Factors influencing Faculty Members’ Behavioral intentions to Use Flipped Classrooms in Saudi Arabia at Taif University

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ABSTRACT

FACTORS INFLUENCING FACULTY MEMBERS’ BEHAVIORAL INTENTIONS TO USE FLIPPED CLASSROOMS IN SAUDI ARABIA AT TAIF UNIVERSITY

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Northern Illinois University, 2021
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This study explores the differences among faculty members at Taif University in Saudi Arabia regarding their behavioral intentions toward the use of flipped classrooms. This study investigated the relationship between the Unified Theory of Acceptance and Use of Technology (UTAUT) constructs and the behavioral intention of faculty members. Gender was studied as a potential moderator of the relationship between each of the three predictors (performance expectancy, effort expectancy, and social influence) and the outcome (behavioral intention). Quantitative methods were used to collect data from 197 survey respondents. Findings showed that performance expectancy and effort expectancy were the only statistically significant predictors of faculty members’ behavioral intentions to use flipped classrooms. Gender did not have any moderating effect on the relationship between the UTAUT constructs and faculty members’ behavioral intention to use flipped classrooms. Finally, the results showed no statistical differences between male and female faculty members in behavioral intention. Based on the study’s findings, practical implications are provided, and future research directions are also suggested. The experiences from this study are valuable additions to the growing body of research for faculty implementing flipped instruction.
FACTORS INFLUENCING FACULTY MEMBERS’ BEHAVIORAL INTENTIONS TO USE FLIPPED CLASSROOMS IN SAUDI ARABIA AT TAIF UNIVERSITY

BY

ABIER JABER AKIRY
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A DISSERTATION SUBMITTED TO THE GRADUATE SCHOOL IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE DOCTOR OF PHILOSOPHY

DEPARTMENT OF EDUCATIONAL TECHNOLOGY, RESEARCH AND ASSESSMENT

Doctoral Director:
Ying Xie
ACKNOWLEDGEMENTS

In the Name of Allah, the Entirely Beneficent, the Especially Merciful.

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DEDICATION

I would like to dedicate this dissertation to my loving husband and my family for the prayers and support they provided to complete this dissertation. Their motivation, love, care, support, encouragement, and enthusiasm inspired me to achieve this intended purpose.
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CHAPTER 1

INTRODUCTION TO THE STUDY

Technology has increasingly become a part of the educational process through the internet, online classes, discussion forums and video links (Rooney, 2003). According to Wells, De Lange, and Fieger (2008), adoption of technology in educational systems has created great changes as far as teaching and learning are concerned, but there is a need for instructors to adopt technology in their classes to ensure they are achieving their teaching objectives (Flumerfelt & Green, 2013). Technology presents limitless opportunities for educational systems (Basal, 2015); however, teachers tend to primarily use a traditional style that includes lectures and rote memorization (Alowat, 2016; LoPresto & Slater, 2016; Ritchhart, Church & Morrison, 2011; Song, Jong, Chang, & Chen, 2017). For this reason, research on learning styles to use technology to create better learning environments and facilitate learning process for every learner is necessary.

The traditional, instructor-centered, lecture-based instructional model occurs when the students listen to the instructor’s lectures in class and apply the knowledge by doing homework alone at home (Allen, & Sloan Consortium, 2010). In a traditional class, none of the content is delivered online and learning takes place mainly in the classroom. On the other side, blended learning (a hybrid method) occurs when a course is structured to integrate traditional and online learning delivery to get the benefits of both instructional strategies (Foldnes, 2016; Garrison & Kanuka, 2004; Graham, Woodfield, & Harrison, 2013; Halverson, Graham, Spring, & Drysdale,
In other words, blended learning refers to a teaching process that is delivered using web-based tools or downloadable software, which draws on the interactive features of synchronous and asynchronous learning (Graham et al., 2013). Blended learning courses are offered to produce an entirely new form of instruction that is much more conducive to learning. In blended learning, 70-80% of the content is delivered online and the remaining part is offered through face-to-face classes, which is different from online learning that is completely taught online (Allen & Seaman, 2016; Archambault & Crippen, 2009; Ernst, 2008; Israel, 2015).

A flipped classroom is a specific type of blended learning that integrates traditional and online learning (Baker & Hill, 2017). In flipped classrooms, the technology plays a vital role in the learning process because it requires students to read online assignments and participate in online group discussions, watch multimedia lectures, or listen to podcasts before class (Berrett, 2012; Chen, Chen, & Chen, 2015). This process leaves the class time for activities applying and discussing the content with the instructor and peers. The face-to-face class time activities usually include group projects and resolving problem-based learning activities, experiments, and class presentations (ALRowais, 2014; Chen et al., 2015; Davies, Dean, & Ball, 2013; McLaughlin et al., 2013; Strayer, 2012). Therefore, the flipped classroom model is a blended learning model that aims to facilitate teachers making better use of the face-to-face sessions through minimizing lectures and increasing students’ active learning, collaboration and scaffolding (Bergmann & Sams, 2012). Flipped classrooms are changing the field of education by moving away from the traditional teacher-centered paradigm to become learner-centered (Kim, Jung, Siqueira & Huber, 2016) by supporting both traditional and online delivery modes of learning at anytime and anyplace (Johnson, 2013). Flipped classrooms are a relatively new pedagogical model that
emphasizes the need for active discussion and practice in the classroom, which are often neglected in traditional classroom settings due to the limited amount of time (Kim, Jung, Siqueira & Huber, 2016). In a flipped classroom, the teacher utilizes the features of online tutoring by recording lectures that can be accessed by students at home and develops knowledge and information with the help of discussion sessions and practical activities about the topic in the classroom.

The concept of a flipped classroom was created in the early 1990s through an effort led by Harvard University professor Erik Mazur, who established the peer instruction approach that not only made the substance of a course easier for learners but additionally made educating less strenuous for the educator (Kurt, 2017). Bergmann and Sams (2012) have developed flipped high school chemistry classes since 2009 and are pioneers of the flipped class model. They found that a flexible flipped class model enables instructors to tailor their courses to allow more time for discussion. A number of researchers (Basal, 2015; Foldnes, 2016; Mason et al., 2013; Phillips & Trainor, 2014; Strayer, 2012) have investigated flipped classrooms and how they work in different majors in higher education: mathematics, chemistry, and physics. Rotellar and Cain (2016) pointed out that “the rationale behind the flipped classroom methodology is to increase student engagement with content, increase and improve faculty contact time with students, and enhance learning” (p.1).

Flipped classrooms have gained special attention in recent years because of the success demonstrated through various research studies (Hung, 2015). The flipped classroom is a pedagogical model that emphasizes the need for being active in both the learning and teaching processes. Active learning focuses on student-centered activities that promote a positive impact during the face-to-face class time (Tune et al., 2013) and support active engagement in the
classroom. Many researchers contend that during active learning situations students retain more information as they connect the material to tangible experiences (Alsowat, 2016; Elmaadaway, 2018). Studying alone via multimedia, web-based, and mobile technologies enhance students’ pre-class self-directed and flexible learning (Bergmann & Sams, 2012; Chen, Yang, & Hsiao, 2016; Elrayies, 2017; Mason, Shuman, & Cook, 2013; Strayer, 2012; Wanner & Palmer, 2015; Webb & Doman, 2016), thus freeing class time for student-centered participation in hands-on learning, group collaboration, and creative projects to master learning objectives (Webb & Doman, 2016).

Several studies have shown that students hold positive attitudes toward their learning experiences regarding the flipped classroom (Alsowat, 2016; Baker & Hill, 2017; Ekmekci, 2017; Stratton, Chitiyo, Mathende, & Davis, 2020; Yang, Feng, & MacLeod, 2018) and positive faculty perceptions (Afrilyasanti, Cahyono, & Astuti, 2017; Basal, 2015; Bergmann & Sams, 2012; Hardin & Koppenhaver, 2016; Kurt, 2017; Long et al., 2017; Touchton, 2015; Zhai et al., 2017). This research has shown the flipped learning strategy can positively impact students’ learning experiences as well as the classroom quality and instructor effectiveness (Al-Harbi & Alshumaimeri, 2016; Baker & Hill, 2017; Elmaadaway, 2018; Foldnes, 2016; Hung, 2015).

However, whether a new technology can be successfully introduced in classrooms also depends on instructors’ attitudes toward technology, as instructors usually have the freedom to select the technology that fits their educational needs (Hsieh, Huang, & Wu, 2017; Mtebe & Raisamo, 2014; Radovan & Kristl, 2017). Regardless of how effective technology is, its use in the classroom depends on the users’ acceptance or rejection to use technology (Hsieh, Huang, & Wu, 2017). Therefore, in the context of the current study, faculty’s willingness to use any technological innovation may be an important factor for analyzing the adoption of new teaching
technology in general and particularly in a flipped classroom. While these and other studies have focused on student benefits associated with their experiences using flipped classrooms, little research has individually examined factors that might interfere with the adoption or acceptance of faculty members’ use of flipped classrooms. Therefore, there is a need for additional empirical research on the factors that influence instructors’ behavioral intentions to use technology in the higher education environment.

The influence of gender on adopting flipped classrooms has also received considerable attention in the literature (Chen et al., 2015; Scott, 2013). Rosseau and Rogers (1998) and Cooper (2006) found that gender may be an influencing factor for instructional technology usage. Spotts, Bowman, and Mertz (1997) suggested gender issues should be examined as a factor affecting behavioral intentions to use the latest technologies in innovative instruction to promote better understanding. A number of researchers looking at technology acceptance highlighted gender differences and new technologies in education as important research (Al-Hunaiyyan, Alhajri, & Al-Sharhan 2017; Alkhasawneh & Alanazy, 2015; Chen et al., 2015; Manca & Raineri, 2017; Minaz, Tabassum, & Ahmad, 2018; Teo, Fan, & Du, 2015). As Saudi Arabia has begun the process of integrating technology into higher education institutions, it is now necessary to address the issues related to that process. The current study seeks to explore several areas related to that process. First, flipped classrooms have been just introduced in higher education in Saudi Arabia (Elmaadaway, 2018). It is essential to provide university policy and decision makers with scientific findings that help with decisions regarding flipped classrooms. Furthermore, faculty gender is highly significant in Saudi Arabia because Saudi educational
institutions are separated by gender; it is imperative that the perspectives of both genders are understood because they influence users’ behavioral intention to use technology.

Problem Statement

Learning in higher education requires the participation of both learners and instructors in an interactive setting (Alsowat, 2016; Webb & Doman, 2016); however, in conventional class students often experience a lack of opportunities to practically engage with abstract knowledge (Bergmann & Sams, 2012; Engin, 2014). For this reason, there is a need for an environment that enhances effective collaboration of students and their instructors and the material. Scholars alike have raised concerns over conventional learning models practiced in some higher learning institutions. Flumerfelt and Green (2013) noted that such concerns result from the fact that traditional learning is no longer effective, especially considering the changing technology. Lyddon (2015) asserts that students are likely to get better learning opportunities through enrichment of the learning environment via technology. Unique teaching opportunities offered by technology have contributed to its effective integration into the classroom (Long, Cummins, & Waugh, 2017). According to Alsowat (2016), the flipped learning method is better than the traditional approach used to teach subject matter. Learners benefit from materials such as videos they can access anytime whenever the need arises. Such an approach also helps students gain knowledge and higher-order thinking skills. For this reason, the use of a flipped learning model can be instrumental in meeting the present needs and demands of Saudi learners.

The fact that the flipped classroom model of teaching is not common presents some significant challenges to learners and teachers, but studies examining the efficiency of flipped classes indicate it takes little time for learners and teachers to adjust to this approach (Flumerfelt
& Green, 2013). As such, the efficiency of this model as a better learning approach is concerned with what can be assessed from the level of satisfaction among learners, the extent of challenges learners and teachers face, and the general academic outcomes of learners. Flumerfelt and Green (2013) found that the flipped classroom helps teachers facilitate more learning during class time when teachers and learners are involved in a higher level of engagement. Therefore, the flipped classroom approach is considered an appropriate learning approach that has the capacity for improving the learning experience of learners (Gilboy, Heinerichs, & Pazzaglia, 2015; Hanson, 2016; Yang, Feng, & MacLeod, 2018).

 Many studies have emphasized the importance of studying behavioral intentions because it provides a foundation for evaluating the impact of adopting new technology in educational environments (Cheung, Chan, Brown, & Wan, 2016; Gruzd, Staves & Wilk, 2012; Lewis, Fretwell, Ryan, & Parham, 2013; Mtebe & Raisamo, 2014; Radovan & Kristl, 2017; Surendran, 2012). However, there is a lack of empirical studies focused on faculty’s use of flipped classrooms in Saudi Arabia. The higher education system in Saudi Arabia has just begun using flipped classrooms (Elmaadaway, 2018), and finding the factors that influence faculty members’ behavioral intentions may provide support for both faculty and administrators. Therefore, this study investigates flipped classrooms acceptance among faculty members at Taif University through using a proposed extension of Unified Theory of Acceptance and Use of Technology model (UTAUT) to provide university policy and decision makers with scientific findings that help with making decisions regarding flipped classrooms among faculty members. Considering the formal educational structure in Saudi Arabia, gender is one of the factors that might affect this adoption. Universities in Saudi Arabia are gender-segregated systems with two separate campuses, one for male and one for female students (Ahadiat, 2008; Alazani, 2015;
Alkhasawneh & Alanazy, 2015; Al-Alawneh, 2014), so this factor should be considered as important in examining the differences between the gender groups regarding adoption of flipped learning. According to Al-Hunaiyyan, Alhajri, and Al-Sharhan (2017), understanding gender differences allows us to develop better strategies and systems to help individual faculty better participate in the teaching-learning experience. There is also a lack of information regarding gender differences among faculty’s behavioral intentions to use flipped classrooms. The results from this study provided more information about the potential differences between males and females that might impact their decisions regarding the use of flipped classrooms and help to bridge the potential gap between male and female faculty at Taif University.

