Table 4. reveals the country of citizenship of participants who are actually hired as a faculty at Al-Qunfudah University College. Saudi faculty members represented 40.8%, 26.1% were from Egypt, 9.9% were from Jordan, 9.2% from Sudan, 1.4% from Syria, 12% from Tunisia, and finally 0.7% from Yemen.

Table 4.

*Participants’ Country*

<table>
<thead>
<tr>
<th>Country</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>58</td>
<td>40.8</td>
</tr>
<tr>
<td>Egypt</td>
<td>37</td>
<td>26.1</td>
</tr>
<tr>
<td>Jordan</td>
<td>14</td>
<td>9.9</td>
</tr>
<tr>
<td>Sudan</td>
<td>13</td>
<td>9.2</td>
</tr>
<tr>
<td>Syria</td>
<td>2</td>
<td>1.4</td>
</tr>
<tr>
<td>Tunisia</td>
<td>17</td>
<td>12.0</td>
</tr>
<tr>
<td>Yemen</td>
<td>1</td>
<td>.7</td>
</tr>
<tr>
<td>Total</td>
<td>142</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Participants’ academic rank.

The following Table 5. shows the academic rank: 2.1% were professors, 17.6% were associate professors, 39.4% were assistant professors, 15.5% were lecturers and finally 25.4% were teaching assistants.
Table 5.

Participants’ Academic Ranking

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid Professor</td>
<td>3</td>
<td>2.1</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>25</td>
<td>17.6</td>
</tr>
<tr>
<td>Assistant Professor</td>
<td>56</td>
<td>39.4</td>
</tr>
<tr>
<td>Lecturer</td>
<td>22</td>
<td>15.5</td>
</tr>
<tr>
<td>Teaching Assistant</td>
<td>36</td>
<td>25.4</td>
</tr>
<tr>
<td>Total</td>
<td>142</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Participants’ teaching experience.

As shown in Table 6, there were three groups of years of teaching experience. The first group was from five and less and represented 30.3% of participants. The percentage of the second group was 22.5%, representing from six to ten years of faculty teaching experience. Lastly, 47.2% were from 11 and above of years of teaching experience.

Table 6.

Participants’ Teaching Experience

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid 5 and less</td>
<td>43</td>
<td>30.3</td>
</tr>
<tr>
<td>6-10</td>
<td>32</td>
<td>22.5</td>
</tr>
<tr>
<td>11 and above</td>
<td>67</td>
<td>47.2</td>
</tr>
<tr>
<td>Total</td>
<td>142</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Participants’ academic departments.

This study involved faculty members from 11 different academic departments at this college. Results revealed that faculty members from both the Education Department
and the Mathematics Department participated with the largest number of participants representing 13.4% whereas the Artistic education contributed with the least participants at 2.1% as shown below in Table 7:

Table 7.

Participants’ Academic Departments

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Islamic studies</td>
<td>18</td>
<td>12.7</td>
</tr>
<tr>
<td>Arabic language</td>
<td>12</td>
<td>8.5</td>
</tr>
<tr>
<td>Education</td>
<td>19</td>
<td>13.4</td>
</tr>
<tr>
<td>Mathematics</td>
<td>19</td>
<td>13.4</td>
</tr>
<tr>
<td>Chemistry</td>
<td>13</td>
<td>9.2</td>
</tr>
<tr>
<td>Physics</td>
<td>12</td>
<td>8.5</td>
</tr>
<tr>
<td>Computer Science</td>
<td>17</td>
<td>12.0</td>
</tr>
<tr>
<td>Artistic education</td>
<td>3</td>
<td>2.1</td>
</tr>
<tr>
<td>Physical education</td>
<td>5</td>
<td>3.5</td>
</tr>
<tr>
<td>English Language</td>
<td>16</td>
<td>11.3</td>
</tr>
<tr>
<td>Home economics</td>
<td>8</td>
<td>5.6</td>
</tr>
<tr>
<td>Total</td>
<td>142</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Having a computer by participants.

Table 8 provides information regarding whether faculty members have a computer in their offices. Results indicated that 58.5% of participants do not have a computer in their offices, while 41.5% of them do. Therefore, the majority of faculty members at Al-Qunfudah University College do not have computers.
Table 8.

\textit{Having a Computer by Participants}

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>59</td>
<td>41.5</td>
</tr>
<tr>
<td>No</td>
<td>83</td>
<td>58.5</td>
</tr>
<tr>
<td>Total</td>
<td>142</td>
<td>100.0</td>
</tr>
</tbody>
</table>

\textbf{Participants' access to the internet.}

As shown below in Table 9., 71.8\% of participants (N=102) have access to the internet in the college whereas 28.2\% of them (N=40) do not have internet service.

Table 9.

\textit{Access to the Internet}

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>102</td>
<td>71.8</td>
</tr>
<tr>
<td>No</td>
<td>40</td>
<td>28.2</td>
</tr>
<tr>
<td>Total</td>
<td>142</td>
<td>100.0</td>
</tr>
</tbody>
</table>

\textbf{Receiving professional development.}

Table 10 reveals that 66.9\% of participants have had professional development or training programs regarding utilizing technology in education and that 33.1\% of them have not had this kind of experience.
Table 10.

*Receiving Professional Development*

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>95</td>
<td>66.9</td>
</tr>
<tr>
<td>No</td>
<td>47</td>
<td>33.1</td>
</tr>
<tr>
<td>Total</td>
<td>142</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Participants' instructional technology knowledge.**

The following Table 11. shows that 29.6% of participants had a very good level of knowledge in IT, 43.7% had poor knowledge, 21.8% had moderate knowledge, and finally, 4.9% with poor knowledge in ICT.

Table 11.

*IT Knowledge*

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Valid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor</td>
<td>7</td>
<td>4.9</td>
</tr>
<tr>
<td>Moderate</td>
<td>31</td>
<td>21.8</td>
</tr>
<tr>
<td>Good</td>
<td>62</td>
<td>43.7</td>
</tr>
<tr>
<td>Very good</td>
<td>42</td>
<td>29.6</td>
</tr>
<tr>
<td>Total</td>
<td>142</td>
<td>100.0</td>
</tr>
</tbody>
</table>

**Participants' use of computers.**

Table 12. provides an overview of information in terms of using computers, tablets or other digital devices by faculty for educational purposes. Results showed that 41.5% of participants used a computer every day, 37.3% used it most of a week, 7.7%
once a week, 3.5% once a month, 3.5% once a semester, and 6.3% never used a computer for education.

Table 12.

Use of Computers

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Every day</td>
<td>59</td>
</tr>
<tr>
<td>Most of a week</td>
<td>53</td>
</tr>
<tr>
<td>Once a week</td>
<td>11</td>
</tr>
<tr>
<td>Once a month</td>
<td>5</td>
</tr>
<tr>
<td>Once a semester</td>
<td>5</td>
</tr>
<tr>
<td>Never</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>142</td>
</tr>
</tbody>
</table>

In addition to the previous information regarding participants’ demographic background, the researcher conducted crosstabs analysis to highlight differences in the daily use of computer and other digital devices by the faculty according to some demographic information, such as gender, age, the country of citizenship, academic ranking, teaching experience, and receiving PD. The results showed that males tend to use a computer more than females do, and they are also more knowledgeable in a computer use. Faculty members who are aged between 36 to 45 years old use technology tools more than other ages, and they also have more computer knowledge than others. There were no differences regarding the use of technology that associated with the faculty’s country of citizenship. As well, the data showed insignificant differences in the daily use of technology among groups of faculty’s academic ranking and years of teaching experience. Faculty members from the Computer Science Department showed
the highest percent of using such tools. Also, faculty members who have received PD utilize a computer more than others who have not. Additionally, knowledgeable faculty members in a computer programs tend to use computer more than others who lacked computer competency. Finally, results revealed that the number of males who have received PD was significantly higher than females did.

Reliability of the Study Instrument

The UTAUT original survey that used here was examined by using Cronbach’s alpha. It is used to evaluate the internal consistency among items in a scale (Hair et al., 2006). As indicated previously in Chapter 3, Venkatesh et al. (2003) stated that the reliability coefficients were higher than 0.70 among the UTAUT constructs. In this quantitative case study, each UTAUT variable including items was tested for reliability. Results indicated that Cronbach’s coefficient alpha for the performance expectancy predictor was 0.71, 0.84 for the effort expectancy predictor, 0.69 for the social influence predictor, 0.56 for the facilitating conditions predictor, and lastly, 0.87 for the Behavioral Intention, as stated below in Table 13.

Table 13.

Cronbach’s Coefficient Alpha Reliability Results

<table>
<thead>
<tr>
<th>UTAUT Variable</th>
<th>Cronbach's Alpha</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Expectancy</td>
<td>.71</td>
<td>4</td>
</tr>
<tr>
<td>Effort Expectancy</td>
<td>.84</td>
<td>4</td>
</tr>
<tr>
<td>Social Influence</td>
<td>.69</td>
<td>4</td>
</tr>
<tr>
<td>Facilitating Conditions</td>
<td>.56</td>
<td>3</td>
</tr>
<tr>
<td>Behavioral Intention</td>
<td>.87</td>
<td>3</td>
</tr>
</tbody>
</table>
According to Rovai, Baker and Ponton (2013), a Cronbach’s alpha is considered high if it is between .70 to .90 and considered moderate between .50 to .70. The original results that obtained by Venkatesh et al., (2003) revealed that Cronbach’s alpha was higher than .70. Here, it was high for performance expectancy, effort expectancy, and behavioral intention whereas it was moderate for social influence and facilitating conditions variables.

Validity of the Study Instrument

The original UTAUT instrument was tested, in this context, for its construct validity by using exploratory factor analysis (EFA) to make sure that this instrument is truly examining what it is intended to. EFA is helpfully used to evaluate and highlight the relationship between variables of testing scales (Hair et al., 2006). There were five factors that were investigated in this regard: Performance Expectancy (four items), Effort Expectancy (four items), Social Influence (four items), Facilitating Conditions (three items) and Behavioral Intention (three items).

Table 14.

