PREDICTORS OF MOBILE LEARNING ADOPTION AMONG UNDERGRADUATE NURSING FACULTY IN A SOUTHEASTERN STATE

by

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A DISSERTATION

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ABSTRACT

This study explored the predictors related to mobile learning (m-learning) adoption among undergraduate nursing faculty in a southeastern state. Venkatesh's (2012) revised version of the Unified Theory of Acceptance and Use of Technology (UTAUT2) was used as the theoretical framework.

Three questions were used to guide this study: (1) How are undergraduate nursing faculty using mobile device technologies?; (2) Do performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), hedonic motivation (HM), price value (PV), habit (HB), and behavioral intention (BI) impact undergraduate nursing faculty adoption of m-learning?; and (3) What differences do gender, age, education level, and type of nursing program have on undergraduate nursing faculty behavioral intention (BI) to adopt m-learning?

An exploratory quantitative survey research design was used. A total of 120 responses were obtained from a one-time deployment of the *Modified UTAUT2 for Assessment of m-Learning Adoption* survey through Qualtrics. A hierarchical multiple regression analysis was used to examine how PE, EE, SI, FC, HM, PV, and HB impacted BI of undergraduate nursing faculty toward the adoption of m-learning. Both one-way ANOVA and three-way ANOVA were performed to examine if a relationship existed between BI and age, education level, and type of nursing program.

Findings from the analysis revealed that device ownership and use of these devices are high. They also showed that nursing faculty report using their mobile devices for learning purposes and indicated that the activity they perform most is information seeking. Furthermore, the results revealed that six (EE, FC, PE, SI, HM, and HB) out of the seven UTAUT2 variables had a statistically significant impact on BI to adopt m-learning. Moreover, the results demonstrated that there were no significant relationships between undergraduate nursing faculty's BI and their age, education level, and type of nursing program.

DEDICATION

This dissertation work is dedicated to my supportive and loving family. My wife, Ashlynn Forehand, has supported me through this endeavor by generously providing encouragement and sacrificing time. A doctoral program is no easy task. Many others can attest to the sacrifices that are required to conquer such a feat. My wife has stood by my side not only through this doctoral journey, but through all of my prior educational work, including a doctorate of nursing practice program, a master's of nursing program, and a bachelor's of nursing program.

I also want to dedicate this body of work to my three children, Mason Forehand (12), Troy Forehand (10), and Caroline Forehand (7). These three represent the world to my wife and me. Each, in their own unique way, has always kept me on my toes. Through all of my doctoral work, they have shared in the sacrifice of time and offered support for daddy's need to complete school work. I hope that at the end of this process they will understand the importance of hard work and dedication. I equally hope that they find what they love to do as they continue to grow and pursue their individual dreams. My goal is be supportive of each of them.

Finally, I want to thank my parents, Donnie and Lana Forehand, for all they have done for me during my life. I certainly would not be in this position had it not been for them. They have always impressed upon me the importance of an education and working hard to achieve one's best.

LIST OF ABBREVIATIONS AND SYMBOLS

a	Cronbach's alpha
ADN	Associate Degree in Nursing
ASN	Associate of Science in Nursing Degree
β	Probability of making a Type II error
BI	Behavioral Intention
BSN	Bachelor of Science in Nursing Degree
df	Degrees of Freedom
DNP	Doctor of Nursing Practice Degree
EE	Effort Expectancy
F	Fisher's *F* ratio
f^2	Effect Size Measure for Multiple Regression
FC	Facilitating Conditions
HB	Habit
HM	Hedonic Motivation
H_o	Null Hypothesis
m-learning	Mobile Learning
LCL	Lower Confidence Limit
M	Mean
MP3	MPEG Layer-3 Audio Player
MP4	MPEG Layer-4 Audio Player

MSN	Master of Science in Nursing Degree
N	Population Size
n	Sample Size
p	Probability Value
PE	Performance Expectancy
PhD	Doctor of Philosophy Degree
PV	Price Value
R^2	Coefficient of Determination
RN	Registered Nurse
RN to BSN	RN Mobility
SD	Standard Deviation
SE	Standard Error
SI	Social Influence
t	Computed value of *t* test
UCL	Upper Confidence Limit
UTAUT	Unified Theory of Acceptance and Use of Technology
UTAUT2	Revised Unified Theory of Acceptance and Use of Technology
<	Less than
>	More than
=	Equal to

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CHAPTER I:

INTRODUCTION

Over the past 15 years, there has been an explosion in the growth of technology and functionality among mobile devices. Devices like smart phones, tablets, e-readers, net books, and laptops are changing the way individuals are communicating and working. Characteristics like device size, applications, improved functions, and characteristics such as instant on and instant access are offering users endless connectivity (Zayim & Ozel, 2015). This upsurge in mobile technology has also dramatically altered the way that people interact with their personal devices. Mobile learning, often referred to as m-learning, is a quickly evolving trend in the area of education, particularly in higher education due to the high rate of mobile device ownership.

M-learning builds upon the devices' characteristics, which include spontaneity, informality, context, portability, ubiquity, pervasion, and personality (Ishtaiwa, Khaled, & Sukmak, 2015). According to Lan and Sie (2010) m-learning can be defined as a type of learning model that allows learners to obtain learning materials anywhere and anytime using mobile technology and the Internet. M-learning works from the premise that learners are on the go, free from the boundaries of a physical location. Mobile learners also tend to initiate activities of learning and prefer to have self-control of educational methods and outcomes (Zeng & Luyegu, 2012). Additionally, mobile learners tend to thrive on the ability to engage with their surroundings in order to create "impromptu sites of learning" (Sharples, Taylor, & Vavoula, 2005, p. 3).

Statement of the Problem

M-learning research has been conducted in elementary and secondary education settings quite extensively; however, there are relatively fewer studies in higher education (Costabile et al., 2008; Hwang & Chang, 2011; Shih, Chuang, & Hwang, 2010). To an even lesser extent, research is lacking regarding m-learning in nursing education.

Few educators would dispute the effect that mobile technology and mobile devices have had on society. These portable and wireless technology devices have resulted in radical changes in social and economic lifestyles. Mobile devices are literally reshaping users' daily lives (Osman, El-Hussein, & Cronje, 2010). For example, mobile device users are provided with instant access to an endless supply of information and resources via apps and/or the Internet. Mobiles devices also afford users with tools for instant communication and collaboration through text messaging apps, emails, and video chats (Computer Industry Almanac, 2017). It is important for nurse educators to realize this constantly evolving trend and to assist students in preparing to become proficient in the use of mobile technology (Raman, 2015). To date, current research in nursing education has focused on the use of mobile technology in the clinical setting, and little has been done to explore the impact that mobile devices can have in the classroom (Raman, 2015). Furthermore, research has not fully explored the faculty perspective on the adoption and use of mobile devices for m-learning in nursing education.

Statement of Purpose

The purpose of this study was to explore variables related to m-learning adoption among undergraduate nursing faculty in a southeastern state. Nurse educators need to begin to consider the implications that mobile devices and m-learning can have on the present day teaching and learning environment (Osman, El-Hussein, & Cronje, 2010). As the use of mobile devices continues to become an evolving trend in education and healthcare, it is important for nurse educators to understand the educational benefits that can be afforded by mobile technology. Thus, it is important to assess variables of technology acceptance and behavioral intention to use mobile technology among undergraduate nursing faculty.

Significance of the Problem

Many national nursing organizations and governing bodies in nursing education are strongly driving curriculum recommendations to embrace technology; not to mention the dynamic, complex, and technology rich healthcare environment that has placed a greater emphasis on the use of technology. Technology has been demonstrated to assist nurses in providing safe and effective patient care. Organizations such as the Institute of Medicine (IOM) released its landmark report in 2011, *The Future of Nursing: Leading Change, Advancing Health* which, proposed recommendations for action-orientated goals for the future of nursing. One goal of the IOM report was to reinforce the use of technology and technological practices by nursing faculty in the nursing curriculum to stay abreast of the continuously evolving healthcare environment. Additionally, the Affordable Care Act of 2010 emphasized the use and importance of technology in healthcare. Furthermore, the National Council of State Boards of Nursing (NCSBN) has developed a policy statement on innovations in nursing education. According to the NCSBN (2009), the purpose of the policy is to

> (1) foster innovative models of nursing education to address the changing needs in health care; (2) assure that innovative approaches are conducted in a manner consistent with the Board’s role of protecting the public; and (3) assure that innovative approaches conform to the quality outcome standards core education criteria established by the Board.

The National League for Nursing (NLN) has also issued a working document that outlines a vision for the changing faculty role. The document recognized the need for faculty to pursue excellence in teaching using emerging technologies in order to advance the health of the nation.

Educators must “reframe how nursing students are taught and how graduates engage with patients and their caregivers in the connected age of health care” (National League for Nursing [NLN], 2015, p. 1). Skiba (2013) mentioned that

> using technology in creative and innovative ways is about finding new ways to engage students in acquiring, managing and using nursing knowledge as well as improving the learning experience . . . to not only provide knowledge, but also promote the development of creativity, innovation and leadership skills. (p. 202)

It is important to recognize the significant role that technology is playing in healthcare; thus, an emphasis of a technology rich environment is needed in the preparation of future nurses. It is important that undergraduate nursing faculty and nursing educational programs come to develop an understanding and network of support for the engagement of mobile technology in the curriculum.

Theoretical Framework

The revised version of the Unified Theory of Acceptance and Use of Technology (UTAUT2) served as the theoretical framework for this study. The framework was developed from eight models ranging from human behavior to computer science (Chang, 2012). The purpose of the UTAUT2 is to better explain the behavioral intention and technology use of individuals (Chang, 2012; Huang & Kao, 2015). The UTAUT2 draws from the previous work by Venkatesh, Morris, Davis, and Davis in 2003 and aimed to explain an individuals’ intention to use technology and their usage behavior. The initial version of UTAUT had four key constructs—performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC)—that influence behavioral intention (BI) related to the use of a technology (Venkatesh, Thong, & Xu, 2012). UTAUT2 incorporates four additional constructs—hedonic motivation (HM), price value (PV), experience (EX), and habit (HB)—in order to improve the variance explained in BI and technology use (Chang, 2012).

Research Questions

This study aimed to enhance the understanding of the variables that affect undergraduate nursing faculty adoption of m-learning. In order to explore the predictors for the acceptance of m-learning among undergraduate nursing faculty in a southeastern state the following three research questions were used:

1. How are undergraduate nursing faculty using mobile device technologies?
2. Do performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), hedonic motivation (HM), price value (PV), habit (HB), and behavioral intention (BI) impact undergraduate nursing faculty's adoption of m-learning? and
3. What differences do gender, age, education level, and type of nursing program have on undergraduate nursing faculty behavioral intention (BI) to adopt m-learning?

Methodology

This study utilized an exploratory quantitative survey research design with a standardized online survey for data collection. Surveys were deployed using an online computerized program, Qualtrics. Participants for this study included undergraduate nurse educators employed in a southeastern state. A recruitment email was sent to all 150 members on the listserv. Members of the listserv were Deans and Program Directors of nursing programs across a single southeastern state. The email invitation requested that the survey be shared with the nursing faculty members of their respective colleges or universities who were teaching in undergraduate nursing programs.

Assumptions of the Study

It was assumed that

1. The sample of undergraduate nurse educators in a southeastern state were representative of all of undergraduate nursing faculty in the respective state;

2. Participants would respond honestly to the questions presented to them electronically; and

3. Participants were both willingly and voluntarily, under no persuasion, participating in this study.

Limitations of the Study

This study was limited to

1. Educators in the nursing profession located in a specific southeastern state who taught in undergraduate nursing programs. Due to time and resource constraints, it was unfeasible to examine nurse educators outside of a single state;

2. Due to a variety of nursing educational programs and the vast difference between how nursing programs are delivered, the researcher chose to only pursue undergraduate nursing programs; thus, it will be difficult to generalize the results from this study to all nurse educators. However, this study will shed light on how nurse educators in a southeastern state perceive m-learning and help to stimulate more technology research interest in nursing areas; and

3. The limited sample size of educators in the respective state.

Operational Definition of Terms

Mobile device: any portable technology that has computing ability, such as a smartphone or tablet.

Mobile learning (m-learning): any teaching and learning activity that can be accomplished via mobile device(s).

Technology adoption: an individual's subjective probability that he or she will perform the behavior in question.

Behavioral intention (BI): the degree to which a person has formulated conscious plans to perform or not perform some specified future behavior.

Performance expectancy (PE): The degree to which an individual believes that using mobile learning will help him or her attain gains in a job.

Effort expectancy (EE): The degree of ease associated with the use of mobile learning.

Social influence (SI): The degree to which an individual feels that it is important for others to believe he or she should use mobile learning.

Facilitating conditions (FC): The degree to which an individual believes that organizational and technical infrastructure exists to support use of mobile learning.

Hedonic motivation (HM): seen as the pleasure or fun resulting from the use of a technology.

Price value (PV): learner's cognitive tradeoff between the perceived benefits of the applications and the monetary cost for using mobile technology.

Habit (HB): the extent to which individuals tend to perform behaviors automatically because of learning.

Pre-licensure nursing students: are individuals that are seeking the entry-level position of Registered Nurse (RN) in their respective state.

Undergraduate nursing faculty: are nurse educators whom teach in 2-year and 4-year educational systems at the associate and baccalaureate level, including registered nurse to baccalaureate programs (RN to BSN programs).

Summary

The purpose of this study was to explore the variables affecting the adoption of m-learning by undergraduate nursing faculty in a southeastern state. Three research questions were used to guide this study. Chapter I consisted of definitions for key terms, study assumptions, study limitation, and a description of the significance of the research. The following chapter, Chapter II, is a review of literature that provides a foundation to understanding m-learning in higher education and more specifically nursing education. The review of literature also examined the Unified Theory of Acceptance and Use of Technology (UTAUT), the modified version of the Unified Theory of Acceptance and Use of Technology (UTAUT2), along with its constructs in detail. Chapter III provides an in-depth look at the research methodology used to guide this study. Chapter IV presents the data analysis along with findings and a discussion of those results. Finally, Chapter V provides a discussion of the conclusions, recommendations for practice, and guidance for future research.