Purpose of the Study

Despite the Saudi Ministry of Higher Education encouraging the use of educational technology for teaching among faculty members, flipped classrooms in higher education are still rare in Saudi Arabia (Elmaadaway, 2018), and few studies to date have focused on the behavioral intention of Saudi faculty members using a flipped classroom. The purpose of this study was to investigate factors influencing faculty members’ behavioral intention toward the use of the flipped classroom. The study focused on faculty members at Taif University in Saudi Arabia and used the Unified Theory of Acceptance and Use of Technology (UTAUT). Using UTAUT’s survey questionnaire, this correlational study examined whether the independent variables (performance expectancy, effort expectancy, and social influence) are predictors of the dependent variable: behavioral intent to use flipped classrooms. This might contribute to understanding faculty’s attitude toward flipped classrooms in higher education in general and their intention, in particular, to actually use flipped classrooms at Taif University. Second, this
study investigated the differences between male and female instructors in terms of their behavioral intention to use flipped classrooms by using the UTAUT framework.

Research Questions

As stated in the statement of the problem, there is a need to examine faculty members’ behavioral intention to use flipped classrooms at Taif University in Saudi Arabia. Thus, the following research questions were investigated:

RQ1. Do performance expectancy, effort expectancy, and social influence predict faculty members’ behavioral intention to use flipped classrooms?

H1: Performance expectancy positively predicts faculty members’ behavioral intention toward using flipped classrooms.

H2: Effort expectancy positively predicts faculty members’ behavioral intention toward using flipped classrooms.

H3: Social influence positively predicts faculty members’ behavioral intention toward using flipped classrooms.

RQ2. Does gender moderate the relationships between performance expectancy, effort expectancy, social influence, and faculty members’ behavioral intention to use flipped classrooms?

RQ3. Do male and female faculty members differ in their behavioral intention to use flipped classrooms?

Definition of Terms

The following terms are used in this research:
**Active learning:** A strategy of learning involving students’ active engagement in the learning process. Students are typically required to take more responsibility for their own learning by identifying and analyzing the lesson to encourage students to search and learn (Felder, 2012; Prince, 2004).

**Behavioral intention:** Behavioral intention is defined as “the degree to which a person has formulated conscious plans to perform or not perform some specified future behavior” (Warshaw & Davis, 1985, p. 214).

**Blended learning:** Learning that is a combination of face-to-face with online delivery sessions. It typically has a reduced number of face-to-face meetings by delivering the content online and using online discussions (Allen et al., 2010).

**Effort expectancy:** “The degree of ease associated with the use of the system” (Venkatesh et al., 2003, p. 450).

**Facilitating conditions:** The basis on which individuals decide to use technology if they believe “technical and organizational infrastructures are available for them” (Venkatesh et al., 2003, p. 453).

**Flipped classroom:** Employs readily accessible technology to free class time from lectures; instruction that usually occurs in the classroom is instead accessed at home prior to the scheduled class time and transforms the class time to provide students with projects and problem-solving and collaborative activities (Johnson, 2013).

**Performance expectancy:** Performance expectancy is defined as “the degree to which an individual believes that using the system will help him or her to attain gains in job performance” (Venkatesh et al., 2003, p. 450).
Social influence: “The degree to which an individual perceives it is important others believe he or she should use the new system” (Venkatesh et al., 2003, p. 451).

Student-centered learning: A learning environment with active engagement in the classroom focusing on students rather than the teacher (Peyton, Moore, & Young, 2010).

Traditional education: An instructional method of teaching lesson content delivered through face-to-face methods and no online technology is used (Allen et al., 2010).

Unified Theory of Acceptance and Use of Technology (UTAUT): A theorized framework with four constructs of direct determinants of user acceptance and usage behavior: performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh et al., 2003).

Chapter Summary

This chapter presented the introduction of this study, theoretical framework, statement of the research problem, purpose and significance of the study, research questions, the assumptions and the definition of terms. This quantitative study is guided by Venkatesh et al.’s (2003) UTAUT model as a theoretical framework to examine factors that influence the behavioral intention to use flipped classrooms at Taif University in Saudi Arabia.
CHAPTER 2

LITERATURE REVIEW
This chapter presents a summary of findings from a review of literature related to the current study as follows: 1) research on flipped classrooms, 2) the theoretical framework: (the Unified Theory of Acceptance and Use of Technology and the constructs that support the topic), and 3) gender differences and faculty acceptance of technology.

Flipped Classrooms

Effectiveness of Flipped Classrooms on Learning Outcome

The topic of flipped classrooms has gained attention since 2007 due to the success of this strategy in various disciplines (Strayer, 2012). Prior studies from fields such as pharmacology, physiology, nursing, physics, mathematics, and business (Butt, 2014; Critz & Knight, 2013; Fulton, 2012; Herreid & Schiller, 2013; McLaughlin et al., 2013; McLaughlin, 2014; Missildine, Fountain, Summers, & Gosselin, 2013; Strayer, 2012; Tune et al., 2013) have found that flipped-classroom teaching positively impacts student outcomes. It also promotes effective engagement and motivation during teaching and learning (Beapler et al., 2014; Berrett, 2012). Mason, Shuman, and Cook (2013) assessed the effectiveness and performance of a flipped classroom in comparison to a traditional classroom for students taking an engineering course. To adopt flipped classrooms, researchers produced 45 videos, 5 to 15 minutes long, and posted them on YouTube for students to access as needed. The findings showed students performed better in the flipped
classroom compared to students in the traditional classroom and those in the flipped classroom showed greater satisfaction. Mason et al. also reported that students in the flipped classroom engaged in the learning environment and learning process more.

Similarly, Foldnes (2016) investigated the effectiveness of the flipped classroom compared to the traditional lecture classroom using two case studies to collect the data. In the first case study, 1,569 students participated in 10 classes, all of which used either a flipped classroom or traditional lecture. In the flipped classroom, students were provided with the materials online during out-of-class activities and worked collaboratively in the classroom. The results revealed no difference between the final exam scores of the two different classes. In the second case study, the participants were 235 students, of which 142 students attended traditional lecture classes. The other 93 students participated in the flipped classroom in which in-class time was structured to encourage cooperative teamwork. The study utilized a pre-test/post-test design to observe the differences between the two groups. The results of the second study showed the post-test data highlighted the statistically significant difference, with mean scores of 63.2% for the flipped group and 50.1% for the traditional group. The examination itself resulted in scores of 64.8% and 54.0% for the flipped and traditional groups, respectively. Foldnes (2016) reported increased student performance in the flipped classroom compared to the lecture-based classroom. The results of Foldnes’s (2016) studies showed the benefits of working cooperatively in a flipped classroom.

Al-Harbi and Alshumaimeri (2016) examined flipped classroom success in a second language course. They used a quasi-experimental technique to check the efficacy of this instructional strategy with the help of a post-test. The results showed that the flipped classroom improved students’ grammar performance by allowing them to take responsibility for their
learning and become active learners. Learners were able to apply the grammar lessons in the flipped classroom through their speaking and writing.

AlJaser (2017) measured the effectiveness of using flipped classroom strategies on the academic achievement and performance of undergraduate female students in the College of Education, Princess Nourah Bint Abdulrahman University (PNU), Saudi Arabia. The study addressed this question through achievement tests and self-efficacy scale research consisting of a control group and an experimental group. The results showed that the experimental group taught using a flipped classroom strategy outperformed the control group in post-achievement testing. AlJaser found that flipped classrooms made teaching, learning, and lecturing more exciting and interesting. It also provided more chances for learners to be positive and take responsibility for their learning process.

These studies show that the use of flipped classrooms for higher education is more effective in terms of learning outcomes compared to traditional classrooms (Al-Harbi & Alshumaimeri, 2016; AlJaser, 2017; Foldnes, 2016). In addition, the previous empirical studies highlighted the effectiveness of the implementation of flipped classrooms in educational institutions, which may point toward the significance of applying flipped classrooms in Taif University in the future. Long et al. (2017) asserted the importance of the effectiveness of the flipped classroom for higher education is deserving of more attention because of its the effectiveness in creating a student-centered environment that improves student outcomes.

**Students’ Perceptions About Flipped Classrooms**

Existing literature shows positive student perceptions of a flipped environment (Afrilyasanti, Cahyono, & Astuti, 2017; Hanson, 2016; Zhai, Gu, Liu, Liang & Tsai, 2017). Students’ perceptions of flipped classrooms received the greatest attention of researchers. For
example, Zhai et al. (2017) used mixed methods to investigate the contributing factors and driving mechanisms accounting for 178 undergraduate students’ perceptions of flipped settings. In their study, Zhai et al. (2017) found that the environment of the flipped classroom allowed learners to work at their own pace and was helpful for increasing student satisfaction. Similarly, Afrilyasanti et al. (2017) conducted a mixed-methods study to investigate the perceptions of students who joined an EFL writing class using the flipped classroom model. Data were collected from 62 students through observations, interviews, and questionnaires. The results of the research showed the students detected that the activities applied in the flipped classroom model helped them write better. They also acknowledged the teacher and peer feedback as well as watching the videos improved their writing ability.

In addition, determining whether students are learning what was intended can be used as evidence of the impact of new teaching methods (Kuhn & Rundle-Thiele, 2009) since students are interpreters of their learning needs. Hanson (2016) used mixed methods to examine students’ perceptions regarding the flipped classroom in nursing courses. To define students’ perceptions, the researcher had used tests before and after exposure to the flipped classroom and open-ended questions for all students enrolled in the course for 2013-2014. The components of flipped classroom teaching used in this course included voiceover lectures (eLectures), quizzes, peer discussion, teacher discussion, and case studies. Students reported increased understanding and wider and deeper thinking. The students observed that the flipped classroom met their needs through the flexibility of accessing the resources whenever and wherever they want. Flexibility was the main reason for students’ (Nguyen, Yu, Japutra, & Chen, 2016; Wanner & Palmer, 2015) and instructors’ (Hardin & Koppenhaver, 2016) expressed satisfaction with the flipped classroom.
Although many studies are positive, some studies revealed negative perceptions of flipped classrooms. In Mason et al.’s (2013) study, students felt they could get immediate feedback that enhanced their learning process and decreased their anxiety about the course. In contrast, Strayer (2012) compared the traditional introductory statistics class to a flipped statistics course using field notes, interview focus groups, and the University Classroom Environment Inventory measure’s seven scales (innovation, personalization, equity, task orientation, student cohesion, cooperation, and individualization). The results showed that five constructs favored flipped instruction (innovation, personalization student cohesion, cooperation, and individualization) and two favored traditional formats (task orientation and equity). Strayer (2012) found that flipped students felt unsatisfied with the in-class activities. In other words, he found that students were less happy with the structure of the flipped classroom but became more open to cooperation compared to the traditional approaches.

Concerning communication and affective aspects, Phillips and Trainor’s (2014) study promotes the constructivist idea that flipped classrooms are designed to address the psycho-cognitive needs of millennial students (born between 1982 and 2005), known for their heightened dependency on technology and their aversion to educational didacticism. Phillips and Trainor (2014) conducted a survey for 125 junior, senior, and graduate accounting majors to gather student perceptions of instruction in their accounting courses. Although most participants (71%) did exhibit an overall friendly attitude toward the flipped classroom, they also proved themselves thoroughly aware of the flipped classroom method’s pitfalls. These include the fact that it relies on a student’s ability to exercise academic self-discipline and the fact that flipped classrooms downplay the importance of teacher-student interaction through the input phase of the learning process. According to Smith (2015), students in the flipped classroom who do not
seem to be self-motivated and in charge of their own learning experience negative effects on
their learning in the flipped classroom.

Furthermore, some researchers conducted studies using demographic factors such as
gender differences that might show a significant influence on the teaching effect of flipped
classrooms (Minaz et al. (2018). A few researchers evaluated the impact of gender on flipped
learning and showed that gender plays a vital role in affecting the perception of students in
different learning environments (Huang, Hood & Yoo, 2013; Yau & Cheng, 2012). Chen, Yang,
and Hsiao (2016) investigated the relationship among gender difference, student perceptions, and
learning outcomes. The primary data were collected from 151 females and 122 males. They used
gender as a factor for predicting student perceptions in a high school mathematics course and
found that women enroll in online courses at a higher rate than men. Chen et al. (2016) found
young women were significantly less interested in the mathematics course than their male
counterparts. Moreover, feelings turned out to be a predictor of final grades in males, whereas
the course design predicted the final grades in females (Chen et al., 2016). Similarly, Touchton
(2015) and Durak (2018) found that gender has no effect on the attitude toward flipped
classrooms. The studies sought to describe the experiences and value of the flipped learning
environment through the perceptions of the learner. Understanding students’ perceptions allowed
the instructors to make decisions in how to modify instruction to the individual and group needs
of learners (Chen & Hoshower, 2003).