*KMO and Bartlett's Test*

| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. | .784 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | 1246.906 |
| | Df | 153 |
| | Sig. | .000 |
As stated in Table 14. above, Kaiser-Meyer-Olkin was slightly high (KMO=.784) indicating that using factor analysis for the collected data is suitable. According to Coakes et al. (2006), KMO should be greater than .60 for strong enough correlations among possible factors. Moreover, Bartlett's Test of Sphericity (Chi-Square=1246.906) was significant ($p<.001$). It means that the relationship among variables are met as Field (2005) illustrated.

Table 15.

*Pattern Matrix* of EFA

<table>
<thead>
<tr>
<th></th>
<th>Component 1</th>
<th>Component 2</th>
<th>Component 3</th>
<th>Component 4</th>
<th>Component 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE1</td>
<td>.818</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PE2</td>
<td>.798</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PE3</td>
<td>.868</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PE4</td>
<td>.385</td>
<td>.662</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE1</td>
<td>.574</td>
<td>.325</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE2</td>
<td>.905</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE3</td>
<td>.945</td>
<td></td>
<td></td>
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<td>EE4</td>
<td>.851</td>
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<td>SI1</td>
<td></td>
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<td>.765</td>
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<tr>
<td>SI2</td>
<td></td>
<td></td>
<td>.829</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SI3</td>
<td></td>
<td></td>
<td>.548</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SI4</td>
<td></td>
<td></td>
<td></td>
<td>.723</td>
<td></td>
</tr>
<tr>
<td>FC1</td>
<td>.417</td>
<td>.334</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FC2</td>
<td>.561</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FC3</td>
<td></td>
<td></td>
<td></td>
<td>.868</td>
<td></td>
</tr>
<tr>
<td>BI1</td>
<td>.934</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>BI2</td>
<td>.965</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BI3</td>
<td>.760</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Extraction Method: Principal Component Analysis.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 7 iterations.
b. Factor loadings > .3 are showed as blank.
In this case, the researcher applied Principal Component Analysis with Promax rotation method for EFA as shown in Table 15. The results indicated that the items of Performance Expectancy (PE1, PE2, PE3, and PE4) loaded onto the same factor; however, PE4 was interrelated with two factors, PE and SI. Items of Effort Expectancy (EE1, EE2, EE3 and EE4) were correlated into the same variable except for EE4 item, which has a cross loading with the PE variable. Social Influence items (SI1, SI2, and SI3) correlated with each other moderately except the SI4 that did not correlate with its group of items. Consequently, this item should be revised for future research. Items of the Facilitating Conditions variable (FC1 and FC2) fell into the same Effort Expectancy component, which indicated that the measurement items of these two variables, EE and FC, were interrelated and failed to be independent from each other. The FC3 item fell into another factor, and it was independent from its own group of items. For this reason, researchers are advised to revise the FC3 item especially for conducting future research in the Saudi context. Additionally, the FC1 also interrelated with another variable. Finally, items of Behavioral Intention (BI1, BI2 and BI3) showed independence in their group, and they adequately correlated strongly in the same component. In above analysis, the cutoff point was .3 to suppress coefficients below this value because they are considered small.

**Checking Missing Data and Outliers**

First of all, the researcher conducted data screening after the entry of all cases in SPSS in order to identify missing data or outliers that might affect the results. For missing data, any uncompleted survey or missing data in the four predictors and the
outcome variable of the UTAUT were not involved in the data analysis. The following Table 16. shows that there were not any missing data regarding the study variables.

Table 16.

*Descriptive Statistics for the UTAUT Variables*

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Expectancy</td>
<td>142</td>
<td>4.2887</td>
<td>.55087</td>
</tr>
<tr>
<td>Effort Expectancy</td>
<td>142</td>
<td>3.9454</td>
<td>.67446</td>
</tr>
<tr>
<td>Social Influence</td>
<td>142</td>
<td>3.3574</td>
<td>.78855</td>
</tr>
<tr>
<td>Facilitating Conditions</td>
<td>142</td>
<td>3.3169</td>
<td>.76809</td>
</tr>
<tr>
<td>Behavioral Intention</td>
<td>142</td>
<td>3.9366</td>
<td>.72979</td>
</tr>
</tbody>
</table>

According to Tabachnick and Fidell (2013), outliers do not fit properly with data, and there are two kinds of outliers: univariate and multivariate outliers. The first type of outliers can be identified regarding the unusual value of cases in each factor. On the other hand, multivariate outliers are cases with unusual values in a combination of a set of variables. In this regard, the researcher used BoxPlot to identify univariate outliers. There were 16 cases located in all UTAUT variables. Those cases were sorted by variables including 48, 132, 86, 103, 17, 41, 61, 132, 109, 135, 48, 116, 102, 39, 43 and 90 which stated in Figure 9. below:
To detect and assess multivariate outliers if they have an influence on the results, Hair et al. (2006) suggested using Cook’s Distance for this purpose. Cook’s Distance was proposed by Dennis Cook in 1977 to detect any case in the regression analysis that could influence the findings (Hair et al., 2006). According to Sorokina, Booth and Thornton (2013), Cook's distance of $4/(n-k-1)$ can be used as the cutoff in order to detect outliers, where $n =$ cases and $K =$ number of predictors. For the current investigation, $n=142$ and $k=4$ so the Cook's distance was 0.0291 and any cases that exceeded this cutoff were deleted from the analysis. Consequently, eight cases were discarded, including cases 39,
43, 86, 90, 102, 116, 132 and 135 as shown in the following Figure 10. Thus, influential outliers were not involved in checking regression assumptions and further analysis in this chapter.

Figure 10. Boxplot for Identifying Influential Outliers Using Cook’s Distance.

Checking Regression Assumptions

Normality.

The first assumption of regression is the normal distribution of variables, which is called normality. This assumption can be checked visually by histograms for the residuals that should fit a normal curve for the data distribution (Tabacknick & Fidell, 2013). Keith (2006) indicated that P-plots is considered another approach to identify this assumption
by fitting residuals in a straight line. According to the following Figures 11 & 12, the normality assumption is met.

Figure 11. Histogram of Regression Standardized Residuals.
Figure 12. Normal P-P Plot for Regression Standardized Residual.

Linearity.

It is defined by Tabacknick and Fidell (2013) as a link between each pair of factors that is basically shown as a straight line in scatterplots. Thus, residual scatterplots are considered a method of detecting whether the linearity assumption is violated or not. Figure 13 showed that data were scattered in a straight line, indicating that the linearity assumption was not violated.
Homoscedasticity.

Also known as homogeneity of variance, it refers to having equal errors of variance across all levels of predictors and can be checked through residual scatterplots that should be similar across all predictors’ levels and not shaping in a systemic pattern (Warner, 2013). Previous Figure 13. showed that this assumption is not violated because residuals were not shaped in a systemic pattern.

Figure 13. Scatterplot of Regression Standardized Predicted Values against Regression Standardized Residuals.
Multicollinearity.

According to Hair et al., (2006), it is a regression assumption that is defined as no correlation among independent variables. Variance Inflation Factor (VIF) is a method to evaluate this assumption that VIF score should be 10 or above to decide that this assumption is violated (Hair et al., 2006). According to Table 17. below, the multicollinearity assumption was not violated.

Table 17.

*Tolerance and VIF of Independent Variables*

<table>
<thead>
<tr>
<th>Model</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Constant)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance Expectancy</td>
<td>.805</td>
<td>1.243</td>
</tr>
<tr>
<td>Effort Expectancy</td>
<td>.601</td>
<td>1.665</td>
</tr>
<tr>
<td>Social Influence</td>
<td>.763</td>
<td>1.311</td>
</tr>
<tr>
<td>Facilitating Conditions</td>
<td>.550</td>
<td>1.818</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Behavioral Intention

Results of Research Questions

The first research question’s result.

The first research question was to what degree do performance expectancy, effort expectancy, social influence and perceived facilitating conditions predict faculty’s behavioral intention to adopt technology integration in the teaching process at Al-Qunfudah University College? To answer this, multiple regression was run to see if the four independent variables can predict the outcome variable. As shown in Table 18, the
overall regression to predict faculty’s behavioral intention from the four independent variables indicating that $R^2 = .560$ and $R^2 = .314$ which means 31.4% of the variance was predicted in the dependent variable, behavioral intention. According to Table 19, the overall regression was statistically significant, $F(4, 129) = 14.747, p < .05$. This result corresponds to other previous studies that were indicated in chapter two (Alkhasawneh & Alanazy, 2015; Oye et al., 2011; Sundaravej, 2009; Tan, 2013; Venkatesh et al., 2003). Therefore, the findings here supported the first research hypothesis and supported the claim that the UTAUT can predict the behavioral intentions of users toward utilizing ICT in several educational settings (Saadé et al., 2007; Venkatesh et al., 2003).

Based on the results that are shown in Table 19, the performance expectancy variable was not statistically significant to predict the behavioral intention of faculty at Al-Qunfudah University College when other predictors were controlled $t(129) = 1.822, p > .05$. This sequence is consistent with other studies about insignificant results for this variable (Attuquayefio & Addo, 2014; Alshehri, 2012). The effort expectancy variable was statistically significant to predict the behavioral intention of faculty when other predictors were controlled $t(129) = 2.537, p < .05$. For the social influence variable, it was not statistically significant to predict the faculty’s behavioral intention when the other predictors such as, performance expectancy, effort expectancy and facilitating conditions were controlled $t(129) = -.777, p > .05$. This sequence is also consistent with other studies about insignificant results for the social influence variables (Attuquayefio & Addo, 2014; Alshehri, 2012).
Finally, the facilitating conditions variable was statistically significant to predict the behavioral intention of faculty when other predictors were controlled: $t(129) = 3.385, p < .05$. Interestingly, this factor was the most useful factor among other UTAUT constructs to predict the outcome, $\beta = .333, p < .05$. Thus, the facilitating conditions factor was considered essential for adopting ICT (Almalki, 2011; Moukali, 2012; Wang & Wang, 2009; Yilmaz, 2011).

Table 18.