CHAPTER II:

REVIEW OF RELATED LITERATURE

Mobile technologies are affording users a new paradigm in connectivity, communication, and collaboration. For higher education, these devices hold an enormous potential to offer content for students in both relevant and engaging ways (McQuiggan, Kosturko, McQuiggan, & Sabourin, 2015). While m-learning may still be seen in its infancy stage in higher education (Gikas & Grant, 2013), educators and researchers in other arenas are making great strides to demonstrate its relevancy and effectiveness. Several studies have researched the use of mobile devices and m-learning in many aspects of education. The purpose of this literature review is to provide a comprehensive exploration of m-learning in higher education and nursing education.

Mobile Learning

Understanding Mobile Learning

Technology advances have made mobile devices strategic tools with the capacity to deliver instruction in a way that was never anticipated when the first prototypes of these devices were designed (El-Hussein & Cronje, 2010). Use of devices like mobile phones, tablets, e-readers, and MP3/MP4 players has grown over the past several years and they are continuously taking the place of the personal computer (El-Hussein & Cronje, 2010). The revolutionary nature of mobile devices allows users to transcend the traditional boundaries of the classroom. Students no longer have to be restricted to one geographical location to communicate effectively.

Presently, there is no single, agreed upon definition for m-learning. This is in part due to the constantly evolving nature of mobile device technology along with the ambiguity of the word *mobile* (Hashemi, Azizinezhad, Najafi, & Nesari, 2011). One main feature of m-learning is the emphasis on mobility in terms of learning. For example, Traxler's (2007) definition of m-learning attempted to define and conceptualize m-learning with a focus on the mobility of learners and mobility of learning by means of mobile devices. Two important concepts thus become mobility and learning. Mobile devices are changing the very nature of formal and informal learning. Additionally, mobile devices are fundamentally altering the way learning materials can be delivered. For example, mobile devices allow educators the ability to personalize the educational experience for individual students through the use of educational apps. Also, mobile devices can expand exponentially an educator's ability to innovate the classroom with the use of cutting edge collaborative tools (Stone, 2015). According to Traxler (2007), learning is no longer delivered in "just-in-case" situations but is now deliverable in "just-in-time," "just enough," and "just-for-me" circumstances (p. 5). Fundamentally, m-learning is not concerned with just the mobile nature of devices nor learning alone, but about how society has been profoundly affected by mobile technologies as a whole. Traxler (2007) further noted the new concept of a mobile society.

Alternately, The Mobile Learning Network (MoLeNET), an advocacy group for m-learning that promotes meaningful integration of mobile devices in learning and teaching environments, provides a broadened scope in defining the term. MoLeNET envisioned m-learning as the "exploitation of ubiquitous handheld technologies, together with wireless and mobile phone networks, to facilitate, support, enhance and extend the reach of teaching and learning" (www.molenet.org.uk/). MoLeNET's definition expanded on the fact that m-learning is not bound by location, and that it is not limited to time. The mobile learner can be involved with educational materials at any time and at any location.

O'Malley et al. (2003) described m-learning as "taking place when the learner is not at a fixed, predetermined location, or when the learner takes advantage of learning opportunities offered by mobile technologies" (p. 6). Other definitions include Wood's view of m-learning as use of mobile and handheld IT devices, such as PDAs, mobile phones, laptops, and tablet PCs, in teaching and learning (Hashemi et al., 2011), whereas Colazzo, Ronchetti, Trifonova, and Molinari (2003) provided a much simpler definition of m-learning. Colazzo et al. defined m-learning as any teaching and learning activity that can be accomplished via mobile devices.

Regardless of how one defines m-learning, the use of mobile devices in education does afford both educators and learners some benefits. M-learning can augment learning experiences by placing learners in a realistic context and affords educators the ability to create both new and engaging learning environments (Vishwakarma, 2016). Benefits of mobile devices in the educational environment include, but are not limited to

Ubiquity: Learners and educators can have access to documents, course materials, and online resources 24 hours a day, 365 days a year; regardless, of their physical location (Andrews, Dyson, & Wishart, 2015; Vishwakarma, 2016);

Compatibility: Both learners and educators are situated on a level playing field. Each can have the same access to software and or hardware (Vishwakarma, 2016);

Savings: Mobile devices such as smartphones are easily replacing the need for a desktop or laptop computer. Mobile devices tend to cost less than their computer counterparts (Alharbi & Drew, 2014; Vishwakarma, 2016);

Emphasis on Learning and Teaching: Students tend to be very technology savvy and are comfortable with their own personal mobile devices; this allows greater time and resources to be devoted to learning and not overcoming equipment challenges (Vishwakarma, 2016);

Assignment Complexity: Learner assignments and projects created using technology tools tend to be more sophisticated (Vishwakarma, 2016);

Improving Instructional Quality: Incorporating the use of mobile devices in teaching and learning can make content more accessible to a larger audience of potential learners. Additionally, m-learning can also stimulate active learning to promote a more engaging environment for learners (Abachi & Muhammad, 2014); and

Inherent Technology Savviness: Current colleges and university student bodies are composed of mostly individuals from the Millennial generation (Tapscott, 1998). These students are inherently technologically savvy people (Jones, Ramanau, Cross, & Healing, 2010). These students are constantly connected with online activities and tend to function well in a high tech environment (Yeap, Ramayah, & Soto-Acosa, 2016).

From the learner's perspective, m-learning also afford students some additional benefits as well, including:

Improved Access: Mobile devices are becoming relatively inexpensive in comparison to the purchase of desktop and laptop computers. The affordability of mobile devices helps to bridge the divide for disadvantaged students (Alharbi & Drew, 2014; Vishwakerma, 2016);

Authentic Learning Needs: Mobile devices affords students constant access to learning material anytime and anywhere. Instant information access affords students the chance to access material just-in-time to augment the learning situation (Vishwakarma, 2016);

Communication: Learners can access teachers and receive instant feedback at any point. This helps to better evaluate the students and recognize content issues earlier in the learning process. Another important aspect of communication is the ability to collaborate regardless of location (Alharbi & Drew, 2014; Baran, 2014; Hashemi et al., 2011; Joan, 2013; Vishwakarma, 2016); and

Portability: Within the palm of a learner's hand, the student can access course content, online resources, applications, and wealth of other useful tools to augment learning (Baran, 2014; Vishwakarma, 2016; Yeap et al., 2016).

The Mobile Learning Environment in Higher Education

The development of innovative technologies has had a substantial effect on educational technology; it has amplified the potential of m-learning as a delivery mode in education. In terms of the educational view of m-learning, it can be described as learning by means of wireless technological devices that can be pocketed and utilized (El-Hussein & Cronje, 2010). The objective of m-learning is to provide the learner the ability to integrate learning anywhere and at any time.

The impact that mobile devices are having in today's society is profound. In fact, according to the 2015 Pew Research Center Survey on smartphone data, cellphones remain high on the list of device ownership. Approximately 92% of American adults possess some form of a mobile phone (Anderson, 2015). From 2004 through 2015, mobile phone ownership increased by 27% among Americans (Smith, 2015). Based on Cisco's Internet Business Solutions Group (IBSG) Higher Education Trends and Statistics report, 97% of United States college students own a cell phone and 79% own a mobile computer. Additionally, the report noted that 73% percent of Americans ages 18 to 29 who own cell phones use them for data and communication activities other than phone calls. Astoundingly, the availability of mobile broadband access in the United States continues to grow each year.

Researchers estimate that for two-thirds of Americans, their mobile device serves as the main entry point for accessing online information (Smith, 2015). Mobile technology is helping both students and faculty to be more productive. Mobile devices are also working to help close the digital divide in education. The digital divide refers to the gap that exists between those who have access to technology and those who do not (Education World, 2002). Mobile devices are less expensive than personal computers or laptops which affords learners the opportunities of device ownership. Therefore, increased mobile device ownership creates greater access to learning materials when they are needed (Ally & Samaka, 2013).

Utilization of mobile devices and m-learning in higher education can vary from simple applications to assist in face-to-face learning methods to more complicated uses in teaching and learning (Ferreira et al., 2013). According Patten, Sanchez, and Tangney (2006), higher education’s use of mobile devices can be classified into three categories: administrative functions, reference functions, and interactive functions. Administrative use of mobile devices by educators and students includes the use of device functions and applications related to calendars and organizational tools, using short message service (SMS) to interact with teachers and students alike, and accessing learning management system (LMS). Reference functions related to mobile devices include the use of e-books and reference materials, the ability to access course content and online resources, and the ability to access podcasts or lecture recordings. Finally, interactive functions afforded by mobile devices in higher education include activities like polling or quizzing, accessing social networks like Facebook, Snapchat, etc., and group collaboration.

The use of mobile devices in higher education brings about both benefits and opportunities for educators and students alike. Milosevic, Zivkovic, Manasijevic, and Nikolic

(2015) outlined several benefits to m-learning: 1) mobility and convenience of devices due to their light weight, 2) interactivity that facilitates quicker interactions between users, 3) collaboration is increasingly easier, 4) environmentally beneficial due to the reduction in the use of printing materials, 5) engaging via mobile devices is particularly appealing to new generations of students, 6) flexible for student and instructor use, and 7) increased accessibility as technology continues to serve as assistive devices for students with disabilities. Furthermore, m-learning creates both a personal and portable environment for learners (Joan, 2013). Some of the frequently cited disadvantages related to m-learning include the small screen size, limited space as it pertains to key placement, reduced internet speed, short battery life of devices (Ibrahim, Salisu, Popoola, & Ibrahim, 2014), differences among operating systems, costly device prices, and the constantly evolving mobile device market (Ally & Samaka, 2013).

Regardless, research supports the effectiveness of learning by m-learning. Vishwakarma (2016) noted that students retain more learning material when using m-learning based material in addition to traditional class-based learning. M-learning also encourages motivation, knowledge sharing, and knowledge gathering. Mobile technology also creates an opportunity to bridge formal and informal learning experiences. For example, learning is no longer limited to the time students spend in classrooms, but now learning can occur outside of the four walls of the classroom (Joan, 2013). The difference between formal and informal learning is based upon the location or setting in which the learning episode occurs. In formal learning, a learner is exposed to new content or training in a formal setting such as a classroom or laboratory space, while informal learning occurs in a non-organized space such as at home or in the workplace (Khaddage, Muller, & Flintoff, 2016). M-learning has the potential to afford learners timely access to information and course content regardless of their physical location. This provides the ability for seamless learning occurring at any location, such as in the classroom or outside of it (Chan, et al., 2006).

The Mobile Learning Environment in Nursing

In today's "information society," educators are taking advantage of mobile technology that can not only enhance, but also improve, the teaching and learning process (Vishwakarma, 2016). According to Zydney and Warner (2016), mobile technology such as smartphones affords educators the ability to teach without the burden of place and time restrictions; thus enabling learning to continue beyond the confinements of a classroom and in a natural or informal setting. This is particularly important in the discipline of healthcare and particularly nursing.

Clinical training is a crucial component of nursing education. Students are not solely restricted to the traditional four walls of a classroom for nursing education. Oftentimes, teaching and learning occur not only in the classroom, but also in the clinical lab, simulation lab, or in direct care facilities like acute care hospitals and clinics. For nursing students, the need to have a wide range of reference materials readily available is critical to the learning process. Nursing students are required to carry a variety of course textbooks, resources, and reference manuals. For example, students regularly transport course textbooks, drug reference books, laboratory reference books, and diagnostic and care planning texts. The amount of reference materials needed can be quite burdensome and overwhelming for any student. Mobile devices are situated well to serve the nursing student's needs. All of the required textbooks and reference manuals can easily be purchased in a digital format allowing students access to all this information in any location and at any time in the palm of their hand.

Mobile devices easily aid students for just-in-time learning moments. With a wealth of resources available at any moment, students can engage with learning in a different way than with textbooks and can do this at virtually any time, not to mention the wealth of tools and applications that are available by download and purchase from the various mobile device markets. In fact, there are well over 6000 health applications available in the Apple AppStore (Sarasohn-Kahn, 2012) and more than 600 applications designed for medical professionals (Phillippi & Wyatt, 2011). These numbers continue to grow daily.

The Association of College and Research Libraries (ACRL) defined information literacy as the set of skills needed to find, retrieve, analyze, and use information (ACRL, 2010). In the field of nursing, new graduate nurses are expected to have the knowledge and skills necessary to locate and appraise current information and to make informed decisions in the plan of care for patients (Wahoush & Banfield, 2014). Despite the fact that millennials are part of the "net generation," most new graduate nurses are not competent or efficient at utilizing information literacy skills and may not have the ability to transfer information from assignments to clinical practice (Julien & Boon, 2004; Nayda & Rankin, 2005). Mobile devices offer a perfect solution to helping nursing students hone and develop their information literacy skills. For example, Rodriquea and Rivero (2014) used mobile devices and quick response (QR) codes as a way to provide help and support to learners in skills training for information location. Many of the previously mentioned benefits of mobile devices are consistent with the benefits of using these devices for information literacy. Benefits of searching for information on mobile devices include anywhere capabilities, quick information that includes context or is location specific, and narrowed search areas (Walsh, 2012).

Kenny, Park, Van Neste-Kenny, Burton, and Qayyum (2012) explored the self-efficacy of nursing faculty and students concerning mobile technology. Data revealed that 46% of those surveyed owned smartphone devices. Results also demonstrated that 65% of participants used their mobile devices in their teaching and learning (Kenny et al., 2012). This study demonstrated that educators and students are not only exposed to mobile devices but are using them in nursing education. Kenny et al. (2012) also discovered that both nursing faculty and students are comfortable with using mobile technology and taking advantage of the many features mobile devices can offer. This research indicated that nursing students and nursing faculty may be willing to embrace m-learning. However, more research is needed to substantiate these results.