Instructors’ Perceptions About Flipped Classroom

The perception of instructors toward the flipped classroom model is one of the areas few
studies have addressed (Long et al., 2017). While all the previously discussed studies focus on
the perceptions and performances of students, a special study was conducted to assess the validity of the traditional method most foreign language instructors use. The research found that the flipped classroom is a valuable educational asset (Basal, 2015). Basal (2015) studied the perceptions of 47 educators through a direct question session. The majority of instructors felt positive about this new teaching strategy (Basal, 2015). Basal identified that flipped teaching is especially beneficial for educators because they can actively assess the students’ level of learning throughout the course of study.

Kurt (2017) and Long et al. (2017) found that instructors’ perceptions of the flipped classroom approach are that it is the helpful for teaching and one of the preferred models of delivery in higher education. Kurt (2017) conducted a quantitative quasi-experimental study with a pre-test/post-test on the implementation of the flipped approach in a higher education institution in Turkey. The participants were 62 instructors in two intact classes: the control and the experimental groups. Kurt (2017) declared that the perceptions of faculty toward the flipped classroom were positive. Faculty found more in-class time that allowed them to conduct engaging activities for students. Similarly, the study by Long et al. (2017) conducted a qualitative study to examine instructors’ perceptions of the benefits and challenges of flipped classrooms by interviewing eight instructors who had used a flipped classroom. Long et al. found that instructors perceived their students enjoyed the independence and freedom and were motivated to learn with the model. Furthermore, the instructors felt the flipped classroom method provided more active learning and better student support. However, there were some challenges; students needed more support to self-assess because they could not learn the content on their own to a sufficient degree before class time to make the in-class activity effective. Long et al. (2017) contended the flipped classroom positively improved the faculty’s ability to make the
right decisions in teaching and learning. The findings of Wanner and Palmer's (2015) study contradict Long et al.’s research. They investigated faculty perceptions about flipped classrooms in higher education and found faculty members shared concerns about issues with respect to time and the amount of work required to implement the flipped classroom. Moreover, they found that some students were unable to be self-learners.

Unified Theory of Acceptance and Use of Technology

To examine the factors affecting the faculty’s intention to adopt flipped classrooms, the Unified Theory of Acceptance and Use of Technology (UTAUT) was utilized in this study. The UTAUT is a model of individual acceptance and adoption of technology developed by Venkatesh, Morris, Davis, and Davis (2003). Venkatesh et al.’s (2003) UTAUT model aims to explain users’ acceptance and usage of technology in organizational settings. The UTAUT model combines eight similar models of technology acceptance: innovation diffusion (IDT), technology acceptance model (TAM), motivation model (MM), theory of reasoned action (TRA), theory of planned behavior (TPB), a model combining TAM and TPB, a model of PC utilization (MPCU), and social cognitive theory (SCT). However, the UTAUT model is more comprehensive than the other eight models because it can explain technology acceptance behavior with 70% accuracy.

The UTAUT model consists of four key constructs: performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh et al., 2003). The constructs of the UTAUT are moderated by gender, age, experience, and voluntariness of use. Furthermore, the UTAUT model takes into consideration the moderating effects of gender, age, experience, and voluntariness of use in relation to the four main determinants. Venkatesh et al. (2003) noted that the performance expectancy, effort expectancy, and social influence predictors contributed
directly to behavioral intention while facilitating conditions contributed directly to actual use (see Figure 1).

Figure 1: The UTAUT model (Venkatesh et al., 2003, p. 447). Used with permission.

The UTAUT supports the basic concept that an individual’s attitudes and reactions influence their intention to use a technology and, as a result, influence their actual use of that technology. The current study focused on three constructs that have a direct effect on behavioral intentions, which are performance expectancy, effort expectancy, and social influence. Some studies have focused on understanding the individual acceptance of faculty intention to adopt new technology in general (Venkatesh et al., 2003; Venkatesh, Thong, & Xu, 2012), which may help to understand the faculty’s decision to adopt a more specific new technology. But very little
is known about using flipped classrooms in Saudi Arabia since it is still in its early infancy. Also, the UTAUT has demonstrated strength in assisting researchers to gain insights into gender differences and their relationship to technology adoption and use (Maduku, 2015; Wang & Wang, 2010). Thus, this study employed the UTAUT to gain understanding of the role gender differences play in flipped classrooms. I adapted the UTAUT by positing performance expectancy, effort expectancy, and social influence as key factors of behavioral intention toward the use of flipped classrooms. Moreover, gender can mediate the effects of performance expectancy, effort expectancy, and social influence on behavioral intention to use flipped classrooms.

Performance Expectancy

Venkatesh et al. (2003) defined performance expectancy as “the degree to which the user expects that using the system will help him or her to attain gains in job performance” (p. 447). This means people are more likely to adopt new technologies when they believe this will help them increase and improve job performance (Venkatesh et al., 2003). Venkatesh et al. (2003) identified five concepts related to performance expectancy: perceived usefulness, extrinsic motivation, job fit, relative advantage, and outcome expectations of the information technology. Perceived usefulness was introduced in the TAM by Davis (1989) and then used by Taylor and Todd (1995) in their C-TAM-TPB. Extrinsic motivation was also introduced by Davis, Bagozzi, and Warshaw (1992) from MM. Job fit was used by Thompson, Higgins, and Howell (1991) in the MPCU and by Rogers (1995) in the concept of relative advantage in the IDT model. Bandura (1986) introduced outcome expectation in his SCT model (see Table 1).
Performance Expectancy and Faculty Technology Acceptance

Previous studies have noted the positive influence of performance expectancy on behavioral intention toward technology adoption and use (Anderson, Schwager, & Kerns, 2006; Lewis et al., 2013; Mtebe & Raisamo, 2014; Oye, Iahad, & Rahim, 2014). In addition to academic environments, performance expectancy was also found to be a strong influential factor in adopting technology (Anderson, Schwager, & Kerns, 2006; Khechine & Lakhal, 2018; Oye et al., 2014; Padhi, 2018). Of the four core constructs of UTAUT, Venkatesh et al. (2003) considered performance expectancy the strongest predictor of behavioral intention and use of information technology. Anderson et al. (2006) applied the UTAUT model to understand the perceptions of university faculty toward tablet personal computer (PC) usage. They surveyed 50 faculty members using web-based survey methods. According to their study, performance expectancy positively affected the use of the PC tablet. In other words, the faculty who believed...
that using a PC tablet increased their work performance tended to use the tablet PC more than the faculty who thought otherwise. Oye et al. (2014) utilized the UTAUT survey to investigate instructor intent to use information and communication technologies (ICT) to facilitate learning and found that performance expectancy had the greatest impact on intent to use.

Gruzd et al. (2012) applied the UTAUT model to investigate why and how academics use social networking tools for communication and research practices. The 51 faculty members’ responses to the semi-structured interviews indicated their attitudes toward using the social media were positive. Their results also indicated that performance expectancy factors were positively associated with academics’ intention to adopt social media. Instructors’ performance expectancy has a beneficial influence on their acceptance of the technology. Additionally, a study conducted by Yusof, Qazi, and Inayat (2017) utilized the UTAUT model to investigate the determining factors and moderators for the acceptance and use of student real-time visualization system (SRTVS). Their quantitative study collected data from 119 participants from two different universities in Malaysia. Like other studies, the researchers found positive and significant influences of performance expectancy on usability expectancy. The results for the variable of gender also showed the effect of performance expectancy on usability expectancy. However, in various studies (Al-Gahtani et al., 2007; Khechine et al., 2014; Lin, Chan, & Jin, 2004), gender did not have a moderating effect on the relationship between performance expectancy and the dependent construct of intention to use the system in education.

Some literature has revealed that performance expectancy is not a significant determinant of faculty’s intention to use technology (Hussin, Jaafar, & Downe, 2011; Mtebe & Raisamo, 2014). Mtebe and Raisamo (2014) used UTAUT to examine the instructors’ intention to adopt and use open educational resources (OER) in teaching and found several challenges that can be
resolved: lack of awareness about intellectual property and copyright policies and guidelines, unreliable internet connections, and the quality of the OER. These results did not support performance expectancy. In addition, Hussin et al. (2011) examined instructors who were slow to adopt virtual reality (VR) in teaching. They found that performance expectancy was not a significant predictor of the behavioral intention of instructors because some instructors did not realize the benefits of technology for the teaching and learning process.

All of the studies under the performance expectation theme predicted the benefits to the faculty when they implemented flipped classrooms. A study conducted by Mazur, Brown, and Jacobsen (2015) indicated that instructors who adopted a flipped classroom had a high performance expectancy in that flipped classrooms helped students gain knowledge and acquire skills in different subjects via in-class active learning activities because a flipped classroom helped the students prepare for class and understand the subject requirements. For example, a chemistry instructor believed that teaching the course in the flipped classroom format could help prepare students with the skills essential for chemistry (Beapler et al., 2014).

**Effort Expectancy**

Venkatesh et al. (2003) defined effort expectancy as “the degree of ease associated with the use of the system” (p. 450). Venkatesh et al. (2003) mentioned the three constructs from other models that capture the concept of effort expectancy: perceived ease of use (TAM/TAM2), complexity (MPCU), and ease of use (IDT). Perceived ease of use was introduced in the TAM by Davis (1989) and then used by Thompson et al. (1991) in the concept of complexity from the MPCU and by Rogers (1995) in the concept of ease of use in the IDT model. Davis et al. (1989) refers to the idea of perceived ease of use as when an individual believes using a technological
device is free from effort. The second concept is complexity, which is the degree to which an innovation is readily understood by members of a population (Rogers, 1995). The last concept is “the degree to which an innovation is perceived as being difficult to use” (Moore & Benbasat, 1991, p. 195; see Table 2).

Table 2

Root Constructs for Effort Expectancy (Venkatesh et al., 2003)

<table>
<thead>
<tr>
<th>Construct</th>
<th>Root Constructs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effort expectancy</td>
<td>Perceived ease of use from TAM/TAM2.</td>
</tr>
<tr>
<td></td>
<td>Complexity from MPCU.</td>
</tr>
<tr>
<td></td>
<td>Ease of use from IDT.</td>
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</table>

Effort Expectancy and Faculty Technology Acceptance

Several studies have shown that effort expectancy has a significant impact on intention to use technology (Cheung, Chan, Brown, & Wan, 2016; Edwards, Kirwin, Gonyeau, Matthews, Lancaster, & DiVall, 2014; Hussin et al., 2011; Kocaleva, Stojanovic, & Zdravev, 2015; Macharia & Nyakwende, 2011; Mtebe & Raisamo, 2014). According to these studies, the instructors adopted the new technology based on how much effort was needed to use this technology in teaching. Effort expectancy could also impact a user’s decision to continue using a new technology after they had already used it. Cheung et al. (2016) explained the behavioral intention of adopting an emerging technology and established that effort expectancy has positive effects on instructors’ behavioral intention to use student response system (SRS) technology. A
study was conducted by Mtebe and Raisamo (2014) to identify challenges that hinder instructors’ intention to adopt and use OER in higher education in Tanzania. Mtebe and Raisamo were concerned about institutions in Tanzania in that they were “spending considerable number of resources to procure, install, and maintain various ICT equipment to complement face-to-face delivery” (p. 250). They collected data from 104 instructors using a modified version of the questionnaire developed by Venkatesh et al. (2003). The results indicated that effort expectancy was the only construct that significantly predicted the use of open educational resources. The findings from this research confirmed that instructors believe OER will be easy to use and free of effort. Effort expectancy produced similar results in Kocaleva, Stojanovic, and Zdravev’s (2015) study. They used UTAUT to understand teaching faculty members’ acceptance and use of the e-learning system at Goce Delcev University (UGD). The research included 138 participants who responded to the online questionnaire. They defined effort expectancy as the ease of using e-learning in teaching. The results of the study showed that effort expectancy had the strongest effect on intention to use the e-learning system. It was the main determinant in identifying the good skills of using technology that might have helped them define the technology’s ease of use. Furthermore, the finding of this study supported the study results by Lewis, Fretwell, Ryan, and Parham (2013), who examined the factors that influenced the faculty members’ use of e-learning at a Southeastern University in the United States. Their findings revealed that effort expectancy was the most important construct for explaining instructors’ use of e-learning. Results further indicated that gender had a moderating effect on the relationship between effort expectancy and behavioral intention to use e-learning.

According to Gruzd et al. (2012), effort expectancy was not a significant predictor of instructors’ intention to adopt and use social media. Gruzd et al. found that the reason for not
adopting potentially useful social networking is a lack of familiarity with the benefits of those tools, as well as a concern that learning how to use those tools could prove challenging. Another study by Raman, Don, Khalid, Hussin, Omar and Ghani (2014) investigated the factors that influenced teachers’ use of SMART Boards™ in Malaysia through applying the UTAUT model. The researchers found that effort expectancy did not have a significant effect on behavioral intention because teachers consider the interactive whiteboard difficult to use and operate. Anderson et al. (2006) also found effort expectancy had no significant impact on behavioral intention. In a similar study, Khechine et al. (2014) found a similar result, no significant results in terms of effort expectancy. The findings showed that gender did not play a moderating effect in the relationship between performance expectancy and the dependent construct of the intention to use systems.