**Model Summary Table**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.560$^a$</td>
<td>.314</td>
<td>.293</td>
<td>.51619</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Facilitating Conditions, Performance Expectancy, Social Influence, Effort Expectancy

Table 19.

**ANOVA Table for the Regression**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>15.718</td>
<td>4</td>
<td>3.929</td>
<td>14.747</td>
<td>.000$^b$</td>
</tr>
<tr>
<td>Residual</td>
<td>34.373</td>
<td>129</td>
<td>.266</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>50.090</td>
<td>133</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Behavioral Intention
b. Predictors: (Constant), Facilitating Conditions, Performance Expectancy, Social Influence, Effort Expectancy
Table 20.

Coefficients Table

<table>
<thead>
<tr>
<th>Model</th>
<th>B</th>
<th>Std. Error</th>
<th>Beta</th>
<th>t</th>
<th>Sig.</th>
<th>Part</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Constant)</td>
<td>1.497</td>
<td>.451</td>
<td>3.320</td>
<td>.001</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Performance Expectancy</td>
<td>.199</td>
<td>.109</td>
<td>.148</td>
<td>1.822</td>
<td>.071</td>
</tr>
<tr>
<td></td>
<td>Effort Expectancy</td>
<td>.228</td>
<td>.090</td>
<td>.239</td>
<td>2.537</td>
<td>.012</td>
</tr>
<tr>
<td></td>
<td>Social Influence</td>
<td>-.050</td>
<td>.064</td>
<td>-.065</td>
<td>-.777</td>
<td>.438</td>
</tr>
<tr>
<td></td>
<td>Facilitating Conditions</td>
<td>.274</td>
<td>.081</td>
<td>.333</td>
<td>3.385</td>
<td>.001</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Behavioral Intention

In addition to the regression analysis, a Pearson correlation coefficient was calculated to assess the correlation between the UTAUT four independent variables and the outcome variable as shown in Table 21. There was a positive correlation between performance expectancy and behavioral intention of faculty to integrate technology into teaching approaches, $r(134)=.330, p<.001$ which is statistically significant. There was also a positive correlation between effort expectancy and behavioral intention of faculty, $r(134)=.476, p<.001$ which is statistically significant. The correlation between social influence and behavioral intention of faculty was not statistically significant, $r(134)=.141, p>.001$ due to the inflexibility of the UTAUT with explaining the acceptance of technology in different cultural contexts (Gahtani et al., 2007). Lastly, there was a positive correlation between facilitating conditions and the faculty’s behavioral intention $r(134)=.482, p<.001$. In sum, the relationship between independent variables and the dependent variables was positive; however, the relationship among variables is not always achieved, which corresponds to some empirical studies (Alkhasawneh & Alanazy, ...
The research also conducted the regression analysis and Pearson correlation coefficient with including the eight cases that were considered outliers. The results showed no differences compared with the above analysis.

Table 21.

Pearson’s $r$ Correlation Coefficient

<table>
<thead>
<tr>
<th></th>
<th>Performance Expectancy</th>
<th>Effort Expectancy</th>
<th>Social Influence</th>
<th>Facilitating Conditions</th>
<th>Behavioral Intention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Expectancy Pearson Correlation</td>
<td>1</td>
<td>.404**</td>
<td>.224**</td>
<td>.300**</td>
<td>.330**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td>.000</td>
<td>.009</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>134</td>
<td>134</td>
<td>134</td>
<td>134</td>
<td>134</td>
</tr>
<tr>
<td>Effort Expectancy    Pearson Correlation</td>
<td>.404**</td>
<td>1</td>
<td>.116</td>
<td>.556**</td>
<td>.476**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.184</td>
<td>.000</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>134</td>
<td>134</td>
<td>134</td>
<td>134</td>
<td>134</td>
</tr>
<tr>
<td>Social Influence     Pearson Correlation</td>
<td>.224**</td>
<td>.116</td>
<td>1</td>
<td>.437**</td>
<td>.141</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.009</td>
<td>.184</td>
<td>.000</td>
<td>.103</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>134</td>
<td>134</td>
<td>134</td>
<td>134</td>
<td>134</td>
</tr>
<tr>
<td>Facilitating Conditions Pearson Correlation</td>
<td>.300**</td>
<td>.556**</td>
<td>.437**</td>
<td>1</td>
<td>.482**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>134</td>
<td>134</td>
<td>134</td>
<td>134</td>
<td>134</td>
</tr>
<tr>
<td>Behavioral Intention Pearson Correlation</td>
<td>.330**</td>
<td>.476**</td>
<td>.141</td>
<td>.482**</td>
<td>1</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.103</td>
<td>.000</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>134</td>
<td>134</td>
<td>134</td>
<td>134</td>
<td>134</td>
</tr>
</tbody>
</table>

**. Correlation is significant at the 0.01 level (2-tailed).
The second research question’s result.

The second research question was about investigating if there were differences in faculty’s behavioral intention scores to adopt technology integration in the teaching process at Al-Qunfudah University College based on their age, gender, and experience. To answer this question, each of the independent variables, such as gender, age, and experience was analyzed separately in order to identify faculty’s behavioral intention.

**Gender.**

In this investigation, both male and female faculty were surveyed to predict their intention to adopt and use technology approaches in teaching. An independent-samples $t$-test was used to compare faculty’s behavioral intentions in their gender, male and female. According to Table 22. Below, there were no difference in the scores between male faculty ($M=4.07$, $SD=.60$) and female faculty ($M=3.94$, $SD=.62$); $t(132)=1.25, p = 2.13$.

Table 22.

**Group Statistics Regarding the Gender**

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavioral</td>
<td>Male</td>
<td>75</td>
<td>4.0711</td>
<td>.60353</td>
</tr>
<tr>
<td>Behavioral</td>
<td>Female</td>
<td>59</td>
<td>3.9379</td>
<td>.62353</td>
</tr>
</tbody>
</table>

Al-Shawi and Al-Wabil (2013) asserted that gender does not play a critical role in the use of technology tools because people have equal chances to use such tools. Here, the second research hypothesis was not supported. This finding is comparable with other preceding studies (Alkhasawneh & Alanazy, 2015; Kay, 2006; Oye et al., 2011; Tan
2013) and contradicts with (Buabeng-Andoh, 2012; Markauskaite, 2006; Venkatesh et al., 2003). For further investigation, univariate outliers that belong to the behavioral intention variable were included to this analysis to confirm this finding; however, the result showed insignificant differences between males and females to adopt ICT at Al-Qunfudah University College.

**Age.**

Faculty were grouped into three categories: the first group included faculty who were 35 years old and less, the second group included faculty aged from 36 to 45 years old, and the third one included faculty aged 46 years old and above. To identify differences in faculty’s behavioral intention scores regarding their adoption of technology tools in teaching, One-way ANOVA was conducted to compare the effect of the age of faculty on the behavioral intention in ages of 35 years and less, 36-45, and 46 and above. There was not a significant effect of the faculty’s ages on their behavioral intention at the level for the three conditions $F(2, 131) = 1.56, p = .215$ as shown in Table 24.

Table 23.

*Descriptives for Participants’ Ages*

<table>
<thead>
<tr>
<th>Behavioral Intention</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>35 and less</td>
<td>47</td>
<td>3.8865</td>
<td>.57432</td>
<td>.08377</td>
</tr>
<tr>
<td>36 to 45</td>
<td>60</td>
<td>4.0889</td>
<td>.64620</td>
<td>.08342</td>
</tr>
<tr>
<td>46 and above</td>
<td>27</td>
<td>4.0617</td>
<td>.59224</td>
<td>.11398</td>
</tr>
<tr>
<td>Total</td>
<td>134</td>
<td>4.0124</td>
<td>.61369</td>
<td>.05302</td>
</tr>
</tbody>
</table>
Table 24.

**AVOVA Table for Participants’ Ages**

<table>
<thead>
<tr>
<th>Behavioral Intention</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1.161</td>
<td>2</td>
<td>.581</td>
<td>1.555</td>
<td>.215</td>
</tr>
<tr>
<td>Within Groups</td>
<td>48.929</td>
<td>131</td>
<td>.374</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>50.090</td>
<td>133</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Despite the fact that age differences affect the adoption of technology tools, this study revealed that the age variable did not play a critical role in this regard. This finding is comparable with other preceding studies (Alkhasawneh & Alanazy, 2015; Bandyopadhyay, 2013; Oye et al., 2011; Tan 2013) and contradicts with (Venkatesh et al., 2003). Thus, the second research hypothesis was not supported. Also, univariate outliers that belong to the behavioral intention variable were included to this analysis to confirm this finding; however, the result was statistically insignificant.

**Years of teaching experience.**

Faculty were grouped into three categories regarding their teaching experience: the first group included faculty who have from one to five years of experience, the second group included faculties who have from six to ten years, and the third one included faculties having 11 years and above of teaching experience. To highlight if there could be differences in their behavioral intention scores regarding their experience, One-way ANOVA was used to address the differences among the three groups of faculties in their behavioral intention based on their years of teaching experience, 1-5, 6-10, and 11-above. There was not a significant effect of the faculty’s ages on their behavioral
intention at the level for the three conditions $F(2, 131) = 2.67, p = .073$ as shown in the following Table 26.

Table 25.

*Descriptives for Participants’ experience*

<table>
<thead>
<tr>
<th>Behavioral Intention</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 and less</td>
<td>42</td>
<td>3.8730</td>
<td>.55559</td>
<td>.08573</td>
</tr>
<tr>
<td>6-10</td>
<td>30</td>
<td>3.9444</td>
<td>.63175</td>
<td>.11534</td>
</tr>
<tr>
<td>11 and above</td>
<td>62</td>
<td>4.1398</td>
<td>.62594</td>
<td>.07949</td>
</tr>
<tr>
<td>Total</td>
<td>134</td>
<td>4.0124</td>
<td>.61369</td>
<td>.05302</td>
</tr>
</tbody>
</table>

Table 26.