Many nursing education researchers have explored the process of incorporating mobile technology and mobile devices in the clinical learning environment. O'Conner and Andrews (2015) examined how mobile technology can help address the challenges of learning in the clinical practice environment through a review of the literature. Some of results and themes that were discovered as a product of the research effort included the ability of mobile technology to shape the nursing student's experience in clinical education and practice and the complexity involved with the implementation of mobile technology in nursing education. Literature supported the fact that mobile devices enhanced student clinical learning knowledge retention. Specifically, Wu and Lai (2009) discovered that mobile technology operated as a "learning scaffold" (p. 200). O'Conner and Andrews (2015) also found some common facilitators and barriers to mobile device use. The facilitators included usability of mobile devices, prior computer knowledge and technical skills, portability of mobile devices, flexible learning, and positive attitude from healthcare professionals and patients. The barriers that were discovered included technical issues with mobile devices, limited battery life, lack of technical infrastructure, small screen size of devices, lack of tailored and verified resources, cost of devices, theft of mobile equipment, poor computer literacy skills, lack of information technology training and support, and negative attitudes of nursing students and faculty (O'Conner & Andrews, 2015).

Lin and Lin (2016) created a mobile interactive learning and diagnosis (MILD) system to support problem-based learning (PBL) for clinical nursing courses in Taiwan. Researchers used mobile devices as tools for learning in order to integrate digital-world and real-world resources to facilitate the adoption of clinical problem-solving skills. Results from the experiment revealed that mobile devices and the MILD system were effective in improving learning performance and reducing cognitive loads for students (Lin & Lin, 2016). Additionally, Forehand, Miller, and Carter (2017) explored the use of integrating mobile devices into nursing classrooms. These researchers noted that using mobile devices in nursing education could enhance learning by helping to stimulate an environment focused on the learner; a learner-centered approach. Also mentioned was that nursing faculty might lack the necessary skills and confidence to use new and emerging mobile technology in the classroom (Forehand et al., 2017).

Willemse, Jooste, and Bozalek (2014) looked at the perceptions of both undergraduate nursing students and educators on the potential use of mobile devices. At the time of the study, mobile devices were not being utilized to enhance the process of teaching and learning. Data revealed that mobile devices have the capability to extend teaching and learning beyond the classroom into other areas that nursing students frequent. This includes areas like hospitals, homes, airports, busses, vehicles, and trains where students would not have direct access to a personal computer (George, Davidson, Serapgilia, Barla, & Thotakura, 2010).

Doyle, Garrett, and Currie (2014) explored nursing literature to understand how nursing programs were integrating mobile devices in the curriculum. They discovered that nursing education institutions are working to adapt their learning environments to embrace new forms of technology, like mobile devices. Researchers found that educators or programs that were interested in integrating mobile devices in the curriculum may very well benefit from the application of a theoretical framework, such as Rogers' diffusion of innovation model (Doyle et al., 2014). While the integration of new technology into the curriculum may be challenging, it is important to examine the evidence-based information and strategies that are available to help guide educators in these adoptions.

Unified Theory of Acceptance and Use of Technology

Description of the UTAUT

The Unified Theory of Acceptance and Use of Technology (UTAUT) was developed by Venkatesh et al. in 2003 and aimed to predict technology acceptance in organizational settings. The theory drew upon eight different models: theory of reasoned action, technology acceptance model (TAM), motivational model, theory of planned behavior (TPB), combined TAM and TPB, model of PC utilization, innovation diffusion theory, and social cognitive theory (Huang & Kao, 2015). The UTAUT compiled the 32 variables across the eight models and consolidated them into four determinants and four moderating factors as shown in Figure 1. The UTAUT model is a well-established research tool and possesses the ability to integrate a wide range of variables from eight prominent theories.

UTAUT Constructs

Performance expectancy (PE). Performance expectancy can best be defined as the degree to which an individual believes that using the system, or in this case the technology, will help him or her attain gains in job performance (Davis, Bagozzi, & Warshaw, 1992). Performance expectancy is theoretically grounded from usefulness perceptions (Technology Acceptance Model), extrinsic motivation (Motivation Model), job-fit (Model of PC Utilization),

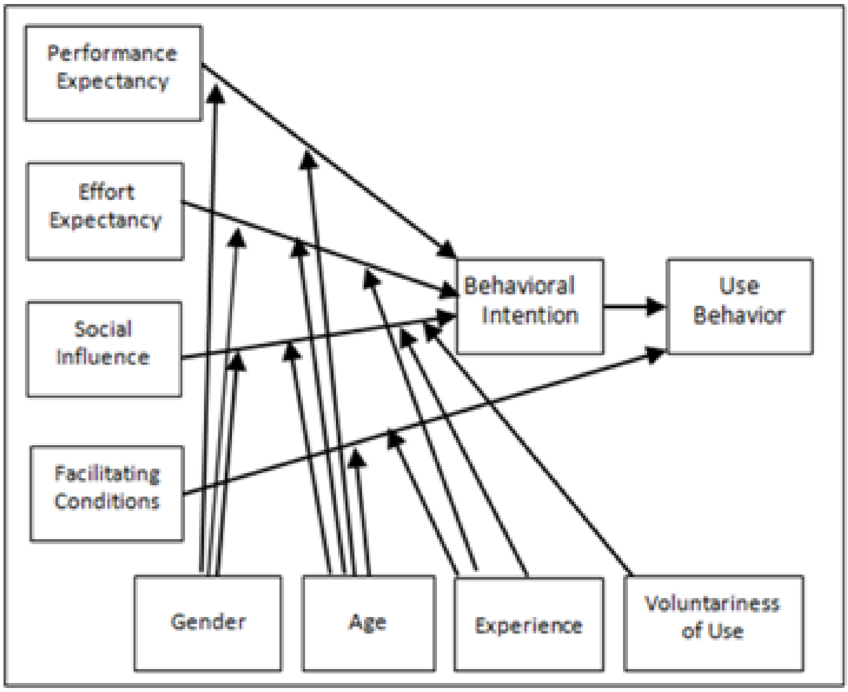

Figure 1. UTAUT Model (Source: Venkatesh et al., 2003).

relative advantage (Innovation Diffusion Theory), and outcome expectations (Social Cognition Theory (Compeau & Higgins, 1995). According to Venkatesh et al. (2003), performance expectancy is the strongest predictor of intention to use and remains significant for all points of measurement. Therefore, performance expectancy is measured as an individual's intention to use an identified technology (Chang, 2012). Previous research related to gender differences and age speculate that both of these variables will have a moderating role (Chang, 2012; Venkatesh et al., 2003).

Effort expectancy (EE). Effort expectancy can be defined as the amount of ease associated with use of a system or technology (Venkatesh et al., 2003). A total of three constructs encompass the concept of effort expectancy including perceived ease of use (Technology Acceptance Model 1 and 2), complexity (Model of PC Utilization), and ease of use (Innovation Diffusion Theory). Davis (1989) reported that an application, or technology, that appears easier to use is more likely to be accepted. According to Chiu, Fang, and Tseng (2010), performance expectancy, effort expectancy, facilitating conditions, and social influence impact the overall use intention, the perceptions of these antecedents vary greatly between potential versus early users.

Social influence (SI). Social influence is understood as the degree to which an individual perceives or believes that more important others feel that the individual should use the new technology (Chang, 2012; Venkatesh et al., 2003). The concept of social influence is best aligned with the factor of subjective norm as defined by the Technology of Acceptance Model (TAM) 2 (Chang, 2012). The subjective norm affects the perceived usefulness by internalization and identification. Internalization relates to how people incorporate social influences into their own perception of usefulness. Identification is how people use a system or technology to gain status and influence with a group of colleagues or co-workers, thus allowing for improved job performance (Change, 2012).

Facilitating conditions (FC). Facilitating conditions are defined as the degree to which an individual perceives that organizational and technical infrastructure exists to support use of the system or technology (Chang, 2012). This construct comprises elements from perceived behavioral control and is speculated to model the connection between an organization's attempt to overcome obstacles to use and the potential users' intent to use. Table 1 demonstrates how the four constructs are derived from a variety of variables and other models.

Description of the UTAUT2

In 2012, Venkatesh et al. proposed a modified version of the original UTAUT model, the UTAUT2. The revision focused on refining for the "consumer use context" (Venkatesh et al., 2012, p. 158). In extending the original model hedonic motivation (HM), price value (PV), and

Table 1

The Core Constructs of UTAUT

Constructs	Definition	Variables	Models Contributing to Constructs
Performance expectancy (PE)	The degree to which an individual believes that using mobile learning will help him or her attain gains in a job.	Perceived Usefulness (PU)	Technology Acceptance Model (TAM); Combined TAM-TPB (Theory of Planned Behavior)
		Extrinsic Motivation	Motivation Model (MM)
		Job-fit	Model of PC Utilization (MPCU)
		Relative Advantage (RA)	Innovation Diffusion Theory (IDT)
		Outcome Expectations	Social Cognition Theory (SCT)
Effort expectancy (EE)	The degree of ease associate with the use of mobile learning.	Perceived Ease of Use (PEOU)	TAM
		Complexity	MPCU
Social influence (SI)	The degree to which an individual feels that it is important for others to believe he or she should use mobile learning.	Subjective Norms	TRA, TAM2, TPB/DTPB, and combined TAM-TPB
		Social Factors	MPCU
		Image	DOI
Facilitating conditions (FC)	The degree to which an individual believes that organizational and technical infrastructure exists to support use of mobile learning.	Perceived Behavioral Control	TPB/DTPB and combined TAM-TPB
		Facilitating Conditions	MPCU
		Compatibility	DOI

habit (HB) were added to the original four constructs of performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC). This revised model of the UTAUT became known as the modified version of the Unified Theory of Acceptance and Use of Technology or UTAUT2. Figure 2 demonstrates the modified model.

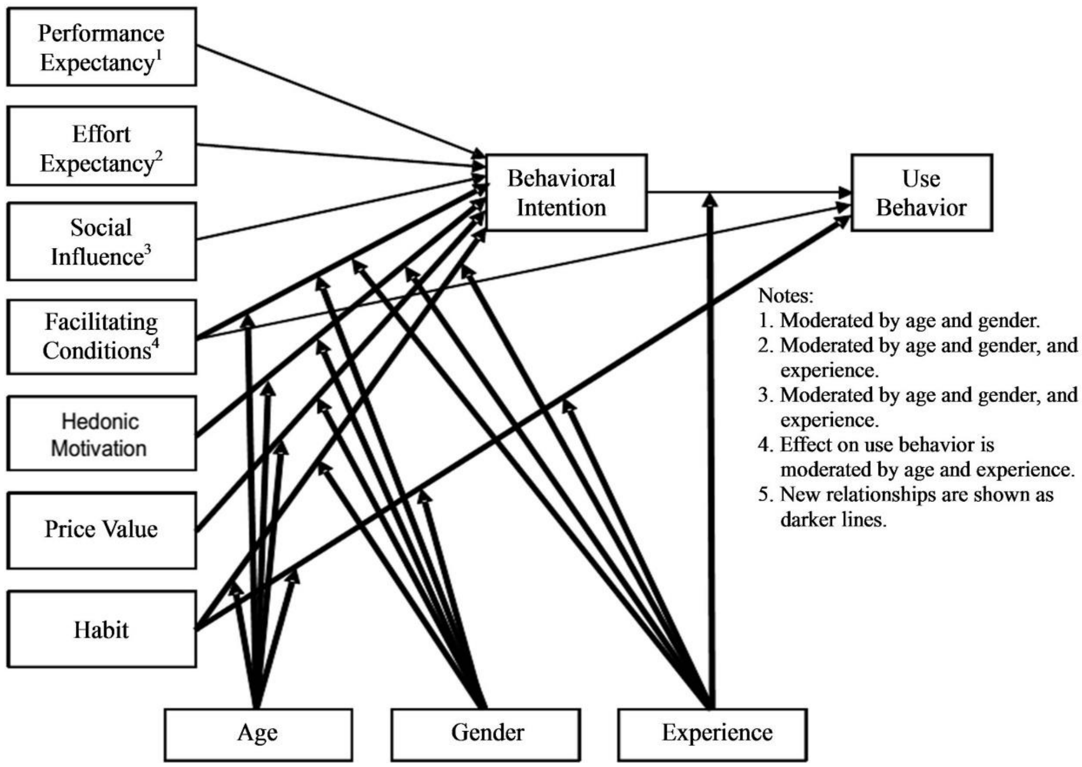

Figure 2. UTAUT2 Model (Source: Venkatesh, Thong, & Xu, 2012).

UTAUT2 Constructs

Hedonic motivation (HM). Hedonic motivation is seen as the pleasure or fun resulting from the use of a technology (Chang, 2012). It has been demonstrated that an individual's motivation is a critical determinant of technology acceptance and use (Brown & Venkatesh, 2005).

Price value (PV). Price value can be explained as the learner's cognitive tradeoff between the perceived benefits of the applications and the monetary cost for using mobile technology. According to Kang, Liew, Lim, Jang, and Lee (2015), the choice that people make to select a service or product depends heavily on whether their benefit gives more than the price value compared to cost. Price value has the potential to considerably influence an individual's use of technology. Typically, employees do not have to bear the financial burden of technology purchases; however, consumers do have the monetary impact as a result of technology costs (Chang, 2012).

Habit (HB). Habit has been defined as the extent to which individuals tend to perform behaviors automatically because of learning (Limayem, Hirt, & Cheung, 2007). Habit has been structured into two distinct methods. The first is prior behavior and the second is the extent to which a person believes behavior is automatic (Chang, 2012). According to Kijsanayotin, Pannarunothai, and Speedie (2009) previous information technology experience was a good predictor of technology use, intention to use the technology, and facilitating conditions.