Many instructors introducing the flipped classroom were frustrated when they had to make a large time and effort investment in instructional preparation (Long et al., 2017). Conversely, many instructors were optimistic that the prepared materials could be preserved for future use in similar classrooms (Bergmann & Sams, 2012; O’Flaherty & Phillips, 2015). In this sense, effort expectancy might predict an instructor’s decision to adopt a flipped classroom. In general, to develop learning materials for students’ using technology, instructors needed to invest a massive amount of time and effort. For example, faculty at Northeastern University were required to attend a training program to incorporate an innovative teaching method into a class, course, or experiential activity (Edwards et al., 2014). The wide range of new methods was integrated into effective teaching with the use of technology. Moreover, to ensure the quality of their instruction, they were asked to either continue using their new strategy as is or incorporate additional modifications for the future (Edwards et al., 2014). This study is an example of how
instructors had to invest a large amount of time and effort to develop instruction, innovate curriculum, and develop learning materials.

Social Influence

Venkatesh et al. (2003) defined social influence as “the degree to which an individual perceives that important others believe he or she should use the new system” (p. 451). It plays a significant role as a direct determinant of behavioral intention and of user acceptance. The three constructs included in social influence are subjective norm, social factors, and image. Subjective norm was adapted from the TRA by Fishbein and Ajzen (1975), which was adapted by Ajzen (1991) from TPB and by Taylor and Todd (1995) from C-TAM-TPB. Venkatesh and Davis (2000) extended the TAM by including subjective norm as an additional predictor of behavioral intention in the TAM2 model. The concept can be explained by “the person’s perception that most people who are important to him think he should or should not perform the behavior in question” (Fishbein & Ajzen, 1975, p. 302). Social factors account for an individual’s internalization of the surrounding subjective culture and social agreements the individual has shared with others (Thompson et al., 1991). The image was adapted from the IDT by Rogers (1995) and is the degree to which an innovation can enhance an individual within a social system (Moore & Benbasat, 1991). The current study defined social influence as the extent to which instructors perceive their colleagues’ belief that they should use the flipped classroom in teaching (see Table 3).
Table 3

<table>
<thead>
<tr>
<th>Construct</th>
<th>Root Constructs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social influence</td>
<td>Subjective norm from TRA, TAM2, TPB and C-TAM-TPB.</td>
</tr>
<tr>
<td></td>
<td>Social factors from MPCU.</td>
</tr>
<tr>
<td></td>
<td>Image from IDT.</td>
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Social Influence and Faculty Technology Acceptance

Prior research (e.g., Alkhasawneh & Alanazy, 2015; Cilliers & Murire, 2017; Lewis et al., 2013; Lin & Lin, 2019; Wang et al., 2009) noted that social influences were strong factors that impacted individual behavioral intentions. Kocaleva et al.’s (2015) study found that social influence by surrounding people was an important factor that influenced individuals’ decision to accept and use new technology. Faculty members in higher education can influence other faculty to use technology and support them in terms of the teaching and learning process. The significant influence on an individual’s intent to use technology has been identified in many studies (Cheung & Vogel, 2013; El-Masri & Tarhini, 2017; Gruzd et al., 2012; Hussin et al., 2011; Khan, Masrek, Mahmood, & Qutab, 2017; Lewis et al., 2013; Macharia & Nyakwende, 2011; Yoo, Huang, & Lee, 2012). Radovan and Kristl (2017) conducted a study with a sample of 326 instructors to determine the behavioral intentions to use LMS at Ljubljana University in Turkey. Their findings showed that social influence had a direct acceptance of using LMS but had no direct influence to use LMS.

In a social environment, an individual decision to adopt technology is pressured and changed by the group to which he or she belongs, and the change is driven by the desire to
conform to the behaviors to utilize technology to be seen as more skillful (Venkatesh et al., 2003). Oye et al. (2014) used the UTAUT to investigate the anticipation of acceptance to investigate the intent of faculty members at the Adamawa State University to use information and communication technologies. The findings highlighted that social influence has a positive influence on faculty’s behavioral intention to recognize and utilize communication technology as the main predictor and amount of time and technical support as the main barriers to the acceptance and use of technology. Moreover, Orji (2010) found social influence is an influential factor for predicting users’ behavioral intention to use a digital library, where the findings revealed that there was no moderation effect of gender on this relationship. Yuvaraj (2016) also used UTAUT to examine the adoption of social media technologies in the recruitment and selection process of library professionals and faculty members in India. Data were collected from 230 participants. The study found that social influence did not significantly affect behavioral intentions of recruiters to adopt social media. He also found that gender was not a moderator variable.

In contrast, other studies showed social influence was not statistically significant in the adoption of new technologies (Anderson et al., 2006; Mtebe & Raisamo, 2014). Venkatesh et al. (2003) found that social influence was not significant in voluntary contexts but became important when its use was mandated. Anderson et al. (2006) also found social influence was a factor when the technology use was mandatory.

**Gender Differences and Faculty Acceptance of Technology**

The issue of gender in technology acceptance and use has received the attention of many researchers with the aim of examining whether or not there are differences between males and
females in regard to technology utilization. The study by Alwraikt and Al Tokhaim (2014) investigated 326 participants to find the differences between male and female faculty members’ attitudes toward an m-learning concept at King Saud University. Their study used independent samples t test to compare female faculty members (N=310) and male faculty members (N=52). They found statistically significant differences in faculty’s attitudes toward m-learning with regard to gender. Female faculty members’ attitudes were more positive to use mobile technology than males. Females also appeared to use the technology more proficiently than the males, which influenced their perceptions.

Zhou and Xu (2007) investigated a large number of faculty members’ attitudes toward using technology at one large Canadian university. According to Zhou and Xu, the Canadian university had a strategic technology plan, which made it is easier for the university to adopt the technology. Zhou and Xu compared the female and male instructors’ confidence in using computers in their classrooms. They found that males tend to be more confident, show more interest, have more access to, and demonstrate a more positive attitude toward technology compared to females. Zhou and Xu suggested that females’ intention to use technology was a significant factor in determining successful professional development implementation.

In another study in Saudi Arabian public universities, Asiri, Mahmud, Bakar, Ayub, and bin Mohd (2012) explored the factors that influenced using learning management systems (LMS) for teaching and learning purposes. They found that gender is one of the factors that influences adopting LMS. The results indicated a significant difference between males and females in using LMS in higher education and showed males were more likely to adopt technology in teaching, whereas female faculty believed using technology was less important and more challenging. Similarly, Mahdi and Al-Dera (2013) contended gender was an important factor in educational
research. They interviewed and surveyed faculty members to identify whether instructors’ personal characteristics, including gender, were related to their use of information and communication strategies (ICS) at Najran University, Saudi Arabia. Mahdi and Al-Dera found a considerable difference in ICS use between the male and female EFL faculty by linking the gender factor to age. This study found that male instructors in their twenties and forties are more inclined toward using ICS than female instructors, mostly because of individual consideration interests. Mahdi and Al-Dera found females used less technology than males because of a lack of ICT training and support (Mahdi & Al-Dera, 2013). Spotts, Bowman, and Mertz (1997) found that gender differences existed in equality of access to and performance with technologies, which seemed to suggest that men tended to use technology more than women. This finding could be as a result of how men and women learn to use or actually use technology as well as attitudes, personal experiences, pre-existing beliefs and goals, previous experiences and cultural conventions of the disciplines (Hora & Holden, 2013). In addition, Al-Hunaiyyan, Alhajri, and Al-Sharhan (2017) found the reason for gender differences was because of cultural and religious norms that affected the implementation of m-learning in Kuwait.

On the other hand, other studies found no significant difference in use and acceptance of technology between male and female faculty members (Ahadiat, 2008; Al-Alawneh, 2014; Kay, 2006; Wichadee, 2015). The study conducted by Ahadiat (2008) investigated 800 accounting educators from 50 states to find differences between males and females toward technology use. Ahadiat (2008) reported that the most popular applications of information technology by accounting faculty were email, the internet, word processing software, electronic spreadsheets, presentation software, and data analysis software. He found no significant gender differences in use of technology with regard to gender (Ahadiat, 2008).
Manca and Raineri (2017) used a survey to investigate use of social media for academic purposes. The survey was given to 6,139 faculty members at Italian universities. The study explored the use and type of social media, as well as the frequency of using it, using gender as a factor that influenced faculty to adopt social media. Their research showed gender has a limited impact on determination to use social media for teaching. Both genders prefer to use technology but differ in the tools and methods. Males preferred Twitter and females used podcasts, such as YouTube and SlideShare. Facebook and Twitter were mainly used to motivate and prepare their lectures and support collaborative work among students. Podcasts were seen to improve the quality of teaching or to share educational content. However, as compared to previous studies’ findings, Crawford and MacLeod (1990) studied the use of technology in the classroom. Crawford’s study mentions that the incidence of gender in the use of technology in the classroom may not be a causal relationship but has to do with factors other than gender. Crawford and MacLeod found 100% of instructors actively used technology in their classes. The findings also showed 50% of instructors believed males used technology more often than women and the remaining 50% believed both males and females equally used technology, which suggests that gender was simply a coincidence when using technology in the classroom.

From an empirical perspective, Orji (2010) adopted the UTAUT model to account for the effect of gender on acceptance. The study surveyed 116 participants (56 males and 60 females) to find the reason for the use of electronic library systems (ELS) among students. Gender differences were a significant factor influencing students' behavioral intention to use ELS. Males, in general, demonstrated a higher acceptance of ELS than females. Also, utilizing the UTAUT model helped the researcher understand the use of ELS across different gender groups to serve as a mechanism in guiding the development of ELS. Wang and Wang (2010) used the
UTAUT model to investigate the gender differences between students' behavioral intention to use mobile devices for learning in Taiwan. There were no significant gender differences in terms of the effects of the determinants on behavioral intention to use mobile internet.

Most of the studies examined the potential differences between female and male faculty members for adopting technologies in higher education by implementing a different subset of an acceptance model. Very few studies used the UTAUT to examine the influence of gender in the use of technology among faculty members in higher education. Therefore, this study used the UTAUT model to investigate differences between male and female faculty members at Taif University toward using flipped classrooms.

Chapter Summary

Existing literature presented students’ perceptions (Alsowat, 2016; Baker & Hill, 2017; A Yang, Feng, & MacLeod, 2018; Ekmekci, 2017) and faculty members’ perceptions (Afrilyasanti, Cahyono & Astuti, 2017; Basal, 2015; Bergmann & Sams, 2012; Hardin & Koppenhaver, 2016; Kurt, 2017; Long et al., 2017) of flipped classroom environments. Based on this review of literature, the adoption of flipped classrooms in Saudi Arabia is still in the early stages (Baker & Hill, 2017). This study uses Venkatesh et al.’s (2003) UTAUT as a theoretical framework to examine the faculty members’ intention to use flipped classrooms. In addition, the empirical studies introduced the theories of the UTAUT model as well as its application in various contexts, such as mobile learning (Al-Hunaiyyan et al., 2017), ICT (Oye et al., 2014), and LMS (Radovan & Kristl, 2017). This chapter also identified that studies have examined the differences between males’ and females’ intention to use technology (Al-Alawneh, 2014; Al-Hunaiyyan, Alhajri, & Al-Sharhan, 2017; Kay, 2006); therefore, gender could be a factor that might
influence the adoption of flipped classrooms and predict the possible issues that can be faced in the future. The focus of this study was to understand the factors that influence faculty’s behavioral intention to adopt flipped classrooms in Saudi to fill the gap left by previous studies. The following chapter explains the methodology and study design used in the current study.
CHAPTER 3

METHODOLOGY

Research Design

This study used a quantitative methodology, specifically a correlational design. Creswell (2012) indicates that correlational research studies can describe relationships between variables and can find which variables are predictors of a certain phenomenon. The current study examined the differences between male and female faculty members’ behavioral intention to use flipped classrooms at Taif University in Saudi Arabia based on the Unified Theory of Acceptance and Use of Technology (UTAUT). According to Creswell (2012), the quantitative approach is suitable for understanding predictors of outcomes. Thus, a quantitative survey research design was used to answer the following research questions:

RQ1. Do performance expectancy, effort expectancy, and social influence predict faculty members’ behavioral intention to use flipped classrooms?

H1: Performance expectancy positively predicts faculty members’ behavioral intention toward using flipped classrooms.

H2: Effort expectancy positively predicts faculty members’ behavioral intention toward using flipped classrooms.

H3: Social influence positively predicts faculty members’ behavioral intention toward using flipped classrooms.
RQ2. Does gender moderate the relationships between performance expectancy, effort expectancy, social influence, and faculty members’ behavioral intention to use flipped classrooms?

RQ3. Do male and female faculty members differ in their behavioral intention to use flipped classrooms?

Variables

The dependent variable of this study was behavioral intention to use flipped classrooms among faculty members. The independent variables of this study are performance expectancy, effort expectancy, and social influence. In addition, gender was used both as a predictor of behavioral intention as well as a demographic moderator of the aforementioned relationships.

Participants and Sampling

The population of this study consisted of all the faculty members, male and female, at Taif University. Taif University is one of the 28 public universities in Saudi Arabia (TU, 2021). Taif University was founded in 2004 due to a merger of the campuses of two Umm Al-Qura colleges located in Makkah. At the 13 colleges of the university, there are more than 4,193 staff and 42,765 students working and studying on four campuses (TU, 2021). The study population consists of all faculty members at Taif University (1129), according to the statistics from the Deanship of Faculty Affairs at Taif University during 2019-2020. The university offers various academic programs and courses, including mathematics, physics, biology, computer science, Arabic, Islamic studies, language, education, early childhood learning, medicine, engineering, accounting, marketing, and pharmacy (Ministry of Higher Education, 2019).
In terms of sample size, a desired sample size for this study was determined as a function of effect size, alpha level, and power (Cohen, 1988). To determine the minimum sample size required for this study, statistical power analysis was carried out using G*Power assuming, a medium effect size of \( \tilde{f}^2 = .15 \), \( \alpha = 0.05 \), power \( \geq .80 \), and the total number of predictors = 6. This analysis determined that the minimum sample size for 80% power was \( N = 98 \) participants (see Appendix A). To maximize the potential sample size and power, the instrument was sent to all current Taif University faculty members via an email with the support of TU’s Vice President of Graduate Studies and Scientific Research, asking them to respond to an online survey. After all data collection was complete, 218 faculty members participated in the study. The participants in this research reflected various ages, types of teaching positions, and their experiences of using flipped classrooms before. Also, they were from different academic departments.