*ANOVA Table for Years of Teaching Experience*

<table>
<thead>
<tr>
<th>Behavioral Intention</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1.961</td>
<td>2</td>
<td>.980</td>
<td>2.668</td>
<td>.073</td>
</tr>
<tr>
<td>Within Groups</td>
<td>48.130</td>
<td>131</td>
<td>.367</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>50.090</td>
<td>133</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

According to this finding, the second research hypothesis was not supported. This finding is also comparable with other preceding studies (Alkhasawneh & Alanazy, 2015; Kay, 2006; Oye et al., 2011; Tan 2013). On the other hand, this finding is not comparable with some empirical studies that teaching experience positively influences the adoption of ICT (Goder, 2008; Lau & Sim, 2008, Russell et al., 2007; Venkatesh et al., 2003). Additionally, including univariate outliers to the behavioral intention variable in the above analysis did not change the insignificant finding.
The third research question’s result.

The third research question was about enumerating technology habits of the faculty at Al-Qunfudah University College. To answer this qualitative question, question number 13 in the first section of the survey was assigned for this purpose, which was about describing how faculty use technology tools in this institution. Content analysis was approached for this research question. There were 98 participants who responded to this question, representing 69.01% of total collected surveys. Results revealed that respondents are divided into eight categories according to their technology habits at this college, as shown in Table 27 below:

Table 27.

Number of Participants Based on Their Technology Habits.

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using technology tools for presentations.</td>
<td>66</td>
<td>67.3</td>
</tr>
<tr>
<td>For grading and attendance.</td>
<td>13</td>
<td>13.3</td>
</tr>
<tr>
<td>Using technology tools for research and online resources.</td>
<td>13</td>
<td>13.3</td>
</tr>
<tr>
<td>Never use technology tools.</td>
<td>11</td>
<td>11.2</td>
</tr>
<tr>
<td>Using them for communicating with students and faculty.</td>
<td>10</td>
<td>10.2</td>
</tr>
<tr>
<td>For producing and using multimedia software.</td>
<td>10</td>
<td>10.2</td>
</tr>
<tr>
<td>To access internet and emails.</td>
<td>6</td>
<td>6.1</td>
</tr>
<tr>
<td>For e-learning.</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Findings showed that the majority of participants (N=66) were under the first category, using technology tools for presentations in classes, such as Microsoft PowerPoint, smartboards, and YouTube. Some participants (N=13) use computers and
internet for grading and taking attendance for students by using Microsoft Excel. 13 participants indicated that they use the internet for doing academic research and finding online resources. For the never use technology tools category, 11 participants indicated that they have never used them for education since computers and internet infrastructure were insufficient. Ten participants pointed out that they use such devices to communicate with their students and with faculty as well as for educational purposes. Ten respondents also mentioned that they use some multimedia software for mathematics such as Mapple, Latex, SPSS, and GAP. They also indicated that they teach their students on how to produce basic multimedia software for teaching elementary schools when they become teachers in the future. Six participants stated that they use computers to access to the internet and their official emails. Finally, only two of the total participants who responded to these questions indicated that they use Moodle LMS sometimes for teaching students, especially in the Computer Department which is the lowest frequency (N=2) for using e-learning.

**Interpretation of open-ended questions.**

Four open-ended questions at the end of the survey, section three, were addressed to highlight some barriers and incentives regarding the adoption of technology innovations in faculty’s practices at Al-Qunfudah University College, and also to better understand additional factors to the UTAUT constructs. There were 119 participants who responded to all these questions representing 83.8 % of the total participants (N=142). Content analysis was used to interpret each open-ended question as stated below:
Q1: What are barriers that the faculty encounter at Al-Qunfudah University College related to integrating technology applications into the teaching process?

Participants were asked, in this question, to list some barriers that the faculty encounter at this college regarding the use of technology. Only 118 of participants responded to this question, and the response rate was 83.1 %. Barriers encounter faculty were divided into two categories, as following:

Technological barriers:

1- The majority of classrooms are not equipped with such technology tools such as computers and data show projectors (N=55). For example, participant number 90 stated that “English Language Department needs a computer lab”.

2- Lack of the internet service. Actually, 83 faculty members agreed that the internet service is not suitable. Participants number 6 pointed out that “the college does not provide high-speed internet”.

3- The absence of technical support (N=62). The majority of participant emphasized that there is an urgent need for the technical support in both college campuses. One of female faculty members stated that “technical support unit is critical to assist the faculty”

4- The majority of computer software and applications are out date. Seven participants stated that in addition to insufficient computers provided to faculty, current computers are old.

Teaching barriers:
1- Most faculty members are not qualified in using such tools. This point was illustrated by eight participants (N=18). For example, participants number 26 stated that “I am not sure about if I could use that data show projectors and smartboard in my classes”.

2- Some faculty members still think that using these tools is a waste of time. Ten participants addressed this point. For example, one of the faculty indicated that “preparing for using computer applications needs time and effort”.

3- Professional development and training programs for academic staff are not available, especially for the use of ICT. This point was illustrated by 31 participants. For example, participant number 2 asserted that “no training programs are provided”.

4- The college does not encourage faculty to integrate computer applications into the teaching process, and it should provide incentives (N=11). This point, in fact, supports the social influence variable. Therefore, leadership should encourage all academic staff in this regard.

According to above barriers that encounter the faculty at Al-Qunfudah University College, the four UTAUT variables were supported regarding the prediction of using such tools at this college. For example, social influence is considered essential because some of participants need encouragement by the leadership. Also, perceived facilitating condition variable was supported because technological facilities are needed. On the other hand, performance expectancy variable was not supported by participants in this question because they think using these tools is waste of time and not useful. Eventually,
Responses to this question about ICT barriers are consistent with the findings of previous studies (Al-Mulhim, 2014; Al-Zahrani, 2014; Almalki, 2011; Alturise & Alojaiman, 2013).

Q2: What kind of incentives would you receive regarding integrating technology applications into the teaching process?

In this open-ended question, participants were asked to address incentives that they would like to have in order to effectively approach this kind of tools in their practices. Only 110 participants responded to this question with response rate 77.5 %. A number of incentives were specified by participants to enhance and improve the faculty’s adoption of technology in teaching approaches. Incentives are categorized into two categories, as following:

Facilitating conditions:

1- Providing sufficient computers or tablets for each faculty with updated software. This point was illustrated by 94 participants. For example, one of them explained that “from my perspective, providing a computer for each faculty is an important motivation”.

2- Providing a unit in each college campuses for technical support (N=46). For instance, “The first incentive that should be offered is technical support” indicated by participant number 12.

3- Providing high-speed internet for faculty. This point, in fact, was addressed by 68 faculty members from both campuses.
4- Providing free annual professional development and training programs to faculty (N=39). “Inviting experts to teach faculty on ICT uses in education” stated by participant number 4 as an example of the absence of PD.

Social influence:

1- Providing acknowledgement certificates for faculty regarding the use of such tools (N=24).
2- Providing financial rewards (N=8).
3- Providing faculty with high scores in the job evaluation (N=7).
4- Decrease weekly teaching hours for each faculty who integrate these tools in teaching frequently (N=4).

All above points were categorized under the social influence factor because participants need social encouragement, such as acknowledgement certificates and decreasing weekly teaching hours for those who use ICT in teaching frequently. Additionally, some of them indicated that providing financial rewards is another example of the influence to approach this teaching method. For example, participants number 7 stated that “financial rewards and acknowledgement certificates should be provided by the Deanship”. In sum, the results of this questions strongly supported two variables of the UTAUT model, which are facilitating conditions and social influence as presented by previous literature (Alkhasawneh & Alanazy, 2015; Oye et al., 2011; Sundaravej, 2009; Tan, 2013; Venkatesh et al., 2003).
Q3: Do you anticipate using technology tools in the future and how would you do that?

This question was about understanding whether or not faculty members would integrate technology tools into their future teaching methods, and how they would use such tools. 114 participants responded to this question representing 80.3% of the total responses to open-ended questions. Results showed that the majority of participants (N=105) agreed that they would integrate computer applications into their teaching process only if the college provides facilities that they need in this regard, such as a computer desktop and data show in every classroom. They also indicated that technology practices will be as presentations, online materials, research, and communication with students. To prove that, participant number 104 stated that “I will use technology tools for presentation once I get sufficient technological facilities and support”. On the other hand, three of the participants who responded to this question indicated that they would not integrate computer applications in their approaches because they believe that these tools are not needed (N=3). Six participants were undecided on whether or not to use such tools (N=6). Consequently, responses of this question support the facilitating conditions factors that belong to the UTAUT as considered a critical variable to the adoption of ICT (Alkhasawneh & Alanazy, 2015; Tan, 2013; Venkatesh et al., 2003).

Q4: Anything else would you like to share regarding technology integration in education at Al-Qunfudah University College?
In this question, 82 participants provided some suggestions and concerns regarding technology integration in education at Al-Qunfudah University College. Three factors were identified based on the following responses:

Facilitating conditions:

1- Providing urgent training programs on technology uses for faculty and for students as well (N=48).

2- Al-Qunfudah University College should establish a new learning resources center and renovate the campus (N=2). “The college should build a learning center because it is not existed yet” specified by participant number 26.

3- Provide e-learning platforms such as Blackboard or Moodle (N=1).

Institutional factor:

1- Al-Qunfudah University College needs to hire more faculty members who are interested in instructional technology (N=13).

2- Faculty members should be allowed to hold online and blended classes (N=9).

Social influence:

1- The Dean and Vice Dean of Al-Qunfudah University College should support this kind of teaching approach and encourage all faculty to use it frequently (N=17). This point was addressed by 17 participants, for example, one of them stated that “the Dean must introduce a plan to assist faculty members in using technology tools”.

In sum, facilitating conditions and social influence factors of the UTAUT were supported by this question’s findings, which correspond to previous indicated studies.
(Alkhasawneh & Alanazy, 2015; Oye et al., 2011; Sundaravej, 2009; Tan, 2013; Venkatesh et al., 2003). Also, the results also confirm that the institutional policy can affect the adoption of such tools (Buabeng-Andoh, 2012).