Applications of the UTAUT2 Model

Kang et al. (2015) investigated the factors of m-learning acceptance among Korean university students based on the UTAUT2. In the study, they examined 305 students from four different universities in Seoul, Korea. Results revealed that five out of seven variables were significant determinants of BI to use m-learning. The primary determinants were found to be PE, SI, and HM. Researchers found that performance expectancy was the strongest predictor of m-learning acceptance. The researcher concluded that to diffuse m-learning successfully among students, it is important that programs offer more m-learning instructional applications with valuable functions.

Lewis, Fretwell, Ryan, and Parham (2013) explored the use of conventional and emerging technologies in post-secondary education using UTAUT. The researchers surveyed business faculty members from one university in the southeastern United States regarding four possible classroom technologies: Blackboard, Facebook, Twitter, and LinkedIn. Results revealed that in relation to faculty use of technology the most important antecedents were PE, EE, SI, and HB.

Masrek (2015) used the UTAUT constructs and two additional variables, which were perceived playfulness and self-management of learning to explore the predictors of m-learning adoption among students at the University Teknologi MARA. Significant findings from the study revealed that 65% of the variance in intention to adopt m-learning was explained by PE, EE, SI, FC; perceived playfulness and self-management of learning. Performance expectancy was a significant influence ($\beta = 0.197$, $p < 0.01$) on the intention to adopt mobile learning. Results suggested the more a student perceives that m-learning is useful for learning and improving productivity; the more likely the student is to engage in m-learning. Effort expectancy was also found to be a significant predictor of m-learning adoption ($\beta = 0.164$, $p < 0.01$), further reinforcing that the more students identify m-learning as easy to use for learning, the greater the chance they will engage in m-learning. In terms of student adoption, perceived playfulness was also a significant predictor of intention for adoption ($\beta = 0.184$, $p < 0.01$).

Summary

Chapter II served as a review of literature for this study. Topics discussed in the chapter included m-learning definitions and the current landscape of m-learning in both higher education and nursing education. Additionally, this chapter also examined the UTAUT2 framework along with the individual constructs of PE, EE, SI, FC, HM, PV, and HB. Research supported the many benefits that m-learning can offer to both learners and educators. There were several important factors discovered through the review of literature. While there was a lack of clarity remaining about how mobile technology is defined, it was evident that mobile devices can afford nursing students many benefits for their individual learning needs (O'Conner & Andrews, 2015).

Evidence suggested there was a lack of research regarding m-learning in nursing education. Furthermore, there was a unique gap in the literature surrounding the nurse educator's perspective on m-learning acceptance.

CHAPTER III:

METHODOLOGY

Chapter III presents the methodology for this study. In this chapter, the study will be described in detail including its purpose, sample, instrumentation, procedures, research design, sample size, data analysis, assumptions, and limitations.

Purpose of the Study

The purpose of this study was to explore the variables for the adoption of m-learning among undergraduate nursing faculty in a southeastern state. Specifically, this study explored how nursing faculty are using mobile devices along with what factors affect nursing faculty's acceptance of m-learning. Factors that were investigated include performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), hedonic motivation (HM), price value (PV), habit (HB), and behavioral intention (BI). Additionally, this study also examined the impact if any, that gender, age, education level, and nursing program type may have on mobile learning adoption.

Research Questions

The following questions were used to guide this study:

1. How are undergraduate nursing faculty using mobile device technologies?

2. Do performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), hedonic motivation (HM), price value (PV), habit (HB), and behavioral intention (BI) impact undergraduate nursing faculty's adoption of m-learning?

H_0: There is no relationship between performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), hedonic motivation (HM), price value (PV), habit (HB), and behavioral intention (BI) and nursing faculty's adoption of m-learning; and

3. What differences do gender, age, education level, and type of nursing program have on undergraduate nursing faculty behavioral intention (BI) to adopt m-learning?

H_0: There is no statistical difference between gender, age, education level, and type of nursing program on undergraduate nursing faculty behavioral intention (BI) to adopt m-learning.

Sample

This study invited nursing faculty teaching in undergraduate nursing programs in a southeastern state to participate in an online survey. One hundred fifty Deans and Program Directors of nursing across a single southeastern state were contacted requesting that they share the research invitation with their undergraduate nursing faculty. Only faculty members teaching in undergraduate nursing programs were considered eligible to participate. Undergraduate nursing programs included ASN, BSN, and RN-BSN programs. Study participants were over the age of 18 and employed full-time in the respective southeastern state. Participants also had to be affiliated with an approved state board of nursing and nationally accredited nursing program in order to participate in the study. One hundred twenty participants (N=120) participated in the study.

Instrumentation

A one-time electronic survey (Appendix A) through Qualtrics was utilized to obtain feedback from participants regarding variables of m-learning adoption using a version of the

UTAUT2 instrument (Appendix B). The proposed survey was titled the *Modified UTAUT2 for Assessment of m-learning Adoption*. The UTAUT2 draws upon eight different models including theory of reasoned action, technology acceptance model (TAM), motivational model, theory of planned behavior (TPB), combined TAM and TPB, model of PC utilization, innovation diffusion theory, and social cognitive theory (Huang & Kao, 2015). The UTAUT2 compiled 32 variables across eight models and consolidated them into four determinants and four moderating factors as shown in Figure 2. The following section will explore these constructs in detail.

Constructs

Performance expectancy (PE). Performance expectancy can best be defined as the degree to which an individual believes that using the system, or in this case the technology, will help him or her attain gains in job performance (Davis, Bagozzi, & Warshaw, 1992). Questions 10-12 in the Qualtrics survey were aimed at evaluating faculty members' PE toward m-learning; for example, "I find m-learning useful in my job." This construct, and all subsequent constructs discussed next, were measured using a 7-point Likert-type scale, with anchors being 1 = strongly disagree and 7 = strongly agree.

Effort expectancy (EE). Effort expectancy can be defined as the amount of ease associated with use of a system or technology (Venkatesh et al., 2003). Questions 13-16 in the Qualtrics survey were aimed at evaluating faculty members' EE toward m-learning; for example, "Learning how to use m-learning is easy for me." Survey items were measured using a 7-point Likert-type scale, with anchors being 1 = strongly disagree and 7 = strongly agree.

Social influence (SI). Social influence is understood as the degree to which an individual perceives or believes that others influence him or her to use the new technology (Chang, 2012; Venkatesh et al., 2003). Questions 17-19 in the Qualtrics survey were aimed at evaluating faculty members' SI toward m-learning; for example, "People who influence my behavior think that I should use m-learning." Survey items were measured using a 7-point Likert-type scale, with anchors being 1 = strongly disagree and 7 = strongly agree.

Facilitating conditions (FC). Facilitating conditions is defined as the degree to which an individual perceives that organizational and technical infrastructure exists to support use of the system or technology (Chang, 2012). This construct comprises elements from perceived behavioral control and is speculated to model the connection between an organization's attempt to overcome obstacles to use and the potential users' intent to use. Questions 20-23 in the Qualtrics survey were aimed to evaluate faculty members' FC toward m-learning. For example, "I have the resources necessary to use m-learning." Survey items were measured using a 7-point Likert-type scale, with anchors being 1 = strongly disagree and 7 = strongly agree.

Hedonic motivation (HM). Hedonic motivation is seen as the pleasure or fun resulting from the use of a technology (Chang, 2012). It has been demonstrated that an individual's motivation is a critical determinate of technology acceptance and use (Brown & Venkatesh, 2005). Questions 24-26 in the Qualtrics survey were aimed to evaluate faculty members' HM toward m-learning; for example, "Using m-learning can be fun." Survey items were measured using a 7-point Likert-type scale, with anchors being 1 = strongly disagree and 7 = strongly agree.

Price value (PV). Price value can be explained as the learner's cognitive tradeoff between the perceived benefits of the applications and the monetary cost for using mobile technology. Questions 27-29 in the Qualtrics survey were aimed to evaluate faculty members PV toward m-learning; for example, "M-learning technology is reasonably priced." Survey items were measured using a 7-point Likert-type scale, with anchors being 1 = strongly disagree and 7 = strongly agree.

Habit (HB). Habit has been defined as the extent to which individuals tend to perform behaviors automatically because of learning (Limayem, Hirt, & Cheung, 2007). Researchers Ajzen and Fishbein (2005) found that feedback from prior experiences did in fact influence various beliefs and, therefore, future behavioral performance. Within the context of this study, HB is a perceptual construct that reflects the results of previous experiences. Questions 30-32 in the Qualtrics survey were aimed to evaluating faculty members' HB toward m-learning. For example, "The use of m-learning has become a habit for me." Survey items were measured using a 7-point Likert-type scale, with anchors being 1 = strongly disagree and 7 = strongly agree.

Behavioral Intention (BI). Behavioral intention is defined as an individual's intention to perform an action, which can forecast corresponding behaviors when the individual acts voluntarily (Islam et al., 2013). Intentions demonstrate the motivational factors the impact behavior and elude to indicators of how hard individuals are willing to try and the efforts they will put forth to engage in a behavior (Mafe, Blas, & Tavera-Mesias, 2010). Questions 33-35 in the Qualtrics survey were aimed to evaluate faculty members' BI toward m-learning; for example, "I intend to continue using m-learning in the future." Survey items were measured using a 7-point Likert-type scale, with anchors being 1 = strongly disagree and 7 = strongly agree.

UTAUT2 Instrument Reliability

Instrument reliability refers to how consistently an instrument is able to measure what it is supposed to measure (Frankfort-Nachimias & Nachimias, 2008). One statistical method of determining an instrument's reliability is the use Cronbach's alpha (University of Connecticut, 2013). Cronbach's alpha is a measure of the internal consistency of a set scale. A Cronbach's alpha is calculated by correlating the score for each scale item with the total score for each observation and then comparing that to the variance for all individual item scores (University of Virginia Library, 2016). Venkatesh et al. (2012) measured the internal consistencies' reliabilities (ICRs) of the UTAUT2 scales modeled with reflective indicators and found results of .75 or greater, suggesting that the scales were reliable. In the preliminary testing phase, reliability coefficients of the constructs ranged from 0.83 to 0.94, whereas it ranged from 0.88 to 0.96 in the cross-validation test (Venkatesh et al., 2003).

UTAUT2 Instrument Validity

Validity of an instrument refers to an instrument's ability or degree to measure what it is supposed to measure (Nolan & Heinzen, 2011). Venkatesh et al. (2012) used the partial least square (PLS) method to test the model due to its ability to explore several interactions. Smart-PLS software was used to examine the measurement model to assess reliability and validity. Convergent validity is demonstrated by loadings greater than 0.7, average variance extracted (AVE) greater than 0.5, and communalities greater than 0.5 (Gaul, Geyer-Schulz, Schmidt-Thieme, & Kunze, 2012). Results demonstrated that the AVE was greater than .70 in all cases and greater than the square of the correlations. This suggests that the instrument did show discriminant validity. Internal consistency and discriminant validity were supported for all variables with the exception of two, one PE item and one HB item. These two items were deleted from the instrument.

Modified UTAUT2 for Assessment of m-learning Adoption Instrument

The UTAUT2 instrument has been adopted and modified by many researchers (Lewis et al., 2013; Masrek, 2015; Oechslein et al., 2014; Wang et al., 2009). Researchers that have used the UTAUT2 instrument have adapted the questions to make the context of the survey more relevant to the phenomena under investigation. For example, Oeschslein et al. (2014) revised the UTAUT2 survey to assess the acceptance of a social recommender system. Lewis et al. (2013) modified the UTAUT2 survey in order to examine the adoption of emerging information technologies in higher education. Raman and Don (2013) used a modified UTAUT2 instrument to explore the acceptance of an LMS among preservice teachers.

The survey instrument consisted of 35 items and one challenge question. Questions 1 through 9 collected information regarding participants' demographic data and mobile device use. Demographic-related questions consisted of gender, age, level of education, and type of nursing program. Questions related to mobile device use include type of device ownership, level of experience with mobile devices, use of mobile devices for learning purposes, the number of hours spent daily on a device, and the type of activities users perform on their devices. Questions 10-35 related to the eight constructs developed by Venkatesh et al. (2012) (see Table 2).

Finally, Question 36 was a challenge question related to who is the mascot for The University of Alabama. The challenge question was used to allow participants the chance to partake in the drawing for a free Apple Watch Series 3. The survey items were adapted from Venkatesh's et al. (2012) UTAUT2 survey instrument with permission. All variables have been measured by using an interval level of measurement. The scale of measurement used a 7-point Likert-type scale, ranging from 1 = strongly disagrees to 7 = strongly agrees. For this study, the UTAUT2 instrument was modified to make the questions more relevant to the context of interest, m-learning; thus, the adapted survey was titled *Modified UTAUT2 for Assessment of m-learning Adoption*. For example, the original UTAUT2 survey items for PE can be seen in Table 3.

Table 2

Survey Questions and the Related Constructs

Survey Questions	Related Construct
Questions 1-4	Demographic Data
Questions 5-9	Mobile Device Use Data
Questions 10-12	Performance Expectancy (PE)
Questions 13-16	Effort Expectancy (EE)
Questions 17-19	Social Influence (SI)
Questions 20-23	Facilitating Conditions (FC)
Questions 24-26	Hedonic Motivation (HM)
Questions 27-29	Price Value (PV)
Questions 30-32	Habit (HB)
Questions 33-35	Behavioral Intention (BI)
Question 36	Challenge Question

Table 3

Performance Expectancy Survey Questions From Original Instrument

Performance Expectancy (PE)	
PE1.	I find mobile internet useful in my daily life.
PE2.	Using mobile internet helps me accomplish things more quickly.
PE3.	Using mobile internet increases my productivity.