**Instrumentation**

The survey instrument used in this study was designed using Venkatesh et al.’s (2003) UTAUT. This instrument has shown evidence of acceptable levels of reliability and validity and has been tested in a number of studies by different researchers (Anderson et al., 2006; Lewis et al., 2013; Oye et al., 2014; Radovan & Kristl, 2017; Venkatesh et al., 2003; Wang, Wu, & Wang, 2009). I received permission to use and adapt the UTAUT instrument to conduct the current study (see Appendix B). The survey was modified to fit this research topic, where the 13 items were modified by changing the word “system” to “flipped classrooms for teaching purposes.” The survey was translated from English to Arabic by an official translator, who notarized and certified all translated documents. The UTAUT survey consists of 5-point Likert items, with
response options strongly disagree, disagree, neutral, agree, and strongly agree to identify the factors (performance expectancy, effort expectancy, and social influence) that might influence a faculty members’ intention to adopt the flipped classroom. The survey was published in Qualtrics. Qualtrics Research Suite survey software is an online survey platform. It was used to capture and analyze the data. Users are able to build questionnaires to their desired specifications. The Qualtrics questionnaire used in this study was created to target the population of faculty members at Taif University. The adopted survey consisted of 25 items that covered demographic information (gender, age, and academic major) as well as items related to the selected constructs of the UTAUT. The UTAUT survey consisted of four subscales: performance expectancy (3 items), effort expectancy (3 items), social influence (4 items), and the behavioral intention construct (3 items). The items associated with these four constructs were coded from 1 = Strongly Disagree to 5 = Strongly Agree. One open-ended item was added at the end of the survey to collect some demographic information (see Appendix B).

According to Venkatesh et al. (2003), data from the UTAUT survey instrument have resulted in internal consistency reliability estimates that exceed .70. Moreover, the UTAUT instrument has been applied in many studies and has been indicated to have good reliability for measuring users’ behavioral intention to determine actual system use. To assess evidence for the reliability of data collected in the current study, Cronbach’s alpha was computed. With observed alpha values above .70 for each construct assessed within the survey, there was evidence of score reliability. An explanation of statistical procedures used for reliability analysis is presented in Chapter 4.
Threats to Validity

According to Sekaran and Bougie (2010), validity is the “evidence that the instrument, technique, or process used to measure a concept does indeed measure the intended concept” (p. 448). Data resulting from the UTAUT instrument have been assessed for reliability and validity in previous studies (Kissi, Nat & Armah, 2018; Mtebe & Raisamo, 2014; Oye et al., 2014; Venkatesh et al., 2003). The survey for the current was a modified version of Venkatesh et al.’s (2003) UTAUT questionnaire. Vogt (2007) recommended that existing instruments, when applied to new populations, should be examined for validity and reliability. For this reason, validity and reliability were assessed to ensure the accuracy of the questionnaire instrument.

Validity is the most significant idea to consider when developing or choosing an instrument (Fraenkel & Wallen, 2009). To assess instrument validity, instrument items were translated into Arabic and checked multiple times for accuracy because the participants in the study were Arabic-speaking faculty and the instrument was originally written in English. Backward translation processes were used to ensure an accurate version of the instruments; therefore, the Arabic versions of the instruments were given to two Arabic specialists in English linguistics who translated them back into English. Then the translated version from the experts was compared to the original English version of survey items from UTAUT to ensure accuracy.

Ethical Principles/Human Subjects Compliance

A number of ethical issues could show up pertaining to the participants after the data collection phase of research (Creswell, 2012). The survey in this study gathered basic demographic information about the faculty and information pertaining to their use of the flipped
classroom for academic use through an online questionnaire. The loss of confidentiality and privacy was not an issue in this study since no information with the potential to identify participants personally was included. The survey did not ask information that could cause psychological harm. Each participant received a letter of invitation with a clear explanation of the purpose and the anticipated outcome of the study, a link to the survey webpage starting with a consent form and agreement checkbox, and a thank you statement for participating in the study (see Appendix C). In addition, each participant was informed within the same email that they were free to end their participation in the survey at any time and would not be penalized if they chose not to participate.

Research Procedure and Data Collection

I conducted all the procedures and regulations outlined by the Northern Illinois University (NIU) Institutional Review Board (IRB). The study was conducted after approval was obtained from the IRB at NIU with permission of TU’s Vice President of Graduate Studies and Scientific Research. The survey was published in Qualtrics, with an informed consent document as the cover page. The researcher sent the Vice President of Graduate Studies and Scientific Research an email that explained the data collection process, including the starting date of the survey. All of the prospective participants received an email from the Vice President of Graduate Studies and Scientific Research indicating the title and description of the study in both languages (English and Arabic) with a link to the survey. Additionally, the survey questions were provided in both English and Arabic.

The survey was available for three months to afford adequate time for the faculty members to respond. In addition, following recommendations by Phillips, Reddy, and Durning
multiple reminders were sent to achieve a high response rate and to mitigate non-response bias. The first reminder was sent three weeks after the invitation, and the second reminder was sent four weeks later to thank those who completed the survey and to ask the faculty members who had not yet completed the survey to consider doing so. The last reminder was sent two days prior to closing the survey to remind potential participants of the end of data collection and to thank those who had completed the survey. A total of 218 completed surveys were received. After completing the required number of participants, the survey was closed, and data was prepared for analysis to answer the research questions (see Table 4).

Table 4
Data Collection Timeline

<table>
<thead>
<tr>
<th>Time</th>
<th>Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jul 17, 2019</td>
<td>Received the IRB approval</td>
</tr>
<tr>
<td>Aug 10, 2019</td>
<td>Develop the online survey (Arabic &amp; English)</td>
</tr>
<tr>
<td>Aug 12, 2019</td>
<td>A letter was sent to the Vice President Graduate Study and Scientific Research at Taif University to obtain an approval to conduct the study.</td>
</tr>
<tr>
<td>Aug 25, 2019</td>
<td>Survey launch</td>
</tr>
<tr>
<td>Sep 15, 2019</td>
<td>First reminder</td>
</tr>
<tr>
<td>Oct 13, 2019</td>
<td>Second reminder</td>
</tr>
<tr>
<td>Oct 29, 2019</td>
<td>Last reminder &amp; thank you email</td>
</tr>
<tr>
<td>Nov 15, 2019</td>
<td>Survey close</td>
</tr>
</tbody>
</table>

Analytic Approach

Data were analyzed through t test and multiple linear regression. I used SPSS as a tool to complete the descriptive statistical analyses. Descriptive statistics were used to explore frequencies, means, standard deviations, and standard error. This study employed multiple
regression analyses to understand and explore the functional relationships among the variables: performance expectancy, effort expectancy, social influence, and behavioral intention. Additionally, I reported the results in graphical and table formats for the three research questions to display the relationships among the examined variables. For illustration, the influence of performance expectancy, effort expectancy, social influence, and behavioral intention and the moderating influence of moderator (gender) on this effect were evaluated using one model. Also, this study employed independent samples t tests to determine whether males and females had distinct mean behavioral intentions toward using flipped classrooms. Inferential tests were evaluated at the .05 level of significance.

Chapter Summary

This chapter reviewed the methodology and procedures employed in the study. The targeted population was faculty members at Taif University in Saudi Arabia. The instrumentation consisted of 13 items based on the UTAUT model (Venkatesh et al., 2003). The independent variables of performance expectancy, effort expectancy, and social influence were directly aligned with the UTAUT model, as were the main effect variable of gender. The validity data for supporting this instrument was presented. Data collection methods were addressed with detailed descriptions of the pilot interview process, interview protocol, and content review instruments. Finally, the processes for performing data analysis and reporting were detailed. The results and findings of this study are explained in Chapter 4.
CHAPTER 4

RESULTS

The Unified Theory of Acceptance and Use of Technology (UTAUT) was utilized was to explore factors that predict faculty members’ behavioral intention to use flipped classrooms in Taif University in Saudi Arabia. The chapter includes a description of the characteristics of the population as well as the sample. Furthermore, the chapter presents a summary of the results of the survey for the following research questions and hypotheses:

RQ1. Do performance expectancy, effort expectancy, and social influence predict faculty members’ behavioral intention to use flipped classrooms?

H1: Performance expectancy positively predicts faculty members’ behavioral intention toward using flipped classrooms.

H2: Effort expectancy positively predicts faculty members’ behavioral intention toward using flipped classrooms.

H3: Social influence positively predicts faculty members’ behavioral intention toward using flipped classrooms.

RQ2. Does gender moderate the relationships between performance expectancy, effort expectancy, social influence, and faculty members’ behavioral intention to use flipped classrooms?

RQ3. Do male and female faculty members differ in their behavioral intention to use flipped classrooms?
Score Reliability

Cronbach’s alpha (a) was employed to assess the internal consistency of the multi-item construct. The generally accepted internal consistency or reliability of each construct is evidenced by values of alpha that exceed .70 (Meyer et al., 2013; Venkatesh et al., 2003). Table 5 provides a summary of the Cronbach’s alpha values for each of the UTAUT constructs used. Cronbach’s alpha for the four constructs indicated evidence of reliability, as each computed statistic is above .70, with the range of alpha values between .77 and .90.

Table 5

Instrument Cronbach’s Alpha Coefficient

<table>
<thead>
<tr>
<th>Construct</th>
<th>Number of Items</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Expectancy</td>
<td>3</td>
<td>.90</td>
</tr>
<tr>
<td>Effort Expectancy</td>
<td>3</td>
<td>.86</td>
</tr>
<tr>
<td>Social Influence</td>
<td>4</td>
<td>.77</td>
</tr>
<tr>
<td>Behavioral Intention</td>
<td>3</td>
<td>.87</td>
</tr>
</tbody>
</table>

Data Screening

Before the primary analyses were carried out, the data were screened for accuracy, outliers, and missing values. A total of 218 faculty members responded; 21 cases were removed from the sample because of a high percentage of missing values. This resulted in the reduction of the sample size to N = 197. Missing values for the remaining 197 cases, which ranged between 7.1% to 14.2% of the cases for each of the variables, were determined to be missing completely random (MCAR)
using Little’s (1988) test [$\chi^2(83) = 77.42, p = .65$]. Because the missing values were considered to be MCAR, I used hot-deck imputation to replace these missing values.

Demographics

The statistics include demographic information for the sample who completed the survey. The descriptive information about the participants includes gender, age, teaching job title, and college.

Gender

Results (Table 6) showed that 102 of the respondents were females, constituting 51.8% of the sample, while 95 of the respondents were males, constituting 48.2% of the sample.

Table 6

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>95</td>
<td>48.2</td>
</tr>
<tr>
<td>Female</td>
<td>102</td>
<td>51.8</td>
</tr>
<tr>
<td>Total</td>
<td>197</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Age

As shown in Table 7, most of the participants were within the 36–45 years age range (n = 80; 40.6%) or the 26–35 years age range (n = 65; 33.0%); while fewer participants were within
the 46–55 years age range (n= 39; 19.8%), 56–65 years age range (n= 11; 5.6%), or over 66 years (n= 2; 1.0%).

Table 7

Age Distribution

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>26-35 years</td>
<td>65</td>
<td>33.0</td>
</tr>
<tr>
<td>36-45 years</td>
<td>80</td>
<td>40.6</td>
</tr>
<tr>
<td>46-55 years</td>
<td>39</td>
<td>19.8</td>
</tr>
<tr>
<td>56-65 years</td>
<td>11</td>
<td>5.6</td>
</tr>
<tr>
<td>Above 65 years</td>
<td>2</td>
<td>1.0</td>
</tr>
<tr>
<td>Total</td>
<td>197</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Teaching Job Title

The participants had five survey options to indicate their teaching job title as faculty members at Taif University. As reflected in Table 8, seventy-five identified themselves as assistant professors (38.1%), sixty as lecturers (30.5%), thirty-six as associate professors (18.3%), nine as professors (4.6%), and seventeen in other positions (8.6%).

Table 8

Teaching Job Title Distribution

<table>
<thead>
<tr>
<th>Participant Role</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructor</td>
<td>10</td>
<td>5.1</td>
</tr>
<tr>
<td>Lecturer</td>
<td>60</td>
<td>30.5</td>
</tr>
<tr>
<td>Assistant Professor</td>
<td>75</td>
<td>38.1</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>36</td>
<td>18.3</td>
</tr>
<tr>
<td>Other</td>
<td>17</td>
<td>8.6</td>
</tr>
<tr>
<td>Total</td>
<td>197</td>
<td>100.0</td>
</tr>
</tbody>
</table>
College

The participants displayed different characteristics in terms of college affiliation. The highest concentration of participants was from the College of Education (33.5%), followed by the College of Computer and Information Technology (12.7%). Participation from the College of Science was (11.2 %). Participation from the College of Business Administration and the College of Art and Humanities was (10.2%) for each college. The participation percentages for the remaining colleges ranged from (3.6%) to (.5%). The distribution by college affiliation is shown in Table 9.