**Interview analysis.**

Ten faculty members at Al-Qunfudah University College were interviewed for in-depth understanding of their perceptions toward technology integration in education, and possible urgent solutions that should be applied to implement this kind of teaching approach by faculty. Also, this tool is a part of the triangulation and reflects the value of the multiple resources of the data regarding predictive factors to the adoption of ICT in education. Interviewees were asked six questions by the researcher himself in face-to-face meetings inside the college male campus, except for the one female faculty who was willing to participate via phone call. Answers were recorded and analyzed for each question as follows:

Q1: What encourages you to integrate computer applications and technology tools in education at Al-Qunfudah University College?

All ten interviewees agreed that there are three incentives they would like to receive, as stated below:

1- New computers and other technology equipment for each classroom.

2- Financial incentives.

3- Decreasing the teaching hours for each faculty who integrates this approach in teaching.
Additionally, two of them asserted that by implementing this approach, they should have received a high job evaluation score. The female faculty said that “establishing a new technical support unit for female campus would encourage them to use computer applications frequently”. One of male faculty members said that “social influence to adopt technology is considered necessary, especially from the college Dean”. According to above information, all mentioned points can be categorized under two variables of the UTAUT model, which are facilitating conditions and social influence. Thus, these two factors are supported by the interview to predict the adoption of technology tools at Al-Qunfudah University College, and the finding is consistent with previous UTAUT inquiries (Alkhasawneh & Alanazy, 2015; Oye et al., 2011; Sundaravej, 2009; Tan, 2013; Venkatesh et al., 2003; Wong & Li, 2008; Yilmaz, 2011).

Q2: Do you think that integrating technology into the teaching approaches at this institution will improve teaching and learning processes?

All ten responses to this question were yes (N=10) because interviewees were convinced that technology tools can enhance and improve the educational environment at this college. They also stated reasons of why using technology tools for education is beneficial and desirable as following:

1- Technology advancements in this era and the high acceptance of such tools by students (N=1).

2- Encouraging students to learn effectively and increasing the motivation for learning (N=4).

3- Supporting traditional teaching methods (N=9).
4- Increasing the interaction between the instructor and students (N=7).

Interviewee number seven pointed out that since Al-Qunfudah University College is in a conservative society, online materials such as pictures or videos should be selected carefully to fit with the Saudi religious culture. For example, females must be well-dressed when they are shown for males in videos or pictures. According to the ten responses to this question, the findings are categorized under the first construct of the UTAUT, performance expectancy, that faculty members think that this tools can help them to better perform their academic jobs. Thus, this result supports the importance performance expectancy factor to predict the ICT adoption as indicated in previous research (Alkhasawneh & Alanazy, 2015; Oye et al., 2011; Sundaravej, 2009; Tan, 2013; Venkatesh et al., 2003).

Q3: What are the challenges regarding integrating technology into the college environment?

Some points were categorized into three groups of challenges that prevent the college society from the regular use of technology tools, as follows:

Lack of technology infrastructure

1- Lack of financial support to establish new well-equipped buildings for this college since the current buildings lack technology infrastructure (N=5).

2- The absence of a technical support at this college (N=2).

3- Low-speed internet does not meet the need for the increasing number of students every academic year (N=7).

4- Insufficient computers for faculty and for the college library (N=1).
5- The absence of LMSs and copyright laws (N=1).

Lack of professional development

1- Most of the current faculty lack computer competency (N=8).

2- Training programs for faculty are not provided (N=3).

Lack of social influence

1- The absence of instructional designers and instructional technologists that can influence faculty to use such tools (N=3).

2- Lack of social support by the leadership on using computer applications and other tools (N=4).

Above findings supported the claims that Saudi higher institutions still encounter lack of technology infrastructure and lack of professional development for the faculty which indicated by some Saudi researchers (Al-Zahrani, 2014; Almalki, 2011; Moukali, 2012). According to three interviewees, the social influence factor is considered critical to influence the use of technology tools in the teaching process, which support the original findings of the UTAUT (Venkatesh et al., 2003). To overcome above challenges regarding the ICT adoption, the college has to contact directly with the Ministry of Higher Education to provide facilities for this purpose.

Q4: How can this college help you to effectively integrate technology tools in your teaching approaches?

The majority of participants agreed that this college could assist them to utilize technology tools in their teaching approaches by providing them with sufficient computers, training programs, encouragement, and maintenance for computers.
Additionally, other facilities, such as multimedia software and learning management systems have to be available for this academic environment. Interviewees number 1, 2, 3, 5, 6, 8, and 9 claimed that providing constant PD and training programs on technology use is, indeed, a corner stone for Al-Qunfudah faculty. Based on responses to this question, the importance of two variables of the UTAUT model were confirmed, which are perceived facilitating conditions and social influence. This results, in fact, supported the findings of the regression analysis as indicated previously in this chapter; the results also corresponded to the original UTAUT findings (Venkatesh, et al., 2003).

Q5: What expectations do you think regarding the adoption of technology in this college?

Unfortunately, four interviewees have had a negative future expectation regarding the use of technology in this college. They justified that hiring new faculty is not based on standards that include technology competency. Additionally, most of the current academic staff are not interested in the use of technology innovations. Another reason is that the leadership does not influence academic staff to integrate such tools. Six of the interviewees have a positive future expectation regarding this teaching approach if only the college would overcome the previous indicated challenges and barriers that encounter the faculty. Interviewee number seven, who has a positive sight regarding technology, asserted that students, in this decade, tend to use computers, tablets, and smartphones more than the old generation, including the majority of currently hired faculty at this college. Interviewees 4 and 7 stated that the current use of technology tools are individual initiatives.
Q6: What is the first step that should be taken when this institution decides to adopt technology integration in faculty’s practices?

One of answers was providing the college with instructional designers, so that they can work with faculty in order to successfully implement this teaching approach by faculty. The instructional designer can write a plan for this university, starting with conducting the need assessment until the evaluation after adopting the use of computer applications and other technological tools for education. Several empirical studies indicated that higher institutions should have a place for instructional designers (Hanna et al., 2009; Schwier et al., 2007; Simeon et al., 2007).

Two of interviewees emphasized that for successful adoption of integrating technology into the teaching approach at this college, the Dean and Vice Dean should be from those who are interested in instructional technology because they have the authority to change the vision regarding this approach. They can also add rules in terms of hiring faculty members for both campuses. This result is related to the importance of social influence factor in this regard and this result supported what have been found in previous analysis. For the facilitating conditions factor, common answers to this question were by providing technology facilities and training programs on technology use (N=9). In sum, providing technology facilities, training programs, instructional designers, and decision makers who are interested in IT are considered primary solutions.

Summary

This chapter presented the results of this study including descriptive statistics that are related to the demographic information about the study sample, reliability and validity
results regarding the study questionnaire, checking outliers, missing data, and regression assumptions. The chapter also included analyzing the data in SPSS approaching multiple regression. For the data, there were not any missing data regarding the UTAUT factors. Influential outliers on the regression data were discarded. Also, regression assumptions were not violated in this investigation. For the first question, results showed that the overall regression to predict faculty’s behavioral intention from the four UTAUT independent variables indicating that \( R = .560 \) and \( R^2 = .314 \) which means 31.4% of the variance was predicted in the dependent variable, behavioral intention. The overall regression was statistically significant, \( F(4, 129) = 14.747, p < .05 \); however, performance expectancy and social influence were not statistically significant predictors after controlling other independent variables. Results for the second question revealed that there were not significant differences in the outcome variable, behavioral intention, regarding faculty’s age, gender, and years of teaching experience. Answers for the third qualitative research questions were summarized as categories via content analysis. Finally, open-ended questions in the survey and interview analysis were explained in two separate sections. The findings of open-ended questions and the interview supported all four predictors of the UTAUT model that were able to predict the behavioral intention to ICT adoption.
Chapter 5: Discussion and Conclusion

Discussion

In this investigation, the initial four factors of the UTAUT were examined to predict faculty’s behavioral intention to adopt technology integration in the teaching process at Al-Qunfudah University College. Results revealed that the overall regression was statistically significant and the four constructs of the UTAUT, performance expectancy, effort expectancy, social influence, and facilitating conditions, were able to predict the behavioral intention of Al-Qunfudah faculty to adopt technology tools for teaching. \( R = .560 \) and \( R^2 = .314 \) means that 31.4% of the variance was explained by this model. Also, results of four open-ended questions and the interview with ten faculty members confirmed the statistical significance of each predictor of the UTAUT in this regard, and these study instruments fully represented the triangulation of this study. For example, insignificant results of the performance expectancy and social influence in the regression analysis were explained in the interview and open-ended questions that faculty members at this institution have not received social influence yet, and the majority of them still do not believe in the effectiveness of such tools for education; however, they indicated that social influence could be a strong factor toward the adoption of ICT in the future. Based on the results of the interview instrument, faculty members asserted that technology tools can help them to better teaching performance. Thus, the researcher suggests that constant training programs and professional development for faculty should be provided for faculty at this institution.
Interestingly, the facilitating conditions factor was the most useful one among other UTAUT constructs to predict the outcome, $\beta = .333$, $p < .05$ because the majority of faculty members agreed that providing technological facilities is a key solution in this regard since the college building insufficiently equipped with such tools. Thus, ICT infrastructures and other technological facilities should be provided, such as establishing a technical support unit. Providing faculty with technical support at this institution is considered a major factor for ICT adoption as indicated by several previous studies (Almalki, 2011; Moukali, 2012; Wang & Wang, 2009; Yilmaz, 2011). The effort expectancy variable was also a significant predictor because findings showed the willingness of faculty members to learn how to approach these tools for education, and learning this task is not complicated.

The relationship among the UTAUT variables was investigated to assess the correlation between four independent variables and the outcome by computing Pearson correlation coefficients. Results revealed that there were positive correlations between independent variables and the outcome, except between social influence and the behavioral intention due to the inflexibility of the UTAUT with explaining the acceptance of technology in different cultural contexts (Gahtani et al., 2007). Another explanation of the insignificant correlation between these two variables is that the adoption of these tools in the Saudi context depends mainly on the faculty’s confidence toward implementing this kind of tool in the teaching process, rather than on the beliefs of the administration as indicated by (Alshehri, 2012). Moreover, ten interviewees indicated that they have not received any influence by the leadership toward integrating technology
into their daily practices at this college. According to the results of Pearson coefficient, the relationship between independent variables and the dependent variables was positive but not strong which corresponds to some empirical studies indicating that the relationship between the UTAUT factors is not always met (Alkhasawneh & Alanazy, 2015; Taiwo & Downe, 2013). This finding is due to the lack of implementing this kind of teaching at Al-Qunfudah University College.