For this study, the following modifications were made to the *Modified UTAUT2 for Assessment of m-learning Adoption* survey items related PE to reflect the study's focus on m-learning. For example, the UTAUT2 survey used the term “mobile internet” to assess the acceptance of mobile internet use. In the proposed study, the term “mobile internet” was changed to “m-learning” to reflect the phenomena of interest. These changes are best demonstrated in Table 4.

Table 4

Modified Performance Expectancy Survey Questions

Performance Expectancy (PE)	
PE1.	I find m-learning useful in my daily life.
PE2.	Using m-learning allows me to accomplish tasks more quickly.
PE3.	Using m-learning increases my productivity.

These same modifications of changing “mobile internet” to “m-learning” were made for each of the remaining constructs. Please refer to Appendix B for the original UTAUT2 survey items. In Appendix A, the *Modified UTAUT2 for Assessment of m-learning Adoption* survey items can be found. The modified survey was used to explore the variables of nursing faculty related to the adoption of m-learning. It consisted of eight key constructs: PE, EE, SI, FC, HM, PV, HB, and BI. Demographic data were also collected in Questions 1 through 9; variables included gender, age, level of education, and type of nursing program. Additionally, demographic data was collected on the type of mobile device ownership, experience using mobile devices, and frequency/type of use involving mobile devices.

Reliability and Validity: Modified UTAUT2

As described previously, the UTAUT2 instrument has been modified on several occasions in a variety of technological adoption-related research studies to take into account the variable(s) of interest. The instrument's validity is well established in the literature. In this research study, the survey was adapted to explore the variable of m-learning adoption among nursing faculty. Thus, it is important and necessary to assess the content validity of the modified instrument in order to verify whether or not the items adequately represent the constructs of interest (Croker & Algina, 1986). In this circumstance, the researcher and members of the doctoral dissertation committee served as content experts who reviewed the *Modified UTAUT2 for Assessment of m-learning Adoption* survey prior to its administration. The researcher is a doctorally prepared registered nurse educator and considered a content expert. Additionally, the *Modified UTAUT2 for Assessment of m-learning Adoption* survey was reviewed by additional content experts to establish construct validity. Content review experts included (a) a doctorally prepared assistant professor of Nursing at The University of Alabama, (b) a doctorally prepared associate professor of Educational Research and statistical expert at The University of Alabama (c) a doctorally prepared associate professor of Educational Leadership, Policy, and Technology Studies at The University of Alabama, (d) a doctorally prepared associate professor of Educational Leadership, Policy, and Technology Studies at The University of Alabama, and (e) a doctorally prepared professor of Instructional Technology at The University of Alabama. The collective group of content experts were able to establish the content validity of the *Modified UTAUT2 for Assessment of m-learning Adoption* survey.

Statistical Package for the Social Sciences (SPSS) version 24 was used to calculate a Cronbach alpha score. Cronbach alpha was calculated for the modified UTAUT2 instrument for all subscales as well as the total for this study. The total Cronbach's alpha was found to be .953, indicating a high level of internal consistency. Further analysis revealed that removal of any item would result in a lower Cronbach's alpha. According to Nunnally (1978), an alpha value of .70 or higher was considered acceptable. Additionally, Cronbach alpha results were calculated for each of the eight subscales, PE, EE, SI, FC, HM, PV, HB, and BI.

For the construct of PE subscale, the Cronbach's alpha was found to be .904. This result indicated a high level of internal consistency. For the construct of EE subscale, the Cronbach's alpha was found to be .955. This result indicated a high level of internal consistency. For the construct of SI subscale, the Cronbach's alpha was found to be .928. This result indicated a high level of internal consistency. For the construct of FC subscale, the Cronbach's alpha was found to be .831. This result indicated a high level of internal consistency. For the construct of HM subscale, the Cronbach's alpha was found to be .934. This result indicated a high level of internal consistency. For the construct of PV subscale, the Cronbach's alpha was found to be .914. This result indicated a high level of internal consistency. For the construct of HB subscale, the Cronbach's alpha was found to be .775. This result indicated a satisfactory level of internal consistency. For the construct of BI subscale, the Cronbach's alpha was found to be .905. This result indicated a high level of internal consistency.

Procedure

Institutional Review Board (IRB) approval through The University of Alabama was obtained prior to initiating the study (Appendix C). Participants were approached via a mass email through a state-wide organization made up of Deans and Program Directors from associate degree and baccalaureate degree nursing programs' listserv. The President of the state-wide organization was made aware of the research study and granted permission to access the email listserv for contacting research participants. There were 150 members representing schools of nursing and nursing programs across a single southeastern state in the email listserv. The members of this organization are only the respective Deans and Program Directors. The invitation email requested that each Dean and Program Director contact their respective undergraduate nursing faculty to solicit their participation in the study. The researcher began by contacting the President of state-wide organization to set up dissemination of the call for participation in the research study by email request (Appendix D) through the email listserv. The invitation email requested that the respective Dean or Program Director forward the invitation email (Appendix E) to his or her undergraduate nursing faculty. Collectively, there were 43 associate and baccalaureate nursing programs in the southeastern state that were approved by the respective board of nursing and nationally accredited by a specialized nursing organization. All undergraduate nurse faculty members who taught in the state were eligible to participate in the study. The Qualtrics survey link was sent out through the email listserv to request faculty participation in the study. Once the respective faculty members clicked on the Qualtrics survey link, they were taken into the online survey. It was recommended that the survey should take no longer than 30 minutes for participants to complete. All participants were directed to a landing page that displayed the informed consent document (Appendix F). After reading the informed consent and qualifications, participants who were eligible and willing to participate were directed to click on "I Agree" to begin the survey. All eligible participants who completed the survey were given the opportunity to answer a challenge question at the end of the survey to earn a free incentive, an Apple Watch. Anyone who completed the survey was eligible to answer the challenge question. The Qualtrics survey did not collect any identifying information from participants such as name, school, or Internet Protocol (IP) address. At the completion of the survey, participants were taken to a “Thank you for participating” screen. At that point, participants were given a chance to decide whether to attempt the challenge question for the free incentive. If participants chose to attempt the challenge question, they were asked to select “Yes” to be taken to the question or “No” to skip. If the participants selected “Yes,” they were taken from the survey to another Qualtrics survey, seamlessly, to enter their name and contact information. If the participants selected “No,” they were taken to the completed survey “Thank you” screen. The survey and the challenge question were not tied together. The survey was kept completely anonymous and free of identifying information. At the end of the survey period, 8 weeks, the researcher collected all of the participant information. One participant was selected randomly to receive the incentive, an Apple Watch. Once the participant was identified, he/she was contacted and arrangements were made to provide the Apple Watch. A reminder email regarding survey participation was sent through the listserv to Deans and Program Directors every 2 weeks for a total of three email reminders (Appendix G).

Any participant could withdraw from the study or quit the survey at any point without penalty. None of the study participants withdrew from participating. No further contact was made with participants unless the individual person was selected for the incentive.

Research Design

The study used an exploratory quantitative survey research design. The goal of quantitative research is to explore the relationship between an independent variable(s) and dependent variable(s). Additionally, a survey design provides a numeric description of trends regarding a population of interest by examining a sample of that population. The purpose of a survey research design is to establish associations between variables and to generalize or draw inferences from the sample results to the population (Creswell, 2014). The research method utilized the process of collecting and analyzing data in order to understand variables for the adoption of m-learning among undergraduate nursing faculty in a single southeastern state. Data for this study were collected from the use of an online one-time survey.

An online electronic survey through Qualtrics served as the method of collecting data for this study. The advantages of an electronic self-reporting survey design is the ability for participants to be contacted all at once, allowance of quick data collection turnaround, automation in data input and handling, flexibility of design, and an effective use of resources as compared to interviews (Creswell, 2014; Porter, 2004). Electronic survey designs also pose disadvantages as well. Some examples of disadvantages may include lack of honest answers, lack of understanding or discomfort in providing answers, incomplete surveys, technology or accessibility issues, and low response rates (Porter, 2004).

Data were analyzed using quantitative methods. The researcher used SPSS version 24 for statistical analyses. For this study, the independent variables were PE, EE, SI, FC, HM, PV, and HB. Behavioral intention served as the dependent variable. Refer to Table 5 for an outline of the data management plan.

Sample Size

One hundred twenty participants (N = 120) participated in the study. A power analysis was estimated to test an overall regression model considering the effect, size, power, and a level of significance at .05. For an eight-predictor scenario with an estimated treatment effect of R^2 = .13 (f^2 = .15), the minimum size for the overall model would be N = 110 (Green, 1991).

Data Analysis

Table 5 presents the data management plan and data analyses.

Table 5

Data Management Plan

Research Question	Measures(s)	Independent Variable(s)	Level of Data	Dependent Variable(s)	Level of Data	Analysis
Question 1	Demographic	N.A.	N.A.	Mobile Device Use	Nominal	Descriptive statistics
Question 2	UTAUT2	Performance Expectancy (PE)	Interval	Behavioral Intention (BI)	Interval	Hierarchical Multiple Regression
		Effort Expectancy (EE)				
		Social Influence (SI)				
		Facilitating Conditions (FC)				
		Hedonic Motivation (HM)				
		Price Value (PV)				
		Habit (HB)				
Question 3	Demographic/	Gender	Nominal	Behavioral Intention (BI)	Interval	ANOVA Analysis
	UTAUT2	Age	Interval			
		Education Level	Ordinal			
		Type of Nursing Program	Nominal			

Summary

This chapter discussed the research design of this study along with the sample, instrumentation, procedure, sample size, data analysis, assumptions, and limitations. A quantitative survey research design was utilized to explore the BI to adopt m-learning among undergraduate nursing faculty. Both descriptive and inferential statistical analysis was performed using SPSS. An adapted version of the UTAUT2 instrument, *Modified UTAUT2 for Assessment of m-learning Adoption* survey, was utilized to explore the variables of PE, EE, SI, FC, HM, PV, HB, and BI.

CHAPTER IV:

ANALYSIS OF DATA

The purpose of this study was to explore variables related to m-learning adoption among undergraduate nursing faculty in a southeastern state. Specifically, this study examined how nursing faculty are using mobile devices. In addition, what factors affect undergraduate nursing faculty's acceptance of m-learning and the extent to which, if any, these factors influence their adoption. The UTAUT2 served as the guiding theoretical framework for this study. Thus, factors that were investigated included PE, EE, SI, FC, HM, PV, HB, and BI. Additionally, this study also examined the impact that gender, age, education level, and nursing program type may have on m-learning adoption.

Sample Demographics

The instrument used to collect data in this study was the *Modified UTAUT2 for Assessment of m-learning Adoption* survey. One hundred twenty (*N* = 120) undergraduate nursing faculty in a southeastern state participated in this study. Demographic information collected from each participant included gender, age, level of education, and type of nursing program. Of those 120 nursing faculty, 115 were females (95.8%) and 5 were males (4.2%). Nursing faculty ages included one participant who responded as less than 25 years old (.8%), 19 reported they were 25 to 35 years old (15.8%), 37 reported they were 36 to 45 years old (30.8%), 34 reported they were 46 to 55 years old (28.3%), 25 reported they were 56 to 55 years old (20.8%), 3 reported they were 66 and over (2.5%). One participant chose not to respond to this question. The majority of nursing faculty held a master's degree or higher as their highest level of education. Baccalaureate prepared faculty accounted for 4.2% (*n* = 5). Masters prepared faculty accounted for 54.2% (*n* = 65). Doctoral prepared faculty included DNP (*n* = 26, 21.7%) and EdD or PhD (*n* = 24, 20%). In regard to type of nursing program, 55.8% (*n* = 67) reported they taught in associate degree programs of nursing, 40% (*n* = 48) reported they taught in baccalaureate nursing programs, and 3.3% (*n* = 4) reported they taught in RN mobility programs. One participant opted to not respond to the type of nursing program question. See Table 6 for descriptive statistics of those nursing faculty surveyed.

Table 6

Demographic Statistics

Selections	n	%
Gender		
Female	115	95.8
Male	5	4.2
Age		
Less than 25 years	1	.8
25 – 35 years	19	15.8
36 – 45 years	37	30.8
46 – 55 years	34	28.3
56 – 65 years	25	20.8
66 – and over	3	2.5
Level of Education		
Baccalaureate (BSN)	5	4.2
Masters (MSN)	65	54.2
Clinical Doctorate (DNP)	26	21.7
Research Doctorate (EdD, PhD)	24	20.0
Type of Nursing Program		
Associate Degree (AND or ASN)	67	55.8
Baccalaureate (BSN)	48	40.0
RN Mobility (RN to BSN)	4	3.3

Research Question 1

How are undergraduate nursing faculty using mobile device technologies? The first research question aimed to explore nursing faculty mobile device ownership and use. In terms of mobile device ownership and use, 100% (*n* = 120) reported that they currently owned a smart phone (i.e. iPhone, Motorola Droid, Samsung Galaxy, etc.). In relation to other types of mobile device ownership, 20.8% (*n* = 25) reported owning an MP3/MP4 player (i.e., iPod, Zune, etc.). Ninety-three participants (77.5%) indicated that they owned a tablet (i.e., iPad, Microsoft Surface, etc.). Five participants (4.2%) indicated that they owned a Netbook, such as a Chromebook or Hewlett Packard Netbook. One hundred sixteen participants (96.7%) noted that they owned a laptop. Participants were also given the option to identify mobile device ownership other than the categories provided. One participant (.8%) indicated they owned another device, an Apple watch. Table 7 presents the numerical representation of device ownership.

Table 7

Do you Currently own any of the Following Mobile Devices? (Select all that apply.)