<table>
<thead>
<tr>
<th>College</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>College of Business Administration</td>
<td>20</td>
<td>10.2</td>
</tr>
<tr>
<td>College of Applied Medical Sciences</td>
<td>4</td>
<td>2.0</td>
</tr>
<tr>
<td>College of Art and Humanities</td>
<td>20</td>
<td>10.2</td>
</tr>
<tr>
<td>Community College</td>
<td>7</td>
<td>3.6</td>
</tr>
<tr>
<td>College of Computer and Information Technology</td>
<td>25</td>
<td>12.7</td>
</tr>
<tr>
<td>College of Education</td>
<td>66</td>
<td>33.5</td>
</tr>
<tr>
<td>College of Arts</td>
<td>4</td>
<td>2.0</td>
</tr>
<tr>
<td>College of Engineering</td>
<td>2</td>
<td>1.0</td>
</tr>
<tr>
<td>College of Medicine</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>College of Pharmacy</td>
<td>1</td>
<td>.5</td>
</tr>
<tr>
<td>College of Science</td>
<td>22</td>
<td>11.2</td>
</tr>
<tr>
<td>College of Dentistry</td>
<td>1</td>
<td>.5</td>
</tr>
<tr>
<td>College of Designs and Home Economics</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>Total</td>
<td>197</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Experience of Using Flipped Classrooms

In terms of experience using flipped classrooms, the majority of faculty members (108; 54.8 %) revealed that they used flipped classrooms, while 89 (46.2 %) did not use flipped classrooms (see Table 10). Table 11 is also an indication of usage experience/frequency of using flipped classrooms; 48 (24.4 %) of participants sometimes used the flipped classroom in their courses, and 43 (17.3 %) frequently used the flipped classroom. Of the 197 valid participants, 13 (6.6 %) participants “rarely” used the flipped classroom, which was equal to the number and percentage of those who reported “always” using flipped classrooms in their courses.

Table 10

Ever Used Flipped Classrooms Distribution

<table>
<thead>
<tr>
<th>Participant Role</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>108</td>
<td>54.8</td>
</tr>
<tr>
<td>No</td>
<td>89</td>
<td>45.2</td>
</tr>
<tr>
<td>Total</td>
<td>197</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 11

Use of Flipped Classrooms Distribution

<table>
<thead>
<tr>
<th>Frequency Used</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>89</td>
<td>45.2</td>
</tr>
<tr>
<td>Rarely</td>
<td>13</td>
<td>6.6</td>
</tr>
<tr>
<td>Sometimes</td>
<td>48</td>
<td>24.4</td>
</tr>
<tr>
<td>Frequently</td>
<td>34</td>
<td>17.3</td>
</tr>
<tr>
<td>Always</td>
<td>13</td>
<td>6.6</td>
</tr>
<tr>
<td>Total</td>
<td>197</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Analysis of Research Questions

Research Question 1

Multiple Regression Analyses and Results

To answer RQ1, multiple regression was used to assess whether the UTAUT model components: performance expectancy (PE), effort expectancy (EE), and social influence (SI) in the context of Taif University predicted faculty members’ intention to use a flipped classroom as pedagogy. As shown in Table 12, the set of three variables significantly predicted the outcome: F(3, 193) = 36.96, p < .001. The R-square value was 0.365, which indicates that 36.5% of the total variability in behavioral intention was explained by the three predictors (performance expectancy, effort expectancy, and social influence).

<table>
<thead>
<tr>
<th>Model</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>45.13</td>
<td>3</td>
<td>15.04</td>
<td>36.96</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Residual</td>
<td>78.54</td>
<td>193</td>
<td>0.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>123.66</td>
<td>196</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Assumptions of Multiple Regression

To provide evidence that the assumptions for multiple regression analyses were met, model residuals were checked for normality, linearity, and homoscedasticity (Field, 2013).
Normality. The normality assumption of the regression was checked Kolmogorov-Smirnov and Shapiro-Wilk tests (Shapiro & Wilk, 1965). Results showed that the model residuals were not normally distributed (see Table 13). In addition, examination of a histogram of standardized residuals showed a slightly positive skewed distributed (see Figure 2). However, the relatively large sample size (N = 197), combined with the slight degree of non-normality, mitigated concerns.

Table 13

<table>
<thead>
<tr>
<th>Tests of Normality</th>
<th>Kolmogorov-Smirnov</th>
<th>Shapiro-Wilk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistic</td>
<td>df</td>
</tr>
<tr>
<td>Standardized Residual</td>
<td>0.10</td>
<td>197</td>
</tr>
</tbody>
</table>
Figure 2: Histogram of the residual values for the regression predicting intention total score.

**Linearity and homoscedasticity.** Other assumptions for multiple regression include linearity and homoscedasticity (Field, 2013). A scatterplot of residuals versus predicted values was used to check for homoscedasticity. Figure 3 depicts a plot of standardized residuals to show a fairly equal spread of positive and negative residuals above and below the zero line, which indicates the two assumptions of linearity and homoscedasticity were met.
Correlation analysis. The correlations among the three predictors (performance expectancy, effort expectancy, and social influence), as shown in Table 14, are as expected significantly related to one another. However, no correlation exceeded .90, indicating lack of excessive multicollinearity among the predictors.
Table 14

Correlations Among the Variables (N = 197)

<table>
<thead>
<tr>
<th></th>
<th>BI</th>
<th>PE</th>
<th>EE</th>
<th>SI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person Correlation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BI</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PE</td>
<td>0.571</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>0.497</td>
<td>0.627</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td>0.226</td>
<td>0.186</td>
<td>0.286</td>
<td>1.000</td>
</tr>
</tbody>
</table>

p (1 -tailed)  

<table>
<thead>
<tr>
<th></th>
<th>BI</th>
<th>PE</th>
<th>EE</th>
<th>SI</th>
</tr>
</thead>
<tbody>
<tr>
<td>BI</td>
<td></td>
<td></td>
<td>&lt;.001</td>
<td></td>
</tr>
<tr>
<td>PE</td>
<td></td>
<td>&lt;.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td></td>
<td>&lt;.001</td>
<td></td>
<td>&lt;.001</td>
</tr>
<tr>
<td>SI</td>
<td></td>
<td>&lt;.001</td>
<td></td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Table 15 provides the values of tolerance and variance inflation factor (VIF) for the independent variables of the model. The variance inflation factors (VIF) were lower than 10, and the tolerance statistics were all higher 0.1, reaffirming the lack of multicollinearity between the variables.

Table 15

Collinearity Statistics of the Predictors

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE</td>
<td>0.61</td>
<td>1.65</td>
</tr>
<tr>
<td>EE</td>
<td>0.58</td>
<td>1.73</td>
</tr>
<tr>
<td>SI</td>
<td>0.92</td>
<td>1.09</td>
</tr>
</tbody>
</table>
Coefficients. As indicated by the regression coefficients for each predictor in Table 16, performance expectancy and effort expectancy significantly predicted faculty members’ behavioral intention to use flipped classrooms (PE: \( b = 0.42, p = <.001 \), and EE: \( b = 20, p = .01 \)). In addition, Pratt indices were computed to assess which predictor was the most important. As shown in Table 16, the constructs of PE and EE are strongly related to BI, with PE in this case being more strongly related, with a Pratt’s index of 0.67, while the Pratt index for EE in this study was 0.28. In addition, standardized coefficients (\( \beta \)) in the hypothesized model are shown. As expected, hypotheses H1 and H2 are supported in that performance expectancy (\( \beta = 0.43, p < .001 \)) and effort expectancy (\( \beta = 0.22, p = .01 \)) were statistically significant.

Table 16

<table>
<thead>
<tr>
<th>Effect</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th></th>
<th></th>
<th>Pratt index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
<td>( \beta )</td>
<td>t</td>
<td>p</td>
</tr>
<tr>
<td>(Constant)</td>
<td>1.18</td>
<td>0.29</td>
<td></td>
<td>4.03</td>
<td>.001</td>
</tr>
<tr>
<td>PE</td>
<td>0.43</td>
<td>0.08</td>
<td>0.43</td>
<td>5.78</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>EE</td>
<td>0.22</td>
<td>0.08</td>
<td>0.21</td>
<td>2.73</td>
<td>.01</td>
</tr>
<tr>
<td>SI</td>
<td>0.09</td>
<td>0.06</td>
<td>0.09</td>
<td>1.46</td>
<td>.15</td>
</tr>
</tbody>
</table>
Research Question 2

Multiple Regression Analyses and Results

To answer RQ2, multiple regression analysis was used to assess whether gender moderated the relationship between the set of predictors and outcome variable to use flipped classrooms. To test the model, gender first was coded using 0 and 1, where 1 represented male. Also, mean centering was used for performance expectancy, effort expectancy, and social influence.

Table 17 shows the partitioning of variance. The set of predictors significantly predicted faculty members’ behavioral intention to use flipped classrooms: $F(6, 189) = 15.83, p < .001$. A total of 37% of the data variation in intention was explained by the four predictors ($R^2 = .37$).

Table 17
ANOVA for Regression of Behavioral Intention on Performance Expectancy, Effort Expectancy, Social Influence, Gender, and Interaction Effect

<table>
<thead>
<tr>
<th>Model</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>45.57</td>
<td>6</td>
<td>6.53</td>
<td>15.83</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Residual</td>
<td>78.09</td>
<td>189</td>
<td>0.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>123.66</td>
<td>196</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Assumptions of Multiple Regression

To provide evidence that the assumptions for multiple regression analyses were met, the model residuals were checked for normality, linearity, and homoscedasticity (Field, 2013).
Normality. Kolmogorov-Smirnov and Shapiro-Wilk tests indicated that the regression residuals were not normally distributed (p < .05; see Table 18). As shown in Figure 4, a histogram of standardized residuals showed a slightly positive skewed distribution. However, the large sample size and relatively small degree of non-normality mitigated concerns.

Table 18
Tests of Normality

<table>
<thead>
<tr>
<th></th>
<th>Kolmogorov-Smirnov</th>
<th></th>
<th>Shapiro-Wilk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistic</td>
<td>df</td>
<td>p</td>
</tr>
<tr>
<td>Standardized Residual</td>
<td>0.10</td>
<td>197</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Figure 4: Histogram of the residual values for the regression predicting intention total score.
Linearity and homoscedasticity. Examination of a scatterplot of standardized residuals on the predicted values supported the assumption of homoscedasticity and linearity (see Figure 5).

![Scatterplot](image)

**Figure 5:** Scatterplot of the residual values against the predicted values of the outcome variable.

**Multicollinearity.** As seen in Table 19, VIF and tolerance statistics computed to assess multicollinearity indicated that this was not a concern. All independent variables had VIF values lower than 10 and a tolerance higher than 0.1.
Table 19

Tolerance and VIF Values for the Predictors

<table>
<thead>
<tr>
<th>Effect</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>PE</td>
<td>.30</td>
<td>3.39</td>
</tr>
<tr>
<td>EE</td>
<td>.32</td>
<td>3.16</td>
</tr>
<tr>
<td>SI</td>
<td>.44</td>
<td>2.29</td>
</tr>
<tr>
<td>Gender</td>
<td>.99</td>
<td>1.01</td>
</tr>
<tr>
<td>PE x Gender</td>
<td>.25</td>
<td>3.98</td>
</tr>
<tr>
<td>EE x Gender</td>
<td>.26</td>
<td>3.81</td>
</tr>
<tr>
<td>SI x Gender</td>
<td>.44</td>
<td>2.27</td>
</tr>
</tbody>
</table>

Coefficients. The coefficients of the multiple linear regression model next were examined. Table 20 shows that gender had no statistically significant moderating effect on the relationship between the independent variables (performance expectancy, effort expectancy, and social influence) and faculty members’ behavioral intention to use flipped classrooms: performance expectancy and intention ($\beta = -0.04, p = .77$), effort expectancy and intention ($\beta = 0.03, p = .83$), and social influence and intention ($\beta = -0.08, p = .34$).

Table 20

Collinearity Statistics for the Predictors

<table>
<thead>
<tr>
<th>Effect</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE</td>
</tr>
<tr>
<td>(Constant)</td>
<td>0.94</td>
<td>0.44</td>
</tr>
<tr>
<td>PE</td>
<td>0.45</td>
<td>0.11</td>
</tr>
<tr>
<td>EE</td>
<td>0.20</td>
<td>0.11</td>
</tr>
<tr>
<td>SI</td>
<td>0.16</td>
<td>0.09</td>
</tr>
<tr>
<td>Gender</td>
<td>0.05</td>
<td>0.09</td>
</tr>
<tr>
<td>PE x Gender</td>
<td>-0.04</td>
<td>0.12</td>
</tr>
<tr>
<td>EE x Gender</td>
<td>0.03</td>
<td>0.12</td>
</tr>
<tr>
<td>SI x Gender</td>
<td>-0.09</td>
<td>0.10</td>
</tr>
</tbody>
</table>
Research Question 3

Independent Samples T Test and Results

To answer RQ3, an independent samples t test was conducted to identify significant differences between female and male faculty members’ mean responses for behavioral intention to use flipped classrooms. The Levene’s test result for the equality of variances was not statistically significant ($p = .96$), allowing for an assumption of equal variances. The results from the t test (Table 21) show no statistically significant gender difference in mean scores: $t(195) = 0.75$, $p = .45$. Table 22 shows descriptive statistics on this outcome for male ($M=4.05$) and female ($M=3.96$) participants.