The effect of gender, age, and teaching experience of faculty on their behavioral intentions to adopt this kind of teaching approach was examined to highlight differences regarding these matters. Results indicated that there were no statistical differences between participants on their intention to use and accept technology based on their gender, age, and teaching experience. This is due to the idea that people in Saudi Arabia have become more familiar with technology and have more exposure to such tools because technology, such as smartphones and computers, has become a part of people’s daily life. Al-Shawi and Al-Wabil (2013) asserted that differences regarding age and gender do not play a critical role in the use of technology tools because people have equal chances to use them, especially in educational environments. Here, the second research hypothesis was not supported. This finding is comparable with other preceding studies (Alkhasawneh & Alanazy, 2015; Kay, 2006; Oye et al., 2011; Tan 2013).

For the third research question, faculty members at Al-Qunfudah University College were asked about their technology habits that they practice for their academic jobs at the current institution. The results revealed that the majority of faculty members use technology tools for presentations and grading sometimes but not frequently. Then,
some of them indicated that they never use these kinds of tools for their academic jobs. A few of the faculty indicated that they approach these tools to access the internet and their emails occasionally. This result supports the claim by Moukali (2012) that the majority of staff members in Saudi universities use technology tools for presentations to support the lectures.

Findings of open-ended questions regarding the barriers encounter the faculty at Al-Qunfudah University College and incentives they would receive revealed that the lack of technology infrastructure, the lack of computer competency, the absence of professional development, and the lack of social influence on the use of ICT were the most common barriers at this institution, corresponding to several studies conducted in Saudi higher institutions that found these barriers (Al-Mulhim, 2014; Almalki, 2011; Alturise & Alojaiman, 2013; Al-Zahrani, 2014; Bingimlas, 2009). Faculty members at Al-Qunfudah University College, indeed, need more incentives, such as financial rewards, acknowledgement certificates, access to computers and high scores in job evaluations regarding approaching technology tools for education. This result also supports the findings of Almalki (2011). Findings of open-ended questions supported the importance of the UTAUT variables to predict the desirable teaching approach because all responses were categorized under each one.

Interviews with the ten faculty revealed that they were willing to adopt technology integration as a new approach for teaching only if they would receive technology facilities, such as adequate computers, high-speed internet, annual training programs, and influence and support by the leadership. Interviewees emphasized that
faculty members at this institution need more social support by the leadership. Thus, the leadership decision regarding adopting ICT into Al-Qunfudah educational settings is critical. According to the above findings of the interview with faculty, the four UTAUT predictors were supported regarding the ICT adoption.

Implications

Since the UTAUT model has been widely used in different educational settings, the main established variables of this model were studied to investigate their influence on the behavioral intention of faculty in the current study context. Other variables such as age, gender, and experience were used to understand faculty’s differences regarding their intentions to adopt and accept technology tools for teaching at this college. This model, in fact, predicted the acceptance of using such tools at Al-Qunfudah University College; however, some variables such as social influence and performance expectancy did not show that they had significant results, which means the effect of these two factors in the Saudi context differ from the original findings by Venkatesh et al (2003) in the USA context.

In spite of the fact that differences in gender, age, and experience affect the ICT adoption, as indicated in some previous studies, participants, in this study, did not show differences in their intention to accept and utilize ICT for education regarding these three variables. The implication of these results is that technology has become a part of people’s daily routine, and the majority of Saudi people have equal chances to have and use these kinds of tools. Further research should be applied the entire UTAUT model in the Saudi context to revise this model and previous TAM models to highlight factors
behind the acceptance of computer apps as a tool for teaching and learning. Thus, findings of this study could help other Saudi higher education institutions regarding factors to adopt ICT.

Current findings revealed that there are several barriers that faculty members encounter regarding their use of ICT at Al-Qunfudah University College. Consequently, Saudi higher institutions in general and this college in particular should pay more attention to overcome these potential barriers. Newly hired staff members should take training programs on technology uses in addition to the rest of faculty members who are already teaching at this college. The college should also review conditions and standards for hiring new faculty and extending positions for them. Computer competency and having previous PD or training programs should be considered a condition for having new staff or extending the period of jobs, especially for those who came from neighboring countries to teach at this college. Another implication of current findings is that the leadership at this college should have a clear vision and better understanding of technology. Also, the leadership should encourage and positively influence staff members to frequently use technology tools and should provide various incentives for those who already use them properly.

**Recommendations**

According to what have been accomplished, the researcher recommends the following hierarchical points to be considered:

Recommendations related to ICT facilitating conditions:
1- Provide faculty members at Al-Qunfudah University College with all technology facilities, such as updated computers and high-speed internet, smartboards, data show projectors, and sufficient computer labs.

2- Establish a technical support unit for both campuses to assist faculty members on using technology tools.

3- Provide the college with a learning management system, such as Blackboard or Moodle, and encourage faculty to adopt and implement e-learning and blended learning in this college.

4- Provide the college library with sufficient multimedia and computer software for learning purposes.

Recommendations related to faculty professional development:

1- Provide faculty with professional development and training programs every year.

2- Provide the college with instructional designers, so that they can work with faculty members in order to successfully implement this teaching approach by faculty. Also, the instructional designer can write a plan for this university regarding ICT, starting with conducting the need assessment until the evaluation process.

Recommendations related to the social influence:

1- Encourage faculty members to integrate technology into the teaching process by the leadership.

2- In addition to faculty, students should be encouraged to use these tools for learning and for communicating with their instructors.
3- Provide potential incentives for those who already used them frequently.

Institutional recommendations:

1- Establish new well-equipped buildings for both college campuses.

2- Review standards and conditions for hiring staff members to include technology qualifications for teaching.

Recommendations related to the UTAUT model:

1- Replicate this study with other Saudi institutions in order to revise and validate the entire UTAUT model with approaching different data collection methods.

2- The UTAUT instrument, the original survey, should be improved for future implementation by adding more items that pertain to each factor.

3- Extend the UTAUT model to include more external factors they could predict the adoption of technology by individuals.

Conclusion

The current quantitative case study aimed to investigate factors that predict the behavioral intentions of the faculty at Al-Qunfudah University College to adopt integrating technology into their teaching methods. Additionally, barriers and incentives regarding the use of technology tools at this college were highlighted. Performance expectancy, effort expectancy, social influence, and perceived facilitating conditions were used as factors to predict the outcome variable, the behavioral intention to adopt integrating technology tools in teaching. A questionnaire was distributed among all faculty members at Al-Qunfudah University College; however, only 142 members participated. To support the data that collected from the questionnaire and highlighting
barriers and incentives in this regard, the researcher interviewed ten of the faculty.

Findings indicated that all four UTAUT constructs predicted the outcome; however, the findings of the regression analysis showed that two factors, performance expectancy and social influence, were insignificant predictors after controlling for other variables, but the triangulation technique that used in this study support these two variables as predictors.

Participants did not show differences in the outcome variable based on gender, age, and teaching experience, which means that due to technology advancement and revolution, the majority of people have equal chances to use these tools. This study should be replicated at other Saudi Universities to focus on these three variables as moderators similar to the original UTAUT model. Also, this model should be well revised and extended based on the Saudi context. Providing the college with technology infrastructure, training programs for the faculty on ICT uses, and appropriate incentives are primarily solutions to adopt this proposed approach. The researcher also recommends that the college leadership should support and encourage ICT practices at this college. Eventually, this topic should be further investigated by using different research approaches, such as qualitative and mixed method approaches, especially in the current context to validate this model.
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Appendix A: The Study Instrument (Survey)

Dear Faculty Member,

The researcher conducts a study to better understand future predictive factors to the adoption of integrating technology in the faculty’s teaching process at Al-Qunfudah University College. By participating in this study, the college will help you to find the best way to integrate technology applications in your academic job, and providing all possible facilities in this regard. In this study, the researcher means by technology integration as computer applications for presentations such as PowerPoint and Prezi, using email to communicate with faculty staff and students, uploading courses’ materials on Blackboard LMS, using College E-services, employing social media such as Facebook and Twitter as collaborative tools in the educational environment, and introducing some Google collaborative tools such as Google docs and slides. All responses to the current investigation will be confidential, and the researcher highly appreciates your cooperation in completing this survey. It will take between 15-20 minutes of your valuable effort and time.

Sincerely,

Ali Al Zebidi

PhD student at Ohio University
Section One: Demographic Information

Please choose the appropriate answer for the following questions:

1. What is your gender?
   o Male
   o Female

2. What is your age?
   o Less than 25 years old
   o 25-30
   o 31-35
   o 36-40
   o 41-45
   o 46-50
   o 51-55
   o 56 and above

3. Where are you from?
   o Saudi Arabia
   o Egypt
   o Jordan
   o Sudan
   o Syria
   o Other

4. What is your academic rank?
   o Professor
   o Associate Professor
   o Assistant Professor
   o Lecturer
   o Teaching Assistant

5. How many years of teaching experience do you have?
6. What is your academic department?
   - Islamic studies
   - Arabic language
   - Education
   - Mathematics
   - Chemistry
   - Physics
   - Computer Science
   - Artistic education
   - Physical education
   - English Language
   - Home economics
   - Other

7. Do you have a computer in your office?
   - Yes
   - No

8. Do you have access to the internet in your office?
   - Yes
   - No

9. Have you received professional development in integrating technology into education?
   - Yes
   - No

10. Describe your knowledge on how to integrate technology into your teaching methods?
    - Poor
    - Moderate
    - Good
    - Very Good
11. Describe your knowledge regarding how to integrate technology into your teaching methods at Al-Qunfudah University College?

12. How often do you use a computer, tablet or other digital devices in your academic job?
   - Every day
   - Most of a week
   - Once a week
   - Once a month
   - Once a semester
   - Never.