Selections	n	%
Basic Cellular Phone	120	100
Smart Phone (i.e. iPhone, Motorola Droid, Samsung Galaxy, etc.)	120	100
Laptop	116	96.7
Tablet (i.e. iPad, Microsoft Surface, etc.)	93	77.5
E-reader (i.e. Amazon Kindle, Nook eReader, etc.)	58	48.3
MP3/MP4 Player (i.e. iPod, Zune, etc.)	25	20.8
Netbook (i.e. Chromebook, HP Netbook, etc.)	5	4.2
Other, please specify: apple watch	1	.8
I do not own a mobile device.	0	0

Participants were also surveyed about their level of experience in using mobile devices. Table 8 displays the level of experience using mobile devices by nursing faculty. Eight participants (6.7%) identified their level of experience in using mobile devices as intermediate, meaning that participants identified as using a mobile device at least once per day. One hundred eleven participants (92.5%) indicated their level of experience in using mobile devices as advanced. meaning that participants identified as using a mobile device many times throughout the day. One participant (.8%) chose not to respond to this question.

Table 8

How Would you Describe Your Level of Experience Using Mobile Devices?

Selections	n	%
None (I have no experience.)	0	0
Novice (I use a mobile device around 1 to 3 times per week.)	0	0
Intermediate (I use a mobile device at least once per day.)	8	6.7
Advanced (I use a mobile device many times throughout the day.)	111	99.2

Next, participants were asked about their use of mobile devices for the purpose of learning. One hundred thirteen participants (94.2%) identified themselves as having used a mobile device for learning. Six participants (5%) indicated that they had never used mobile devices before for the purpose of learning. One participant (.8%) opted to not respond to this question. Table 9 demonstrates the results regarding nursing faculty use of mobile devices for learning purposes.

Table 9

Have you Ever Used Mobile Devices for Learning Purposes?

Selections	n	%
Yes	113	94.2
No	6	5

Participants were asked about the number of hours spent on a mobile device per day. Table 10 presents the number of hours per day that nursing faculty used a mobile device. Fifty-four participants (45%) responded that they spent 0 to 3 hours per day on a mobile device. Fifty-eight participants (48.3) responded that they spent 4 to 7 hours per day on a mobile device. Seven participants (5.8%) responded that they spent 8 to 11 hours per day on a mobile device. One participant (.8%) opted to not respond to this question.

Table 10

How Many Hours do you Spend on Your Mobile Device per Day?

Selections	n	%
0-3 hours	54	45
4-7 hours	58	48.3
8-11 hours	7	5.8
12 or more hours	0	0

It was found that 81.7% (*n* = 98) of participants revealed that they used their mobile devices for the purpose of entertainment activities. Examples of entertainment included listening to music, watching videos, playing games, or other related activities. Over 80% (*n* = 97) of participants surveyed indicated that they also used their mobile device for social networking activities including Facebook, Snapchat, Instagram, Twitter, and other similar social media functions. Additionally, 95.8% (*n* = 115) of participants responded to using their mobile devices for the purpose of seeking information. Seeking information activities included news, weather, online searches, and other similar functions. The use of mobile devices for business and work activities accounted for 94.2% (*n* = 113) of surveyed nursing faculty. Finally, 81.7% (*n* = 98) of those surveyed revealed that mobile devices were used for education-related purposes like accessing course materials. Table 11 identifies the type of activities that nursing faculty reported using on their mobile devices.

Table 11

What Kind of Activities do you Usually do While on Your Mobile Device? (Select all that apply.)

Selections	n	%
Entertainment (i.e., Listen to music, Watch videos, Play games, etc.)	98	81.7
Social Networking (i.e., Facebook, Snapchat, Instagram, Twitter, etc.)	97	80.8
Seeking Information (i.e., News, Weather, Online searches, etc.)	115	95.8
Business/Work (i.e., Monitor and responding to emails, etc.)	113	94.2
Educational Purposes (i.e., Accessing course materials.)	98	81.7

Research Question 2

Do performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), hedonic motivation (HM), price value (PV), habit (HB), and behavioral intention (BI) impact undergraduate nursing faculty's adoption of m-learning? The second research question examined the impact that independent variables, PE, EE, SI, FC, HM, PV, and HB, had on the dependent variable BI among undergraduate nursing faculty. Second, if these IVs do affect BI, then to what extent. The UTAUT2 served as the theoretical framework to guide the researcher in this study.

Using a 7-point Likert-type scale, participants were instructed to select a value that best indicated their opinion on each of the 28 items related to each of the UTAUT2 constructs. The Likert-type scale contained seven values: strongly disagree = 1, somewhat disagree = 2, disagree = 3, neutral = 4, agree = 5, somewhat agree = 6, strongly agree = 7. The mean for each survey item was obtained. Next, the mean and standard deviation for each construct was calculated using the average score of the participants' composite means.

Survey items 10 through 12 served to measure participants' PE from the *Modified UTAUT2 for Assessment of m-learning Adoption* survey. As presented in Table 12, 50% of participants strongly agreed that m-learning was useful in their daily life; 10.8% somewhat agreed; 34.2% agreed; 2.5% neither agreed nor disagreed; and 2.5% somewhat disagreed. Over half of the participants, 51.7%, strongly agreed that m-learning allowed them to accomplish things more quickly; 10% somewhat agreed; 31.7% agreed; 5% neither agreed nor disagreed; and only .8% somewhat disagreed. Over 40% of participants who indicated that using m-learning increased their productivity; 15.8% somewhat agreed; 35% agreed; 5.8% neither agreed nor disagreed; and .8% disagreed. The composite mean for PE was 6.23; thus, indicating that participants' attitudes on whether using m-learning can or cannot improve their performances fell between somewhat to strongly agree.

Survey items 13 through 16 served to measure participants' EE from the *Modified UTAUT2 for Assessment of m-learning Adoption* survey. Table 13 displays the descriptive statistics for these four items. More than 27% of participants strongly agreed that m-learning was easy to use; 17.5% somewhat agreed; 47.5% agreed; 2.5% neither agreed nor disagreed; .8 disagreed; and 3.3% somewhat disagreed. More than 29% of participants strongly agreed that their interactions with m-learning were clear and understandable; 13.3% somewhat agreed; 48.3% agreed; .8 disagreed; and 1.7% somewhat disagreed. Over 30% strongly agreed that m-learning was easy to use; 14.2% somewhat agreed; 45% agreed; 2.5% neither agreed nor disagreed; 3.3% somewhat disagreed; and .8% strongly disagreed. Additionally, 33.3% strongly agreed that it was easy for them to become skillful at using m-learning; 15.8% somewhat agreed; 45.8% agreed; 1.7% neither agreed nor disagreed, and 2.5% somewhat disagreed. The composite mean for the EE construct was 5.98. This indicated that participants' attitudes fell between agree to somewhat agree about the ease associated with the use of m-learning.

Table 12

Descriptive Statistics for Performance Expectancy (PE)

Items	Selections	n	%	Mean	Composite Mean	Std. Deviation
Item 10 (PE1) I find m-learning useful in my daily life.	Strongly Disagree	0	0	6.29		
	Somewhat Disagree	2	2.5			
	Disagree	0	0			
	Neutral	3	2.5			
	Agree	41	34.2			
	Somewhat Agree	13	10.8			
	Strongly Agree	60	50.0			
Item 11 (PE2) Using m-learning allows me to…	Strongly Disagree	0	0	6.29		
	Somewhat Disagree	1	.8			
	Disagree	0	0		6.23	.84
	Neutral	6	5			
	Agree	38	31.7			
	Somewhat Agree	12	10			
	Strongly Agree	62	51.7			
Item 12 (PE3) Using m-learning increases my…	Strongly Disagree	0	0	6.11		
	Somewhat Disagree	0	0			
	Disagree	1	.8			
	Neutral	7	5.8			
	Agree	42	35			
	Somewhat Agree	19	15.8			
	Strongly Agree	50	41.7			

Table 13

Descriptive Statistics for Effort Expectancy (EE)

Items	Selections	n	%	Mean	Composite Mean	Std. Deviation
Item 13 (EE1) Learning how to use m-learning is easy for me.	Strongly Disagree	0	0	5.92		
	Somewhat Disagree	4	3.3			
	Disagree	1	.8			
	Neutral	3	2.5			
	Agree	57	47.5			
	Somewhat Agree	21	17.5			
	Strongly Agree	33	27.5			
Item 14 (EE2) My interaction with m-learning…	Strongly Disagree	0	0	5.96		
	Somewhat Disagree	2	1.7			
	Disagree	1	.8			
	Neutral	0	0			
	Agree	58	48.3			
	Somewhat Agree	16	13.3			
	Strongly Agree	35	29.2		5.98	.91
Item 15 (EE3) I find m-learning is clear and understand able.	Strongly Disagree	1	.8	6.00		
	Somewhat Disagree	4	3.3			
	Disagree	0	0			
	Neutral	3	2.5			
	Agree	54	45			
	Somewhat Agree	17	14.2			
	Strongly Agree	39	32.5			
Item 16 (EE4) It is easy for me to become skillful at…	Strongly Disagree	0	0	6.07		
	Somewhat Disagree	3	2.5			
	Disagree	0	0			
	Neutral	2	1.7			
	Agree	55	45.8			
	Somewhat Agree	19	15.8			
	Strongly Agree	40	33.3			

Survey items 17 through 19 served to measure participants' SI from the *Modified UTAUT2 for Assessment of m-learning Adoption* survey. As presented in Table 14, 14.2% of participants indicated that people who are important to them think they should use m-learning; 13.3% somewhat agreed; 38.3 agreed; 38.3% neither agreed nor disagreed; and 1.7% somewhat disagreed. Almost 11% of the participants strongly agreed that people who influenced their behavior thought that they should use m-learning; 25% agreed; 40% neither agreed nor disagreed; 1.7% disagreed; and 20.8% somewhat disagreed. Nearly 12% of participants strongly agreed that people whose opinions they valued preferred that they use m-learning; 30% agreed; 39.2% neither agreed nor disagreed; 1.7% disagreed; 2.5% somewhat disagreed. The composite mean for the SI construct was 5.09; demonstrating that participants agreed to somewhat agreed about the importance of whether or not others who were important to them believed they should use m-learning.

Survey items 20 through 23 served to measure participants' FC from the *Modified UTAUT2 for Assessment of m-learning Adoption* survey. As presented in Table 15, 35.8% of participants strongly agreed that they had the resources necessary to use m-learning, 6.7% somewhat agreed, 53.3% agreed, .8% neither agreed nor disagreed, and 2.5% somewhat disagreed. Over 38% of participants strongly agreed that they have the knowledge necessary to use m-learning, 10.8% somewhat agreed, 47.5% agreed, .8% neither agreed nor disagreed, .8% disagreed, and .8% somewhat disagreed. When asked about the compatibility between m-learning and other technologies used, 30% strongly agreed that m-learning is compatible. 10.8% somewhat agreed, 50.8% agreed, 5% neither agreed nor disagreed, and 1.7% somewhat disagreed. Nearly 26% of participants strongly agreed that they could get help from others when having difficulties in using m-learning, 15% somewhat agreed, 55% agreed, .8% strongly agreed, and .8% somewhat disagreed. The composite mean for the FC construct was 6.13, signifying that

Table 14

Descriptive Statistics for Social Influence (SI)

Items	Selections	n	%	Mean	Composite Mean	Std. Deviation
Item 17	Strongly Disagree	0	0	5.18		
(SI1)	Somewhat Disagree	2	1.7			
People	Disagree	0	0			
who are	Neutral	46	38.3			
important	Agree	38	38.3			
to me	Somewhat Agree	16	13.3			
think…	Strongly Agree	17	14.2			
Item 18	Strongly Disagree	0	0	5.03		
(SI2)	Somewhat Disagree	25	20.8			
People	Disagree	2	1.7		5.09	1.09
who	Neutral	48	40			
influence	Agree	30	25			
my…	Somewhat Agree	0	0			
	Strongly Agree	14	11.7			
Item 19	Strongly Disagree	0	0	5.06		
(SI3)	Somewhat Disagree	3	2.5			
People	Disagree	2	1.7			
whose	Neutral	47	39.2			
opinions	Agree	36	30			
that I…	Somewhat Agree	0	0			
	Strongly Agree	15	12.5			

participants somewhat to strongly agreed that there were organizational resources and knowledgeable people needed to use m-learning.

Survey items 24 through 26 served to measure participants’ HM from the *Modified UTAUT2 for Assessment of m-learning Adoption* survey. As displayed in Table 16, 25.8% strongly agreed that using m-learning was fun, 15% somewhat agreed, 43.3% agreed, 12.5% neither agreed nor disagreed, .8% disagreed, and .8% somewhat disagreed. In terms of finding the use of m-learning enjoyable, 26.7% strongly agreed, 17.5% somewhat agreed, 41.7% agreed, 10.8% neither agreed nor disagreed, and 1.7% somewhat disagreed. More than 21% strongly agreed that using m-learning was very entertaining, 28.3% somewhat agreed, 34.2% agreed, 10.8% neither agreed nor disagreed, .8% disagreed, and 2.5% somewhat disagreed. The composite mean for the HM construct was 5.74, therefore suggesting that participants agreed to somewhat agreed that using m-learning was enjoyable.

Survey items 27 through 29 served to measure participants' PV from the *Modified UTAUT2 for Assessment of m-learning Adoption* survey. Table 17 displays the descriptive statistics for these three items. Approximately 7.5% of participants indicated that they strongly agreed that m-learning technology is reasonably priced, 41.7 somewhat agreed, 20.8% agreed, 9.2% neither agreed nor disagreed, 1.7% disagreed, and 17.5% somewhat disagreed. Over 11% of participants indicated that m-learning technology is a good value for the money, 35.8% somewhat agreed, 34.2% agreed, 9.2% neither agreed nor disagreed, and 7.5% somewhat disagreed. Again, over 11% strongly agreed that at the current price, m-learning provides a good value, 30.8% somewhat agreed, 35.8% agreed, 10% neither agreed nor disagreed, and 10% somewhat disagreed. The composite mean for the PV was 5.17, thus suggesting that participants agreed to somewhat agreed that m-learning technology is reasonably priced.