Table 21

<table>
<thead>
<tr>
<th>Behavioral Intention</th>
<th>Levene’s Test for Equality of Variances</th>
<th>T test for Equality of Means</th>
<th>95% Confidence Interval of the Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F  p      t    df  p</td>
<td>Mean Difference</td>
<td>Std. Error Difference</td>
</tr>
<tr>
<td>Equal variances assumed</td>
<td>0.00  0.96  0.75  195  0.45</td>
<td>0.09</td>
<td>0.11</td>
</tr>
<tr>
<td>Equal variances not assumed</td>
<td>0.75  193.39  0.45</td>
<td>0.09</td>
<td>0.11</td>
</tr>
</tbody>
</table>
Table 22
Mean Scores of Behavioral Intention by Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
<th>Std. Error of Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>95</td>
<td>4.05</td>
<td>0.80</td>
<td>0.08</td>
</tr>
<tr>
<td>Female</td>
<td>102</td>
<td>3.96</td>
<td>0.79</td>
<td>0.08</td>
</tr>
<tr>
<td>Total</td>
<td>197</td>
<td>4.01</td>
<td>0.79</td>
<td>0.06</td>
</tr>
</tbody>
</table>

Normality

Both the Kolmogorov-Smirnov and Shapiro-Wilk tests were conducted to check the normality of model residuals. Both tests were statistically significant (each p < .001; see Table 23), indicating that the model residuals were not normally distributed. However, the relatively large sample size mitigated this concern, based on the central limit theorem. The histogram of residuals is shown in Figure 6.

Table 23
Tests of Normality

<table>
<thead>
<tr>
<th></th>
<th>Kolmogorov-Smirnov</th>
<th>Shapiro-Wilk</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Statistic df p</td>
<td>Statistic df p</td>
</tr>
<tr>
<td>Standardized Residual</td>
<td>0.21 197 &lt;.001</td>
<td>0.89 197 &lt;.001</td>
</tr>
</tbody>
</table>
This chapter presented the data analysis and findings for the three research questions. Analysis of multiple regression was conducted to address the first research question: “Do performance expectancy, effort expectancy, and social influence predict faculty members’ behavioral intention to use flipped classrooms?” The result showed that the two predictors PE and EE significantly predicted faculty members’ behavioral intention.

Multiple regression was also used to address the second research question: “Does gender moderate the relationships between performance expectancy, effort expectancy, social influence, and faculty members’ behavioral intention to use flipped classrooms?” Results showed there was no statistically significant moderating effect of gender on the relationship between PE, EE, and SI and faculty members’ behavioral intention to use flipped classrooms.
Independent samples t test was conducted to answer the third research question: “Do male and female faculty members differ in their behavioral intention to use flipped classrooms?” The t-test results showed no statistically significant differences between male and female faculty members’ behavioral intention toward using flipped classrooms. Chapter 5 includes the discussion of the results in detail with conclusions and recommendations for future research.
CHAPTER 5

DISCUSSION

This descriptive, quantitative study examined factors related to behavioral intention toward the use of flipped learning among faculty at Taif University in Saudi Arabia based on Venkatesh et al.’s (2003) UTAUT model as the framework. This study further assessed the presence of a gender difference between male and female faculty members. This study used the UTAUT constructs to establish factors that influence the faculty’s behavioral intentions to adopt flipped classrooms. A modified version of the UTAUT survey was used to collect data and consisted of two sections. The first section asked participants for their demographic information, and the second section included Likert items pertaining to faculty members’ behavioral intention to use flipped classrooms. This chapter discusses the study findings in relation to studies as presented in Chapter 2 and the results of the study presented in Chapter 4. Then it discusses the implication of the results, limitations, recommendations for future research, and lastly, a chapter summary. The following research questions guided the study:

RQ1. Do performance expectancy, effort expectancy, and social influence predict faculty members’ behavioral intention to use flipped classrooms?

H1: Performance expectancy positively predicts faculty members’ behavioral intention toward using flipped classrooms.

H2: Effort expectancy positively predicts faculty members’ behavioral intention toward using flipped classrooms.
H3: Social influence positively predicts faculty members’ behavioral intention toward using flipped classrooms.

RQ2. Does gender moderate the relationships between performance expectancy, effort expectancy, social influence, and faculty members’ behavioral intention to use flipped classrooms?

RQ3. Do male and female faculty members differ in their behavioral intention to use flipped classrooms?

Discussion of Findings

Research Question 1

Do performance expectancy, effort expectancy, and social influence predict faculty members’ behavioral intention to use flipped classrooms?

The first research question examined faculty members’ behavioral intention to use flipped classrooms as pedagogy at Taif University in Saudi Arabia. Multiple regression analysis was carried out for all hypotheses in this question to determine whether faculty members’ behavioral intention to use the flipped classroom can be predicted by performance expectancy, social influence, and effort expectancy.

H1: Performance expectancy positively predicts faculty members’ behavioral intention toward using flipped classrooms.

Performance expectancy is the extent to which technology will help users perform their jobs better (Venkatesh et al., 2003). Results from Hypothesis 1 indicated that performance expectancy was a significant predictor of the behavioral intention of faculty; therefore, this hypothesis was supported. These findings are consistent with those of the original UTAUT
(Venkatesh et al., 2003) and other studies (Anderson et al., 2006; Gruzd et al., 2012; Lewis et al., 2013; Mtebe & Raisamo, 2014; Oye et al., 2014) and thus confirmed performance expectancy as a significant factor toward intention to use technology in education. The results obtained from this study indicated the performance expectancy determinant was the strongest predictor of behavioral intention.

Anderson et al. (2006) also found that performance expectancy was the primary driver of technology acceptance when applied in a business college. Faculty members can benefit from using the technology system when they believe it is beneficial to them. This means that if the advantages and benefits of technology systems are demonstrated for and promoted to the faculty in an interactive manner, flipped classroom acceptance and use would most likely increase. The current study suggests that faculty members find flipped classroom integration in their classes to be one of their job requirements in the form of performance expectancy. This indicates that faculty expectancy for using flipped classrooms might be increased by focusing on the usefulness of flipped classrooms.

H2: Effort expectancy positively predicts faculty members’ behavioral intention toward using flipped classrooms.

Effort expectancy is the extent to which the user believes technology is easy to use (Venkatesh et al., 2003). Results from testing Hypothesis 2 indicated that effort expectancy was a statistically significant predictor of faculty members’ behavioral intention; therefore, this hypothesis was supported. The findings suggested effort expectancy has a positive influence on the behavioral intention of faculty to accept and use technology as an important predictor, which is in agreement with previous research (Cheung et al., 2016; Edwards et al., 2014; Hussin et al.,
These findings further suggest that faculty members who find flipped classrooms easy and straightforward to use are more likely to adopt flipped classrooms as pedagogy in higher education. Kocaleva et al. (2015) used the UTAUT model to understand teaching staff’s acceptance and use of an e-learning system. The findings revealed that effort expectancy had a powerful effect on teaching staff’s intention to use the e-learning system, which means the respondents’ interaction with the system for e-learning was clear and understandable. The current findings also support Kocaleva et al. (2015), who showed effort expectancy had the strongest effect on intention to use the e-learning system.

In contrast, the results of this study regarding effort expectancy contradicted previous research conducted by Anderson et al. (2006), Gruzd et al. (2012), and Radovan and Kristl (2017). According to Gruzd et al. (2012), effort expectancy was not a significant predictor of instructors’ intention to adopt and use social media. Gruzd et al. found that the reason for not adopting potentially useful social networking is a lack of familiarity with the benefits of those tools, as well as a concern that learning how to use those tools could prove challenging. Another study by Raman et al. (2014) investigated the factors that influenced teachers’ use of SMART Boards in Malaysia through applying the UTAUT model. The researchers found that effort expectancy did not have a significant effect on behavioral intention because teachers consider the interactive whiteboard difficult to use and operate. This contradicts the findings of the present study. An explanation for this contradiction might be that the current study used flipped classrooms, whereas other studies used different learning tools such as SMART Boards or social networks. Another possible explanation of this contradiction is the current increase in faculty members’ effort expectancy to use flipped classrooms at Taif University, where efforts have been
made to provide computers, internet in educational facilities, and IT support. Therefore, previous studies' findings emphasized the importance of designing the educational content that meets its target audience in terms of usability and availability of tools to ensure the use.

H3: Social influence positively predicts faculty members’ behavioral intention toward using flipped classrooms.

Social influence is the extent to which others influence a users’ intention to use a system. Results from Hypothesis 3 indicated that faculty members’ social influence did not predict behavioral intention, which is consistent with previous studies by Anderson et al., (2006), Mtebe and Raisamo (2014) and Padhi (2018). Venkatesh et al. (2003) stated that “the role of social influence in technology acceptance decisions is complex and subject to a wide range of contingent influences” (p. 452). Venkatesh and Davis (2000) found that the effect of social influence is more significant in mandatory situations and has less influence in a voluntary setting. In a mandatory context, there is a direct effect between social influence and behavioral intention, but in a voluntary context, the relationship between social influence and behavioral intention is not direct. An explanation could lie in the divide between administrators and classroom teachers (Thomas et al., 2014). Alshehri (2012) argued that instructors might view adoption as a personal issue that would not attract school support. This argument seems consistent with some participants’ concerns about the lack of planning time and hectic workloads.

These arguments can explain the result because the flipped classroom use was voluntary in the current research setting. In a social environment, an individual decision to adopt technology may be pressured and changed by the group to which he or she belongs, and the
change can be driven by the desire to conform to the behaviors to utilize technology to be seen as more skillful in technology use (Venkantesh et al., 2003). In terms of higher education where faculty are expected to conform to the social influence of the college to which they belong, it is likely faculty may be pressured to adopt a given technology simply because they are expected to conform to fit in the society. The role of social influences should not be discounted. Taif University ought to develop strategies to encourage colleagues to communicate with and recommend lecturers to use flipped classrooms in the academic environment.

**Research Question 2**

Does gender moderate the relationships between performance expectancy, effort expectancy, social influence, and faculty members’ behavioral intention to use flipped classrooms?

This study sought to understand the influence of gender as a moderator of flipped classroom use. Multiple linear regression was carried out to test if gender had a significant moderation effect on the relationship between performance expectancy, social influence, effort expectancy, and faculty members’ behavioral intention to use flipped classrooms in Saudi Arabia. Dong and Zhang (2011) argued gender moderators play a significant role in affecting users’ intention to use technology. The results of the current study corroborated the findings of researchers such as Khechine et al. (2014), Khechine and Lakhal (2018), Khan el al. (2017), et al. (2007), and Birch and Irvine (2009) in that there was no significant moderating effect of gender. Khechine et al. (2014) examined the effect of gender and age to explain the relationships between the predictors and intention to use and the students’ acceptance of using online learning. The results showed that gender did not moderate the relationship between the independent construct (performance expectancy and social influence and effort expectancy) and the
dependent variables in the intention to use online learning. Also, the finding of the current study support Birch and Irvine (2009), who examined performance expectancy, social influence, effort expectancy, and behavioral intention with the moderator of gender to investigate the factors that influence preservice teachers’ acceptance of information and communication technology (ICT) integration in the classroom. The study found no moderating effect of gender.

Unlike other study results (Hussin et al., 2011; Lewis et al., 2013; Yusof et al., 2017) the first study that used the UTAUT model in a work context (Venkatesh et al., 2003) showed some moderating effects of gender. Yusof, Qazi, and Inayat (2017) identified that gender was a critical moderating variable for performance expectancy and effort expectancy, but social influence was not used in their study. Similarly, the study by Hussin, Jaafar, and Downe (2011) stated that gender significantly moderated the relationship between effort expectancy, social influence, and behavioral intention; however, gender failed to have any influence on the relationship between performance expectancy and behavioral intention. Lewis, Fretwell, Ryan, and Parham (2013) also examined the moderating effect of gender on the adoption of the new technology. Their finding showed gender moderated the effect of the relationship between performance expectancy, effort expectancy, social influence, and behavioral intention to use technologies, but the environment in which the experiment was carried out could explain this difference in the results. It may be that training and support for new and existing technologies need to be available to ensure the adoption of technology and that immediate supervisors and administration need to be on board with the process. However, the previous studies were carried out at different times, while the current research study benefited from the widespread expansion in the use of technology making it accessible to every individual, especially in the educational field, which
may explain why gender did not play a moderating role. The sample was almost equally split between males and females.

**Research Question 3**

Do male and female faculty members differ in their behavioral intention to use flipped classrooms?