13. Describe how you use a computer, tablet or other digital devices in your academic job at Al-Qunfudah University College?
Section Two: Factors influencing faculty to integrate technology into their practices (UTAUT model)

For each item below, please indicate your agreement level by using the 5-point Likert scale:

<table>
<thead>
<tr>
<th>Items</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Undecided</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE1 I find that integrating technology in teaching is useful.</td>
<td></td>
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<tr>
<td>PE2 Using technology helps me to accomplish teaching tasks quickly.</td>
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<tr>
<td>PE3 Using technology increases my productivity.</td>
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<tr>
<td>PE4 If I continuously use technology in my job, my job evaluation score will be higher.</td>
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<tr>
<td>EE1 My interaction with instructional technology tools is clear and understandable.</td>
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<tr>
<td>EE2 It is easy for me to become skilled at integrating technology in my teaching job.</td>
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<tr>
<td>EE3 I find it is easy to use technology in education.</td>
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<tr>
<td>EE4 Learning to utilize and use technology tools in education is easy for me.</td>
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<tr>
<td>SI1 People who are important to me think that I should integrate technology in my teaching methods.</td>
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<tr>
<td>SI2 People who influence my behavior think that I should integrate technology in my teaching methods.</td>
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</tr>
</tbody>
</table>
Section three: Answer to the following open-ended questions:

- What are barriers that the faculty encounter at Al-Qunfudah University College related to integrating technology applications into the teaching process?
• What kind of incentives would you receive regarding integrating technology applications into the teaching process?

• Do you anticipate using technology tools in the future and how would you do that?

• Anything else would you like to share regarding technology integration in education at Al-Qunfudah University College?

Thanks for your participation!
Appendix B: The Study Instrument (Arabic Version)

عوامل تبني دمج تقنيات التعليم في العملية التدريسية لإعطاء هيئة التدريس بالكلية الجامعية بالقفزة

عضو/ عضوة هيئة التدريس بالكلية الجامعية بالقفزة

السلام عليكم ورحمة الله وبركاته وبعد

يقوم الباحث بإجراء هذه الدراسة للتوصيل إلى معرفة العوامل المستقبلية لتبني دمج التقنيات التعليمية في تدريس طلاب وطالبات الكلية الجامعية بالقفزة من قبل أعضاء وعضوات هيئة التدريس من أجل تعزيز وتطوير البيئة التعليمية داخل الكلية وتوفير وقت وجهد الأعضاء وذلك من خلال توظيف واستخدام تقنيات التعليم. تعد المشاركة في هذا الاستبيان مساهمة فاعلة في مساعدة المسؤلين عن القرار في معرفة العوامل والأسباب التي تعيق تبني هذا الأسلوب في تدريس الطلاب والطالبات بالإضافة إلى مساعدة الكلية على توفير ما يلزم لمساعدة هيئة التدريس بإيجاد الحلول في هذا المجال.

يود الباحث ان يشير إلى أن مفهوم دمج تقنيات التعليم في العملية التدريسية داخل الكلية هو استخدام تطبيقات الحاسب الآلي المختلفة كعرض للمحاضرات، التواصل مع أعضاء هيئة التدريس و الطلاب باستخدام الايميل الخاص بالجامعة، استخدام أنظمة التعلم الإلكترونية لإرسال المحتوى الدراسي للطلاب كبوابة تعلم، استبدال النسخ الورقية المطبوعة للواجبات بالمستندات الإلكترونية كملف الورد أو PDF وكذلك استخدام النسخ الإلكترونية في التواصل بين الأعضاء داخل الكلية، توظيف دور شبكات التواصل الاجتماعي في زيادة تفاعل الطلاب مع المحتوى التعليمي، استخدام أدوات قبو التفاعلية للعمل الجماعي في أداء الواجبات الدراسية من قبل الطلاب، وأخيراً تعزيز أساليب التواصل وطرق التدريس بين فرعين الكلية بالقفزة من خلال توظيف هذ التقنيات لمواجهة النقص في الكفاءات التدريسية المتخصصة في كلا الفرعين.

نأمل من الجميع المشاركة الفاعلة في إكمال هذه الاستبانة مع العلم أن الباحث يضمن السرية التامة لجميع الإجابات دون تحديد هوية أي شخص مشارك في هذا الاستبيان، شاكرا لكم حسن تفاعلكم والله يرعاهكم،

الباحث
علي الزبيدي
+966508796809
المحور الأول: المعلومات الشخصية:
يرجى اختيار الإجابة المناسبة:
1- الجنس:
○ ذكر
○ أنثى
2- العمر:
○ 24 فأقل
○ 25 – 30
○ 31 – 35
○ 36 – 40
○ 41 – 45
○ 46 – 50
○ 51 – 55
○ 56 فأكثر
3- بلد الجنسية:
○ السعودية
○ الأردن
○ السودان
○ سوريا
○ مصر
○ أخر
4- الدرجة العلمية:
○ أستاذ
○ أستاذ مشارك
○ أستاذ مساعد
○ محاضر
○ مساعد
5- عدد سنوات الخبرة التدريسية:
6- القسم الأكاديمي التابع له في الكلية الجامعية بالقنفذة:
○.drاسات الإسلامية
○ اللغة العربية
○ التربية
○ الرياضيات
○ الكيمياء
○ الفيزياء
○ الحاسب الألي
○ التربية الفنية
○ التربية الرياضية
○ اللغة الإنجليزية
○ الاقتصاد المنزلي
○ أخر
7- هل يوجد لديك حاسب إلكتروني خاص بك في الكلية؟
- نعم  
- لا

8- هل توفر لك الكلية خدمة الإنترنت في مكتبك؟
- نعم  
- لا

9- هل سبق لك الالتحاق بدورات تدريبية في مجال استخدام تقنيات التعليم في العمل الاكاديمي؟
- نعم  
- لا

10- كيف تقييم مستوى المعرفة بطريقة توظيف ودمج تقنيات التعليم في المجال الاكاديمي؟
- ضعيف  
- متوسط  
- جيد  
- جيدة جدا

11- صف لنا مستوى المعرفة بخصوص كيفية استخدام ودمج تقنيات التعليم في تدريس مقرراتك داخل الكلية؟

12- كم عدد مرات استخدامك للكمبيوتر أو التابلت أو الأجهزة الرقمية الأخرى في عملك الاكاديمي والتدريسي؟
- كل يوم  
- أغلب أيام الأسبوع  
- مرة واحدة في الأسبوع  
- مرة واحدة في الشهر  
- مرة واحدة في ال_TERM  
- لا استخدم ذلك على الإطلاق

13- صف لنا كيف تستخدم الحاسب أو التابلت أو الأجهزة الرقمية الأخرى في مجال تدريس المقررات داخل الكلية؟
المحور الثاني: عوامل تبني دمج تقنيات التعلم في العملية التدريسية لامعة هيئة التدريس بكلية الجامعية
بالغيشة
بجرى اختيار مستوى الرضا المقابل لكل فئة بناءاً على مقياس ليكرت وذلك بوسيع إشارة 7 في المربع المناسب:

<table>
<thead>
<tr>
<th>الفقرات</th>
<th>الرقم</th>
</tr>
</thead>
<tbody>
<tr>
<td>ارى أن دمج تقنيات التعليم في العملية التدريسية مفيد.</td>
<td>PE1</td>
</tr>
<tr>
<td>استخدام تقنيات التعليم يساعدني في انجاز المهام التدريسية بشكل أسرع.</td>
<td>PE2</td>
</tr>
<tr>
<td>استخدام تقنيات التعليم يساعد على زيادة انتاجي العلمي والتعليمي.</td>
<td>PE3</td>
</tr>
<tr>
<td>إذا تم استخدام تكنولوجيا بشكل مستمر في مهامي الوظيفية والتدريسية سوف يعكس ذلك على زيادة درجة تقييمي الوظيفي.</td>
<td>PE4</td>
</tr>
<tr>
<td>طريقة استخدام تكنولوجيا التعليم في العملية التدريسية واضحة ومفهومة.</td>
<td>EE1</td>
</tr>
<tr>
<td>من السهل على أن أكون متمسكاً بموهارة في دمج واستخدام تقنيات التعليم في عملي التدريسي.</td>
<td>EE2</td>
</tr>
<tr>
<td>طريقة استخدام دمج تقنيات التعليم في العملية التدريسية بشكل عام سهل وبسيط.</td>
<td>EE3</td>
</tr>
<tr>
<td>تعلم استخدام وتوزيع تقنيات التعليم سهل بالنسبة لي على وجه الخصوص.</td>
<td>EE4</td>
</tr>
<tr>
<td>الأشخاص المهمون بالنسبة لي في الكلية يعتقدون أنه من الواجب على استخدام تكنولوجيا التعليم أثناء التدريس.</td>
<td>SI1</td>
</tr>
<tr>
<td>الأشخاص ذو التأثير المباشر والقوي على قراراتي يعتقدون أنه يجب علي استخدام تقنيات التعليم في التدريس.</td>
<td>SI2</td>
</tr>
<tr>
<td>سوف أقوم بدمج تكنولوجيا التعليم في العملية التدريسية في حالة أن جميع زملائي أعضاء هيئة التدريس قاموا بذلك.</td>
<td>SI3</td>
</tr>
<tr>
<td>بشكل عام تقوم الكلية بتشجيع ودعم من يوظف تقنيات التعليم من أعضاء هيئة التدريس في التعليم والتعلم.</td>
<td>SI4</td>
</tr>
<tr>
<td>لدي المصادر الضرورية والكافية لاستخدام ودمج تقنيات التعليم في العمل التدريسي.</td>
<td>FC1</td>
</tr>
<tr>
<td>لدي المعرفة الكافية لدمج تكنولوجيا التعليم في التدريس.</td>
<td>FC2</td>
</tr>
<tr>
<td>يوجد هناك شخص أو مجموعه من الأشخاص في الكلية المساعدة في حل مشاكل تقنيات التعليم التي تواجهني.</td>
<td>FC3</td>
</tr>
<tr>
<td>لدي البنية في استخدام ودمج تقنيات التعليم في عملي التدريس خلال الأشهر القادمة.</td>
<td>BI1</td>
</tr>
<tr>
<td>اعتقد أنه سوف تكون لدي القدرة على استخدام وتوزيع تقنيات التعليم في التدريس خلال الأشهر القادمة.</td>
<td>BI2</td>
</tr>
<tr>
<td>توجد لدي خطة مستقبلية حالياً لدمج واستخدام تقنيات التعليم في التدريس خلال الأشهر القادمة.</td>
<td>BI3</td>
</tr>
</tbody>
</table>
1- ما هي مواقف استخدام تقنيات التعليم في العملية التدريسية التي تواجه أعضاء هيئة التدريس داخل الكلية من وجهة نظرك؟

2- ما هي الحوافز التي ترغب الحصول عليها من أجل توظيف واستخدام تقنيات التعليم في العمل التدريسي داخل الكلية؟

3- هل من المتوقع أن تقوم بإستخدام توظيف تقنيات التعليم في التدريس مستقبلاً وكيف سوف تقوم بذلك؟

4- مالذي تود أن تضيفه فيما يتعلق بدمج تقنيات التعليم في البيئة التعليمية داخل الكلية الجامعية بالتنفيذ؟
Appendix C: Ohio University Adult Consent Form with Signature

Title of Research: Predictive Factors to Adopt Integrating Technology into The Teaching Process by Faculty at Al-Qunfudah University College.