Table 15

Descriptive Statistics for Facilitating Conditions (FC)

Items	Selections	N	%	Mean	Composite Mean	Std. Deviation
Item 20	Strongly Disagree	0	0	6.20		
(FC1)	Somewhat Disagree	3	2.5			
I have the	Disagree	0	0			
resources	Neutral	1	.8			
necessary	Agree	64	53.3			
to use…	Somewhat Agree	8	6.7			
	Strongly Agree	43	35.8			
Item 21	Strongly Disagree	0	0	6.20		
(FC2)	Somewhat Disagree	1	.8			
I have the	Disagree	1	.8			
knowledge	Neutral	1	.8			
necessary	Agree	57	47.5			
to use…	Somewhat Agree	13	10.8			
	Strongly Agree	46	38.3		6.13	.66
Item 22	Strongly Disagree	0	0	6.04		
(FC3)	Somewhat Disagree	2	1.7			
M-	Disagree	0	0			
learning is	Neutral	6	5			
compatible	Agree	61	50.8			
with…	Somewhat Agree	13	10.8			
	Strongly Agree	36	30			
Item 23	Strongly Disagree	0	0	6.08		
(FC4)	Somewhat Disagree	1	.8			
I can get	Disagree	0	0			
help from	Neutral	1	.8			
others	Agree	66	55			
when I…	Somewhat Agree	18	15			
	Strongly Agree	32	26.7			

Table 16

Descriptive Statistics for Hedonic Motivation (HM)

Items	Selections	n	%	Mean	Composite Mean	Std. Deviation
Item 24 (HM1) Using m-learning is fun.	Strongly Disagree	0	0	5.80		
	Somewhat Disagree	1	.8			
	Disagree	1	.8			
	Neutral	15	12.5			
	Agree	52	43.3			
	Somewhat Agree	18	15			
	Strongly Agree	31	25.8			
Item 25 (HM2) Using m-learning is enjoyable.	Strongly Disagree	0	0	5.82		
	Somewhat Disagree	2	1.7			
	Disagree	0	0		5.74	.98
	Neutral	13	10.8			
	Agree	50	41.7			
	Somewhat Agree	21	17.5			
	Strongly Agree	32	26.7			
Item 26 (HM3) Using m-learning is very…	Strongly Disagree	0	0	5.60		
	Somewhat Disagree	3	2.5			
	Disagree	1	.8			
	Neutral	13	10.8			
	Agree	41	34.2			
	Somewhat Agree	34	28.3			
	Strongly Agree	26	21.7			

Table 17

Descriptive Statistics for Price Value (PV)

Items	Selections	n	%	Mean	Composite Mean	Std. Deviation
Item 27 (PV1) M-learning technology is…	Strongly Disagree	0	0	4.86		
	Somewhat Disagree	21	17.5			
	Disagree	2	1.7			
	Neutral	11	9.2			
	Agree	25	20.8			
	Somewhat Agree	50	41.7			
	Strongly Agree	9	7.5			
Item 28 (PV2) M-learning technology is a…	Strongly Disagree	0	0	5.34		
	Somewhat Disagree	9	7.5			
	Disagree	0	0		5.17	1.05
	Neutral	11	9.2			
	Agree	41	34.2			
	Somewhat Agree	43	35.8			
	Strongly Agree	14	11.7			
Item 29 (PV3) At the current price, m-learning provides…	Strongly Disagree	0	0	5.30		
	Somewhat Disagree	12	10			
	Disagree	0	0			
	Neutral	12	10			
	Agree	43	35.8			
	Somewhat Agree	37	30.8			
	Strongly Agree	14	11.7			

Survey items 30 through 32 served to measure participants' HB from the *Modified UTAUT2 for Assessment of m-learning Adoption* survey. As presented in Table 18, 35% of participants strongly agreed to the statement, "I must use m-learning," 12.5% somewhat agreed, 35% agreed, 10.8% neither agreed nor disagreed, 5% disagreed, and 3.3% somewhat disagreed with the statement. Alternately, 9.2% strongly agreed that they would get addicted to using m-learning, 17.5% somewhat agreed, 15.8% agreed, 23.3 neither agreed nor disagreed, 16.7%

disagreed, 10.8% somewhat disagreed, and 4.2% strongly disagreed. Related to the statement, "I must use m-learning," 9.2% of participants indicated they strongly agreed, 19.2% somewhat agreed, 21.7 agreed, 22.5% neither agreed nor disagreed, 15% disagreed, 7.5% somewhat disagreed, and 2.5% strongly disagreed. The composite mean for the HB construct was 4.77, therefore indicating that participants were neutral to agreed that m-learning had become a habit.

Table 18

Descriptive Statistics for Habit (HB)

Items	Selections	n	%	Mean	Composite Mean	Std. Deviation
Item 30 (HB1) The use of m-learning has become…	Strongly Disagree	0	0	5.65		
	Somewhat Disagree	4	3.3			
	Disagree	6	5			
	Neutral	13	10.8			
	Agree	42	35			
	Somewhat Agree	15	12.5			
	Strongly Agree	36	35			
Item 31 (HB2) I will get addicted to using m-learning.	Strongly Disagree	5	4.2	4.21		
	Somewhat Disagree	13	10.8			
	Disagree	20	16.7		4.77	1.30
	Neutral	28	23.3			
	Agree	19	15.8			
	Somewhat Agree	21	17.5			
	Strongly Agree	11	9.2			
Item 32 (HB3) I muse use m-learning.	Strongly Disagree	3	2.5	4.46		
	Somewhat Disagree	9	7.5			
	Disagree	18	15			
	Neutral	27	22.5			
	Agree	26	21.7			
	Somewhat Agree	23	19.2			
	Strongly Agree	11	9.2			

Survey items 33 through 35 served to measure participants' BI from the *Modified UTAUT2 for Assessment of m-learning Adoption* survey. As presented in Table 19, 25% of participants strongly agreed that they intended to continue using m-learning in the future, 6.7% somewhat agreed, 59.2% agreed, 5.8% neither agreed nor disagreed, and .8% strongly disagreed. Over 21% of participants strongly agreed to always trying to use m-learning in their daily activities, 15.8% somewhat agreed, 47.5% agreed, 10.8% neither agreed nor disagreed, .8% disagreed, and .8% somewhat disagreed. More than 23% of participants strongly agreed with planning to continue to use m-learning frequently; 13.3% somewhat agreed, 52.5% agreed, 7.5% neither agreed nor disagreed, and .8% somewhat disagreed. The composite mean for the BI construct was 5.91, thus demonstrating that participants agreed to somewhat agreed that they indented to continue using m-learning.

Hierarchical Linear Regression Analysis

A hierarchical linear regression analysis was conducted to examine how PE, EE, SI, FC, HM, PV, and HB impacted BI of undergraduate nursing faculty toward the adoption of m-learning. Based on expert opinion in the disciplines of nursing and educational technology, the seven IVs were ranked. The ranking of the seven IVs was based on a consensus of relevance to the population of interest, undergraduate nursing faculty, and degree of importance developed from the literature. Effort expectancy was ranked as one, FC as two, PE as three, SI as four, HM as five, HB as six, and PV as seven. Based on the previously noted ranked order of importance by expert consensus, each construct was entered into the model, respectively. Table 20 depicts the ranking order by consensus.

Table 19

Descriptive Statistics for Behavioral Intention (BI)

Items	Selections	n	%	Mean	Composite Mean	Std. Deviation
Item 33 (BI1) I intend to continue using m-learning…	Strongly Disagree	1	.8	6.03		
	Somewhat Disagree	0	0			
	Disagree	0	0			
	Neutral	7	5.8			
	Agree	71	59.2			
	Somewhat Agree	8	6.7			
	Strongly Agree	30	25			
Item 34 (BI2) I will always try to use m-learning…	Strongly Disagree	0	0	5.78		
	Somewhat Disagree	1	.8			
	Disagree	1	.8		5.91	.85
	Neutral	13	10.8			
	Agree	57	47.5			
	Somewhat Agree	19	15.8			
	Strongly Agree	26	21.7			
Item 35 (BI3) I plan to continue to use m-learning frequently.	Strongly Disagree	0	0	5.92		
	Somewhat Disagree	1	.8			
	Disagree	0	0			
	Neutral	9	7.5			
	Agree	63	52.5			
	Somewhat Agree	16	13.3			
	Strongly Agree	28	23.3			

Table 20

Ranked UTAUT2 Constructs by Expert Consensus

Construct	Definition	Ranking
Effort expectancy (EE)	Amount of ease associated with use of a system or technology	1
Facilitating Conditions (FC)	Degree to which an individual perceives that organizational and technical infrastructure exists to support use of the system or technology	2
Performance expectancy (PE)	Degree to which an individual believes that using the system, or in this case the technology, will help him or her attain gains in job performance	3
Social Influence (SI)	Degree to which an individual perceives or believes that others influence him or her to use the new technology	4
Hedonic Motivation (HM)	Pleasure or fun resulting from the use of a technology	5
Habit (HB)	Perceptual construct that reflects the results of previous experiences	6
Price value (PV)	Learner's cognitive tradeoff between the perceived benefits of the applications and the monetary cost for using mobile technology	7

The first linear regression model was calculated to predict BI based on participants' reported EE. Table 21 presents statistical results from Model One. Regression analysis results revealed that EE was significantly related to participants' BI to adopt m-learning, adjusted R^2 = .387, $F(1, 115) = 74.35$; $p < 0.01$, indicating that 38.7% of BI can be predicted by EE. The slope of the relationship between EE and BI was positive ($\beta = .597$), which demonstrated that nursing faculty who indicated ease of use also had higher scores on BI.

Table 21

Summary Statistics for Model One

Model	R	R Square	Adj. R Square	R Square Change	F	Sig.
1	.63	.39	.387	.39	74.35	.000

The relationship of EE on BI was found to be direct; meaning as EE increased so did BI. For every one unit of change in EE, BI to adopt m-learning increased by .60. See Table 22 for the regression model coefficients.

Table 22

Regression Model Coefficients for Model One

	B	SE	t	Sig.	95% LCL	95% UCL
EE	.597	.42	8.62	.000	1.49	3.15

The second linear regression model was calculated to predict BI based on participants' reported FC, while controlling for EE. Table 23 displays statistical results from the second model. Regression analysis results revealed a significant impact on participants' BI to adopt m-learning, adjusted $R^2 = .439$, $F(1, 114) = 11.60$; $p < 0.01$, indicating that 43.9% of BI can be predicted by FC while controlling for EE. The slope of the relationship between FC and BI, while controlling for EE, was positive ($\beta = .428$), which demonstrated that nursing faculty who indicated a belief that the necessary infrastructure was in place had higher scores on BI.

Table 23

Summary Statistics for Model Two

Model	R	R Square	Adj. R Square	R Square Change	F	Sig.
2	.67	.45	.439	.06	11.60	.001

The relationship of FC, while controlling for EE, on BI was found to be direct. In other words, as FC increased so did BI. For every one unit of change in FC, while controlling EE, BI to adopt m-learning increased by .43. Undergraduate nursing faculty who had similar EE scores tended to have higher FC scores, as BI increased. See Table 24 for the regression model coefficients.

Table 24

Regression Model Coefficients for Model Two

	B	SE	t	Sig.	95% LCL	95% UCL
EE	.366	.10	3.86	.000	.18	.55
FC	.428	.13	3.41	.001	.18	.68

A third linear regression model was calculated to predict BI based on participants' reported PE, while controlling for EE and FC. Table 25 presents statistical results from the third model. Regression analysis results revealed a significant impact on participants' BI to adopt m-learning, adjusted R^2 = .572, F(1, 113) = 36.33; $p < 0.01$, indicating that 57.2% of predictability on participants' BI can be predicted by PE while controlling for EE and FC. The slope of the relationship between PE and BI, while controlling for EE and FC, was positive ($\beta = .510$), which demonstrated that nursing faculty who indicated a belief that using m-learning did help them to attain gains on the job had higher scores on BI.

Table 25

Summary Statistics for Model Three

Model	R	R Square	Adj. R Square	R Square Change	F	Sig.
3	.76	.58	.572	.13	36.33	.000

The relationship of PE, while controlling for EE and FC, on BI was found to be direct. Basically, as PE increased so did BI. For every one unit of change in PE, BI to adopt m-learning increased by .51. Undergraduate nursing faculty who have similar scores on EE and FC tended to have higher scores on PE, as BI increased. See Table 26 for the regression model coefficients.

Table 26

Regression Model Coefficients for Model Three

	B	SE	t	Sig.	95% LCL	95% UCL
EE	.069	.10	.72	.476	-.12	.26
FC	.361	.11	3.27	.001	.14	.58
PE	.510	.09	6.03	.000	.34	.68

A fourth linear regression model was calculated to predict BI based on participants' reported SI, while controlling for EE, FC, and PE. Table 27 displays statistical results from the fourth model. Regression analysis results revealed a significant impact on participants' BI to adopt m-learning, adjusted $R^2 = .601$, $F(1, 112) = 9.13$; $p < 0.01$, indicating that 60.1% of predictability on participants' BI can be predicted by SI while controlling for EE, FC, and PE. The slope of the relationship between SI and BI, while controlling for EE, FC, and PE, was positive ($\beta = .155$), which demonstrated that nursing faculty who agreed that it is important for others to believe that they should use m-learning had higher scores on BI.

Table 27

Summary Statistics for Model Four

Model	R	R Square	Adj. R Square	R Square Change	F	Sig.
4	.78	.61	.601	.03	9.13	.003

The relationship of SI, while controlling for EE, FC, and PE, on BI was found to be direct; therefore, as SI increased so did BI. For every one unit of change in SI, BI to adopt m-learning increased by .16. Faculty who responded similarly to EE, FC, and PE tended to have higher scores for SI, as BI increased. See Table 28 for the regression model coefficients.