Mahdi and Al-Dera (2013) declared that the gender perspective was an important factor in educational research. In this context and regarding gender differences, findings from the current study showed no statistically significant differences between male and female faculty members’ behavioral intention toward using flipped classrooms. This finding disagreed with other studies that show a difference between males and females (Al-Hunaiyyan et al., 2017; Alwraikat & Al-Tokhaim, 2014; Asiri et al., 2012; Mahdi & Al-Dera, 2013). For example, in studies investigating gender differences, Mahdi and Al-Dera (2013) found that the number of male faculty using technology was significantly higher than the female faculty because of a lack of ICT training and support for female faculty who participated in the study. Furthermore, Alwraikat and Al-Tokhaim (2014) found that male instructors were better than females in using technology. Faculty members who held a positive attitude toward using m-learning felt more comfortable than those using traditional learning. In other words, the factors needed to enhance the use of technology in the classroom were knowledge and comfort with technology (Alwraikat & Al-Tokhaim, 2014). According to Eagly and Wood (1991), the explanation of gender differences in behavior refers to gender roles predicting behaviors for males and females. Those differences may be responsible for the practical gender effect in the technology acceptance and use.
The findings of the current study regarding faculty members’ attitude toward using flipped classrooms aligns with some of the previous studies that show no difference between males and females. The current finding agreed with a study by Ahadiat (2008), who examined behavioral intentions between female and male faculty toward technology use. The results revealed no significant difference in the use of technology with regard to gender. The study by Wichadee (2015) examined faculty attitude toward using LMS and found difference by gender was not significant among faculty members in their attitude toward LMS. However, the study by Manca and Raineri (2017) found that both genders preferred to use technology but differed in the tools and methods used. Moreover, they found that gender differences exist in how male and female faculty participated in and used Twitter.

Implications

The specifics of the research problem addressed in this study were to identify the factors that influence faculty members’ behavioral intentions to use flipped classrooms and the learners’ gender differences at Taif University in Saudi Arabia. The factors examined included the three core determinants of technology adoption and acceptance proposed by Venkatesh et al. (2003) in the UTAUT model. It also examined how gender moderated the relationships between 1) performance expectancy, effort expectancy, social influence, and 2) faculty members’ behavioral intentions to use flipped classrooms. The findings of the current study might be relevant to the Ministry of Higher Education in Saudi Arabia and provide them with potential determinants that might influence their faculty members’ behavioral intentions to use the flipped classroom pedagogy to improve the learning system.
The results of this study showed that faculty members perceived performance expectancy and effort expectancy were important factors when using the flipped classroom pedagogy development. A strong correlation exists between performance expectancy and faculty members’ behavioral intentions to adopt instructional technology, such as flipped classrooms. An implication of this could be that faculty are ready to adopt and use the flipped classroom as long as such a pedagogy helps them improve the way they teach and to accomplish their tasks quickly. Thus, decision makers at Taif University need to utilize their faculty members’ inclinations, which will improve the way they teach and students’ academic achievement.

Effort expectancy also had a significant relationship with faculty members' behavioral intentions to adopt flipped classrooms as a teaching pedagogy in higher education. This study revealed that faculty are strongly persuaded to use flipped classrooms because they are easier and have evident usefulness to faculty and their students. For example, the lack of use of flipped classrooms reflects the extent of their difficulty and impediment for use by faculty members. This also implies that decision makers at Taif University should emphasize training and support offered for new and existing technologies that need to be available to ensure the adoption of technology.

Social influence had the weakest correlation with the faculty’s behavioral intention. According to these results, this perception could be changed if Taif University has strong influence coming from administrative circles such as deans of departments in order to support faculty’s behavioral intention to accept flipped classrooms. This is also confirmed by the answers to the open-ended question. Decision makers at Taif University should encourage the faculty members to use flipped classrooms and perceive its benefits. This can be achieved through support from college administrators and managers; they play an essential role in this because
social influence emerged as the strongest underlying factor according to the results of the study. In summary, college administrators and managers need to focus on the role of social groups and teams to implement flipped classrooms in order to enhance their beliefs and develop positive attitudes to accept and use flipped classrooms.

Universities in Saudi Arabia need to be aware that gender did not affect the faculty members’ intention to use flipped classrooms. This implication is important because single-gender education is the formal educational structure in Saudi Arabia. Based on the results of this study, future utilization of flipped classrooms and the challenges of onboarding that new approach with faculty members will not be different because of gender. Despite the current norms of the Saudi educational system, gender will not be a factor when making decisions related to the utilization of new technology in the future. If decision makers in higher education in Saudi Arabia want to use the flipped classroom in all levels of higher education equally, they can benefit from these findings.

Limitations of the Study and Future Research Suggestions

1. The study population was limited solely to Saudi Arabia. It is recommended that future researchers expand the study population to include different parts of the Middle East and North Africa (MENA) region.

2. Another limitation is that this study used survey data, which could result in biased responses to certain items due to personal preferences or social and professional backgrounds. It is recommended that future studies also use qualitative techniques such as interviews and focus groups to deepen exploration of the influence of the proposed acceptance constructs in the study.
It will enable educators to develop better strategies and systems to help individual instructors participate in the teaching-learning experience.

3. This study focused on the faculty members’ attitudes only and did not consider the students’ attitudes. Future research needs to take into account students’ attitudes to investigate the determinants that predict college students’ intention to participate in flipped classrooms at Taif University, Saudi Arabia, using Venkatesh et al.’s (2003) UTAUT model as the framework.

4. This study also excluded other potential moderating factors of the UTAUT model, namely age, experience, and voluntariness, which were part of the original study by Venkatesh et al. (2003). Future researchers who may want to expand this study should consider including the other moderators to see if they influence performance expectancy’s, effort expectancy’s, and social influence’s effects on the behavioral intention to adopt flipped classrooms.

Chapter Summary

The aim of this study was to investigate the factors that predict the intention of faculty members to use flipped classrooms at Taif University in Saudi Arabia based on the Unified Theory of Acceptance and Use of Technology (UTAUT). This study examined the influence of the UTAUT model’s three predictors (performance expectancy, effort expectancy, and social influence) on faculty members’ behavioral intention. In addition, this research study further examined the gender differences between male and female faculty members’ intention to use flipped classrooms at Taif University in Saudi Arabia. This chapter discussed the findings of this study in relation to the existing literature. Also, the chapter presented the limitations and delimitations of the study as well as highlighted the potential implications of the major findings and suggestions for future research.
REFERENCES


Bergmann, J., & Sams, A. (2012). *Flip your classroom: Reach every student in every class every day*. Eugene, OR: International Society for Technology in Education.


Mtebe, J. S., & Raisamo, R. (2014). Challenges and instructors’ intention to adopt and use open educational resources in higher education in Tanzania. *International Review of Research in Open and Distributed Learning, 15*(1).


APPENDIX A

G*POWER ANALYSIS SCREENSHOT OF THE SAMPLE SIZE
Central and noncentral distributions

Critical F = 2.1999

Test family: F tests
Statistical test: Linear multiple regression: Fixed model, R² deviation from zero

Type of power analysis: A priori: Compute required sample size - given α, power, and effect size

Input parameters:
- Effect size $f^2$: 0.15
- $\alpha$ err prob: 0.05
- Power (1-β err prob): 0.8
- Number of predictors: 6

Output parameters:
- Noncentrality parameter $\lambda$: 14.7000000
- Critical F: 2.1999052
- Numerator df: 6
- Denominator df: 91
- Total sample size: 98
- Actual power: 0.8035289

X-Y plot for a range of values: Calculate
APPENDIX B

PERMISSION FOR UTAUT SURVEY USE
Dear Davis,

Greetings and I hope this email finds you in the finest of health. My name is Abier Akiry, and I am a doctoral candidate at Northern Illinois University located in Dekalb, IL. I am writing my dissertation under the direction of my dissertation committee chaired by Dr. Ying Xie titled “Factors Influence Faculty Members’ Behavior Intentions to Use Flipped Classroom”. I am interested to use the UTAUT model and instrument from “User Acceptance of Information Technology: Toward a Unified View,” MIS Quarterly, 2003 (27: 3) to fit the context of my study.

I would appreciate if you provide me permission to use the UTAUT figure and survey instrument.

Kind regards,

Abier Akiry
Northern Illinois University
APPENDIX C

MODIFIED UTAUT INSTRUMENT
Survey

1. Your Gender
   - Male
   - Female

2. Your age ranges between:
   - Less than 25 years.
   - 26-35 years.
   - 36-45 years.
   - 46-55 years.
   - 56-65 years.
   - Above 66 years.

3. What is your teaching job title?
   - Demonstrator
   - Lecturer
   - Assistant Professor
   - Associate Professor
   - Adjunct
   - Other (Type in the box)

4. What is your academic major?
   - Administration and Home Economics
   - Administrative and Financial Sciences
   - Applied Medical Sciences
   - Art and Sciences
   - Community
   - Computer Science
   - Dentistry
   - Education
   - Education and Arts
   - Engineering
   - Humanities Languages and Translation
   - Medicine and Surgery
   - Nursing
   - Pharmacy
   - Sciences
   - Sciences and Arts
   - Shariah and Fundamentals of Religion
• Other: ..........................

5. Do you use multimedia technologies (e.g. PowerPoint, Keynote, Prezi, YouTube, Khan Academy, Smartboard, or others) in your courses? Yes No

6. Do you use Internet-based technologies (e.g. Dropbox, Google Drive, Onedrive, Discussion Board, Skype, Google Chat, Zoom) in your courses? Yes No

7. Do you use student-centered learning activities (e.g. discussions, small group work, project-based learning, case study) in your classroom? Yes No

8. Have you used a flipped classroom instructional model before? Yes No

9. How often have you used flipped classroom instructional model in your courses?

• Never
• Rarely
• Sometime
• Frequently
• Always

Please rate each of the following statements on the following 1-5 scale with 1 being “strongly disagree” and 5 being “strongly agree” to indicate your level of agreement about using the flipped classroom instructional model in teaching:

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance expectancy:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. I find the flipped classroom for teaching purposes useful in my job.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Using the flipped classroom for teaching purposes enables me to accomplish tasks more quickly.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Using the flipped classroom for teaching purposes increases my productivity.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effort expectancy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. It would be easy for me to become skillful at using the</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flipped Classroom for Teaching Purposes</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>----------------------------------------</td>
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</tr>
<tr>
<td>14. I would find the flipped classroom for teaching purposes easy to use.</td>
<td></td>
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</tr>
<tr>
<td>15. Learning to operate the flipped classroom for teaching purposes is easy for me.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Social Influence</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. People who influence my behavior think that I should use the flipped classroom for teaching purposes.</td>
</tr>
<tr>
<td>17. People who are important to me think that I should use the flipped classroom for teaching purposes.</td>
</tr>
<tr>
<td>18. Other faculty on the university has been helpful in the use of the flipped classroom for teaching purposes.</td>
</tr>
<tr>
<td>19. In general, Taif University has supported the use of the flipped classroom for teaching purposes.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Behavioral Intention to Use the System</th>
</tr>
</thead>
<tbody>
<tr>
<td>20. I intend to use the flipped classroom in the future.</td>
</tr>
<tr>
<td>21. I predict I would use the flipped classroom in the future.</td>
</tr>
<tr>
<td>22. I plan to use the flipped classroom in the future.</td>
</tr>
</tbody>
</table>

Open-ended questions:

23. Please feel free to share any concerns, suggestions, or comments about a flipped classroom:
APPENDIX D

CONSENT FORM
I agree to participate in the study titled (Factors Influencing Faculty Members’ Behavioral Intentions to Use Flipped Classroom in Saudi Arabia) by Abier Akiry, a doctoral student at Northern Illinois University.

I have been informed that this study attempts to examine faculty’s behavioral intention toward using flipped classrooms. I understand that if I agree to participate in this study, I will be asked to answer all of the survey questions. However, my participating is voluntary and may be withdrawn at any time without penalty or prejudice.

Shall I have any question or concern, I will contact Abier Akiry. Phone# +1 (302) 401-9884 or email: [redacted]. Faculty advisor: Ying Xie. Email: [redacted].

I understand that if I need more information regarding my rights as a research subject, I may contact the Office of Research Compliance in Northern Illinois University at +1 (815) 753-8588.

I understand that the intended benefits of this study include obtaining information about faculty’s acceptance of using flipped classrooms as pedagogy to support teaching presence in classroom environment among Taif University’s faculty.

I have been informed that there are no potential risks and/or discomforts I could experience during my participating in this study. I understand that all information gathered in this study will be kept anonymous and saved in a password protected file that only the researcher has access to and will only share group level data in any reports or presentations.

I understand that Northern Illinois University does not provide compensation, or carry insurance to cover injury or illness occurred as a result of participating in university sponsored research projects.

I understand that my consent to participate in this study does not constitute a waiver of any legal rights or redress I might have as a result of my participation, and I acknowledge that I have received a copy of this consent form.

I understand that, by clicking the “Agree” button below, I am providing my informed consent to participate in this study.
Exempt Determination

17-Jul-2019
Abier Akiry (01735232)
Educational Technology, Research and Assessment

RE: Protocol # HS20-0014 "Factors influencing faculty members' behavioral intentions to use flipped classrooms (FC) in Saudi Arabia"

Dear Abier Akiry,

Your application for institutional review of research involving human subjects was reviewed by Institutional Review Board #1 on 17-Jul-2019 and it was determined that it meets the criteria for exemption 2.

Although this research is exempt, you have responsibilities for the ethical conduct of the research and must comply with the following:

Amendments: You are responsible for reporting any amendments or changes to your research protocol that may affect the determination of exemption and/or the specific category. This may result in your research no longer being eligible for the exemption that has been granted.

Record Keeping: You are responsible for maintaining a copy of all research related records in a secure location, in the event future verification is necessary. At a minimum these documents include: the research protocol, all questionnaires, survey instruments, interview questions and/or data collection instruments associated with this research protocol, recruiting or advertising materials, any consent forms or information sheets given to participants, all correspondence to or from the IRB, and any other pertinent documents.

Please include the protocol number (HS20-0014) on any documents or correspondence sent to the IRB about this study.

If you have questions or need additional information, please contact the Office of Research Compliance, Integrity, and Safety at 815-753-8588.