Researcher: Ali Al Zebidi

Dear Faculty member,

You are asked to participated in this quantitative case study. You should understand that participation in this study is voluntary, and all matters regarding this project, such as risks and benefits should be understandable for you to decide whether or not will complete the study instrument, a survey. In this form, the researcher describes the purpose, procedures, benefits, and risks regarding involving in this investigation. Further, personal information of participants is explained regarding the way that will be protected. Each participant from Al-Qunfudah University College should sign at the end of this form if he or she accepted the participation.

Explanation of Study

This study aims to examine predictive factors to the adoption of technology integration in faculty’s teaching approaches at Al-Qunfudah University College. All faculty members at this institution will be surveyed. If you agree to participate, you will be asked to sign this form. You should not participate in this study if you are no longer work in this college or not a faculty member.

Risks and Discomforts

No risks or discomforts are anticipated regarding participating in this quantitative case study.

Benefits

This study will examine and highlight factors that predict the adoption of integrating technology into the teaching process by faculty at Al-Qunfudah University College. By highlighting these factors, the researcher will offer some suggestions and recommendations to assist faculty members on how to effectively integrate technology into teaching practices and possible ways to depend on this approach in education. In addition, barriers and obstacles that encounter faculty members will be introduced when they utilize technology tools in teaching students in higher institutions of Saudi Arabia. Possible solutions to overcome the lack of using computers for academic purposes will be
illustrated. You may benefit from this study regarding the solutions that behind supporting using technology tools in educational environment.

Confidentiality and Records

Your study information will be kept confidential by the researcher, Ali Al Zebidi.

The results from this study may be written about for publication or presented at research or educational conferences.

Contact Information

If you have questions or concerns for this study, please contact Ali Al Zebidi, aa903513@ohio.edu, 571-494-7350 or the advisor Dr. Greg Kessler, kessler@ohio.edu, 740-593-2748.

If you have any questions regarding your rights as a research participant, please contact Dr. Chris Hayhow, Director of Research Compliance, Ohio University, (740)593-0664 or hayhow@ohio.edu.

By signing below, you are agreeing that:

- You accepted participation in this study.
- you understand benefits and risks of participating in the current study.
- you are 18 years of age or older.
- your participation in this research is completely voluntary.

Otherwise, if you are not interested in this study, you can stop completing the study instrument.

Signature ___________________________ Date __________
Printed Name ___________________________
1. What encourages you to integrate computer applications and technology tools in education at Al-Qunfudah University College?

2. Do you think that integrating technology into the teaching approaches at this institution will improve teaching and learning processes?

3. What are the challenges regarding integrating technology into the college environment?

4. How can this college help you to effectively integrate technology tools in your teaching approaches?

5. What expectations do you think regarding the adoption of technology in this college?

6. What is the first step that should be taken when this institution decides to adopt technology integration in faculty’s practices?

MAL-HAWAZH AL-TIHISFUK LOST TADKHIYATU TADHRISU WAT'TITAHIYATU A'SASSAMU AL-AHLY FI TADHRISU FI AL-MALIKA AL-JAMA'IA AL-AL-YEGGDAT?

1. HA'TIHA AL-MALIKA AL-JAMA'IA AL-AL-YEGGDAT WAT'TITAHIYATU TADHRISU WAT'TITAHIYATU A'SASSAMU AL-AHLY FI TADHRISU FI AL-MALIKA AL-JAMA'IA AL-AL-YEGGDAT?

2. HA'TIHA AL-MALIKA AL-JAMA'IA AL-AL-YEGGDAT WAT'TITAHIYATU TADHRISU WAT'TITAHIYATU A'SASSAMU AL-AHLY FI TADHRISU FI AL-MALIKA AL-JAMA'IA AL-AL-YEGGDAT?

3. MAL-HAWAZH AL-TIHISFUK LOST TADKHIYATU TADHRISU WAT'TITAHIYATU A'SASSAMU AL-AHLY FI TADHRISU FI AL-MALIKA AL-JAMA'IA AL-AL-YEGGDAT?

4. HA'TIHA AL-MALIKA AL-JAMA'IA AL-AL-YEGGDAT WAT'TITAHIYATU TADHRISU WAT'TITAHIYATU A'SASSAMU AL-AHLY FI TADHRISU FI AL-MALIKA AL-JAMA'IA AL-AL-YEGGDAT?

5. MAL-HAWAZH AL-TIHISFUK LOST TADKHIYATU TADHRISU WAT'TITAHIYATU A'SASSAMU AL-AHLY FI TADHRISU FI AL-MALIKA AL-JAMA'IA AL-AL-YEGGDAT?

6. HA'TIHA AL-MALIKA AL-JAMA'IA AL-AL-YEGGDAT WAT'TITAHIYATU TADHRISU WAT'TITAHIYATU A'SASSAMU AL-AHLY FI TADHRISU FI AL-MALIKA AL-JAMA'IA AL-AL-YEGGDAT?
Appendix E: Permission to Use the Study Instrument (Survey)

3/9/2016

RE: Asking for permission to use the UTAUT instrument.

Viswanath Venkatesh <venkatesh@venkatesh.us>

To: Al Zebidi, Ali

Sat 3/5/2016 08:29 PM

Inbox

Thanks for your interest. I am sorry for the delayed response which is due to a hectic travel schedule.

You have my permission.

You will find related papers at: http://venkatesh.com/Downloads/Papers/fulltext/downloadpapers.htm

You may also find my book (that can be purchased for a significant student discount and faculty member discount) to be of use: http://venkatesh.com/book

Hope this helps.

Sincerely,

Viswanath Venkatesh
Distinguished Professor and George and Boyce Billingsley Chair in Information Systems
Walton College of Business
University of Arkansas
Fayetteville, AR 72701
Phone: 479-575-3869; Fax: 479-575-3689
Email: venkatesh@venkatesh.us
Website: http://venkatesh.com

From: Al Zebidi, Ali [mailto:aa903513@ohio.edu]
Sent: Monday, February 15, 2016 8:25 PM
To: vvenkatesh@walton.uark.edu; vvenkatesh@vvenkatesh.us
Subject: Asking for permission to use the UTAUT Instrument.

Dear Professor Venkatesh,

I hope you are doing well. I am Ali Alzebidi, a PhD student in Instructional Technology program at Ohio University. Currently, I am working on my dissertation titled “Investigating Factors that Influence Faculty to Integrate Technology into Teaching Approaches at Al-Qmufudah University College, Saudi Arabia.” I would like to take your permission to use your survey of the UTAUT model in your previous research titled “User Acceptance of Information Technology: Toward a Unified View.” I will use the entire survey with minor modifications to fit with my study context. I really appreciate your valuable time and efforts that you spent for the proposed model that is
RE: Asking for permission to use the UTAUT Instrument.

considered a comprehensive theory to predict factors that influence the use of technology in different workplaces.

Thanks in Advance,

Sincerely,

Ali Alzebidi
The Gladys W. and David H. Patton College of Education
Ohio University
aa903513@ohio.edu
Appendix F: Approval Letter from MIS Quarterly to Use the UTAUT Tool.

MIS Quarterly
Carlson School of Management
University of Minnesota
Suite 4-339 CSOM
321 19th Avenue South
Minneapolis, MN 55455

May 24, 2016

Ali Alzehidi
The Gladys W. and David H. Patton
College of Education
Ohio University

Permission to use material from
MIS Quarterly in Dissertation Research

Permission is hereby granted for Ali Alzehidi to use material from “User Acceptance of Information Technology: Toward a Unified View,” V. Venkatesh, M. G. Morris, G. B. Davis, and F. D. Davis, MIS Quarterly (27:3), September 2003, pp. 424-478, specifically a adaptation of the survey items in the appendix, and additional reference material as needed, in his doctoral dissertation titled “Investigating Factors that Influence Faculty to Integrate Technology into Teaching Approaches at Al-Qunfudah University College, Saudi Arabia,” being completed at Ohio University.

In addition to the citation information for the work, the legend for the material should include

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Janice DeGross
Manager
Appendix G: Approval Letter from the Advisor at Ohio University

To Whom It May Concern:

Ali Alzebidi has completed his dissertation proposal, titled Predictive factors to the adoption of integrating technology in the faculty’s teaching process, and he is prepared to collect data this Summer at Al-Qunfuhdah College. Please allow him to survey and interview the faculty in order to gather data for his dissertation. He also intends to have his wife conduct surveys and interviews on the female campus on his behalf. He will be trying to identify ways that he can promote technology integration for instruction at Al-Qunfuhdah in the future.

Sincerely,

Greg Kessler
Associate Professor of Instructional Technology
Educational Studies
Patton College of Education
Ohio University
Appendix H: A Permission from Al-Qunfudah UC to Distribute Study Tools