Table 28

Regression Model Coefficients for Model Four

	B	SE	t	Sig.	95% LCL	95% UCL
EE	.118	.01	1.25	.214	-.07	.31
FC	.321	.12	2.983	.004	.11	.53
PE	.403	.09	4.52	.000	.23	.58
SI	.155	.05	3.02	.003	.05	.26

A fifth linear regression model was calculated to predict BI based on participants' reported HM, while controlling for EE, FC, PE, and SI. Table 29 presents statistical results from the fifth model. Regression analysis results revealed a significant impact on participants' BI to adopt m-learning, adjusted $R^2 = .62$, $F(1, 111) = 7.95$; $p < 0.01$, indicating that 62% of predictability on participants' BI can be predicted by HM while controlling for EE, FC, PE, and SI. The slope of the relationship between HM and BI, while controlling for EE, FC, PE, and SI, was positive ($\beta = .196$), which demonstrates that nursing faculty who agreed that using technology, such as m-learning, is pleasing had higher scores on BI.

Table 29

Summary Statistics for Model Five

Model	R	R Square	Adj. R Square	R Square Change	F	Sig.
5	.80	.64	.624	.03	7.95	.006

The relationship of HM, while controlling for EE, FC, PE, and SI, on BI was found to be direct; therefore, as HM increased so did BI. For every one unit of change in HM, BI to adopt m-learning increased by .20. Faculty who responded similarly to EE, FC, PE, and SI tended to have higher scores for HM, as BI increased. See Table 30 for the regression model coefficients.

Table 30

Regression Model Coefficients for Model Five

	B	SE	t	Sig.	95% LCL	95% UCL
EE	.047	.10	.49	.624	-.14	.24
FC	.251	.11	2.34	.021	.04	.46
PE	.366	.09	4.18	.000	.19	.54
SI	.127	.05	2.52	.013	.03	.23
HM	.196	.07	2.82	.006	.06	.33

A sixth linear regression model was calculated to predict BI based on participants' reported HB, while controlling for EE, FC, PE, SI, and HM. Table 31 displays statistical results from the sixth model. Regression analysis results revealed a significant impact on participants' BI to adopt m-learning, adjusted $R^2 = .646$, $F(1, 110) = 7.84$; $p < 0.01$, indicating that 64.6% of predictability on participants' BI can be predicted by HB while controlling for EE, FC, PE, SI, and HM. The slope of the relationship between HB and BI, while controlling for EE, FC, PE, SI, and HM, was positive ($\beta = .149$), which demonstrated that nursing faculty who agreed that using m-learning was a developed habit had higher scores on BI.

Table 31

Summary Statistics for Model Six

Model	R	R Square	Adj. R Square	R Square Change	F	Sig.
6	.62	.66	.646	.02	7.84	.006

The relationship of HB, while controlling for EE, FC, PE, SI, and HM, on BI was found to be direct; therefore, as HB increased so did BI. For every one unit of change in HB, BI to adopt m-learning increased by .15. Faculty who responded similarly to EE, FC, PE, SI, and HM tended to have higher scores for HM, as BI increased. See Table 32 for the regression model coefficients.

Table 32

Regression Model Coefficients for Model Six

	B	SE	t	Sig.	95% LCL	95% UCL
EE	.072	.09	.78	.438	-..11	.26
FC	.159	.11	1.46	.149	-.06	.38
PE	.299	.09	3.39	.001	.12	.47
SI	.083	.05	1.62	.108	-.02	.19
HM	.156	.07	2.56	.028	.02	.29
HB	.149	.05	2.80	.006	.04	.26

A seventh linear regression model was calculated to predict BI based on participants' reported PV, while controlling for EE, FC, PE, SI, HM, and HB. Table 33 presents statistical results from the seventh model. Regression analysis results revealed that PV did not significantly impact participants' BI to adopt m-learning, adjusted $R^2 = .644$, $F(1, 109) = .47$; $p = .493$. Therefore, undergraduate faculty did not find the cost of mobile technology to be a factor in their decision to use m-learning. See Table 34 for the regression model coefficients.

Table 33

Summary Statistics for Model Seven

Model	R	R Square	Adj. R Square	R Square Change	F	Sig.
7	.82	.67	.644	.00	.47	.493

Table 34

Regression Model Coefficients for Model Seven

	B	SE	t	Sig.	95% LCL	95% UCL
EE	.072	.09	.78	.440	-.11	.26
FC	.143	.11	1.29	.201	-.08	.37
PE	.298	.09	3.37	.001	.12	.47
SI	.083	.05	1.61	.110	-.02	.19
HM	.148	.07	2.11	.037	.01	.29
HB	.140	.06	2.54	.013	.24	.14
PV	.040	.06	.69	.493	.07	.04

In summary, the hierarchical linear regression results indicated that the independent variables of EE, FC, PE, SI, HM, and HB did have a statistically significant impact on BI of undergraduate nursing faculty. Therefore, the null hypothesis was rejected. Furthermore, the relationship for each, while controlling for the previous independent variable, had a positive relationship. As the independent variable increased, so did BI. It was also discovered that the independent variable, PV, did not have a statistically significant effect on BI for those surveyed.

Research Question 3

What differences do gender, age, education level, and type of nursing program have on undergraduate nursing faculty behavioral intention (BI) to adopt m-learning?

ANOVA Analysis

Analysis for Research Question 3 sought to explore how gender, age, education level, and type of nursing program impacted BI of undergraduate nursing faculty. However, due to a low sample size based upon participant gender, male (4.2%) and female (95.8%), participant gender as a potential factor of impact on BI was removed from the analysis process.

Concerning data related to participant age, further manipulation of data was required for analysis purposes due to low sample sizes in certain categories. For example, only one respondent reported their age as less than 25 years. Due to the small sample size, this participant was removed from the data set for further analysis. In addition, the category of 66 and over only had three participants to respond. These three participants were recoded into the 55 to 65 category to create a new category, individuals over the age of 55 years, for the purpose of analysis. With the recoding of data, 16% (*n* = 19) of participants reported being 25 to 35 years old, 31.1% (*n* = 37) reported ages between 36 and 45 years, 28.6% (*n* = 34) reported ages between 46 to 55 years, and 23.5% (*n* = 28) reported ages 55 and over.

A similar issue arose with the data related to level of education. For the category related to baccalaureate education, only five respondents indicated this as their highest level of preparation. Therefore, due to this sample size, participants with the baccalaureate degree and master's degree were combined into a new category, non-doctorally prepared. The other two categories, clinical doctorate and research doctorate remained unchanged for analysis. Consequently, 58.3% (*n* = 70) participants did not have an earned doctorate degree. Alternatively, 21.7% (*n* = 26) of those surveyed indicated they held a clinical doctorate and 20% (*n* = 24) indicated they held a research doctorate.

Finally, the concern related to small sample sizes affected the category of type of nursing program. For the category of RN mobility, only four participants identified with this category as the type of program. As a result, these four participants were combined with the baccalaureate category since both educational programs lead students to the baccalaureate degree at the end of the program. With the recoding of data, 55.8% (*n* = 67) of participants taught in an associate degree nursing program and 43.3% (*n* = 52) of participants taught in a baccalaureate nursing program.

A one-way ANOVA analysis was performed exploring the impact of age on BI of undergraduate nursing faculty toward the adoption of m-learning; results revealed that there were no statistically significant differences between group means as determined by the one-way ANOVA, $F(3,111) = .20$, $p = .89$. Therefore, the one-way ANOVA analysis revealed that age did not have an impact on participants' BI to adopt m-learning. The null hypothesis was not rejected. Table 35 presents the result of the one-way ANOVA analysis.

Table 35

One-way ANOVA Table for Age

	SS	df	MS	F	Sig.
Between Groups	.45	3	.15	.20	.89
Within Group	82.33	111	.74		
Total	82.78	114			

A one-way ANOVA analysis was performed exploring the impact of level of education on BI of undergraduate nursing faculty toward the adoption of m-learning, results revealed that there were no statistically significant differences between group means as determined by the one-way ANOVA, $F(2,113) = .08$, $p = .92$. Therefore, the one-way ANOVA analysis revealed that level of education did not have an impact on participants' BI to adopt m-learning. Table 36 presents the result of the one-way ANOVA analysis.

Table 36

One-way ANOVA Table for Level of Education

	SS	df	MS	F	Sig.
Between Groups	.12	2	.06	.08	.92
Within Group	82.68	113	.73		
Total	82.80	115			

A one-way ANOVA analysis was performed exploring the impact of type of program on BI of undergraduate nursing faculty toward the adoption of m-learning; results revealed that there were no statistically significant differences between group means as determined by the one-way ANOVA, $F(1,113) = .08$, $p = .77$. Therefore, the one-way ANOVA analysis revealed that type of nursing program did not have an impact on participants' BI to adopt m-learning. Table 37 presents the result of the one-way ANOVA analysis.

Table 37

One-way ANOVA Table for Type of Nursing Program

	SS	df	MS	F	Sig.
Between Groups	.06	1	.06	.08	.78
Within Group	82.73	113	.73		
Total	82.79	114			

Three-way ANOVA Analysis

A three-way ANOVA analysis was performed to explore if any interactions existed between age, level of education, type of nursing program, and responses to BI. Results revealed that there were no statistically significant interactions between groups as determined by the three-way ANOVA. There was no significant effect of age on participants' BI, $F(3, 115) = .15$, $p = .933$. There was also no significant effect of level of education on participants' BI, $F(2, 115) = .49$, $p = .612$. There was also no significant effect between type of nursing program and participants' BI, $F(1, 115) = .15$, $p = .612$. Finally, There was no significant effect of age, level of education, and type of nursing program on BI, $F(5, 115) = .88$, $p = .499$. Table 38 presents the results of the three-way ANOVA analysis.

Table 38

Three-way ANOVA Table for Age, Level of Education, and Behavioral Intention

	SS	df	MS	F	Sig.
Age	.33	3	.11	.15	.931
Level of Education	.75	2	.37	.49	.612
Type of Nursing Program	.11	1	.11	.15	.700
Age*Level of Education*Type of Nursing Program	3.31	5	.66	.88	.499
Total	4095.78	115			

Summary

This chapter examined the findings of undergraduate nursing faculty's' adoption of m-learning from a single southeastern state. Findings revealed that of those surveyed, 100% owned a smartphone device. Results also revealed that the majority of participants owned laptops (96.7%) and tablet devices (77.5%). Device ownership also included E-readers, MP3/MP4 players, and netbooks in much smaller percentages. Participants also indicated that their level of experience in using mobile devices ranged between intermediate and advanced. An overwhelming number of participants indicated that they had used mobile devices in the past for learning purposes. The majority of participants indicated they used their mobile devices between 0-3 or 4-7 hour per day. Of those surveyed, participants used their mobile devices for seeking information, business or work, educational, and entertainment followed, finally, with social networking. A hierarchical multiple regression analysis was performed and revealed statistically significant results for six out of the seven models in predicting BI. Finally, three one-way ANOVA analyses were performed to examine if age, level of education, or type of nursing program hand any statistically significant impact on BI to adopt m-learning. Independent analyses demonstrated that none of the variables had a significant impact on BI. A three-way

ANOVA analysis was performed to determine if there were any statistically significant interaction between the age of participants, level of education of participants, type of nursing program, and responses to BI. Results of the three-way ANOVA demonstrated that there were no statistically significant interactions present.

CHAPTER V:

DISCUSSION OF RESULTS

The purpose of this study was to explore variables related to m-learning adoption among undergraduate nursing faculty in a southeastern state. To guide the development of this study Venkatesh's (2012) revised version of the Unified Theory of Acceptance and Use of Technology, UTAUT2, was utilized. Independent variables of PE, EE, SI, FC, HM, PV, and HB were used to evaluate their impact and degree of influence on BI toward the adoption of m-learning. This study also examined how undergraduate nursing faculty were using mobile technology devices and the relationship between gender, age, education level, and type of nursing program on BI. Chapter V presents a theoretical framework review, a discussion related to the findings from each of the three research questions, conclusion, recommendations for practice, recommendations for future research, and limitations of the study, followed by a summary of this study.

Theoretical Framework

The revised version of the Unified Theory of Acceptance and Use of Technology served as the framework for this study. The UTAUT2 is a modified version of the original UTAUT created in 2003 by Venkatesh and associates. In 2012, three additional constructs were added to the original constructs of PE, EE, SI, and FC. The three additional constructs were HM, PV, and HB. These seven constructs served as the independent variables for this study. Behavioral intention served as the dependent variable. Behavioral intention is a construct used to measure an individual's intention to perform an action. The theory compiled 32 variables across eight different models and has consolidated the aforementioned constructs. The UTAUT2 has been used in a variety of disciplines to explore the impact of technology acceptance and adoption. Prior research has demonstrated the UTAUT2 instrument as both valid and reliable. The researcher chose to modify the UTAUT2 instrument to explore the impact of m-learning among undergraduate nursing faculty in a southeastern state. The modified survey was identified as the *Modified UTAUT2 for Assessment of m-learning Adoption*. The instrument consisted of 35 items and 1 challenge question. Questions 1 through 9 explored demographic and mobile device use data. Questions 10 through 35 used a 7-point Likert-type scale to evaluate nursing faculty agreement of each of the constructs. To establish validity of the *Modified UTAUT2 for Assessment of m-learning Adoption* survey, the researcher utilized a collective group of content experts. The group of experts did confirm the instrument's content validity to measure m-learning among nursing faculty. A Cronbach alpha score was calculated to determine the instrument's reliability. The total Cronbach alpha score was found to be .953, indicating a high level of internal consistency, thus validating the instrument as a reliable assessment.

Research Question 1

How are undergraduate nursing faculty using mobile device technologies?

Nursing faculty in this study owned some type of smart phone (100%, n = 120). Faculty also indicated that they owned other mobile devices such as MP3/MP4 players (20.8%, n = 25), tablets (77.5%, n = 93), netbooks (4.2%, n = 5), and laptops (96.7%, n = 116). Kenny et al. (2012) noted that, of those nursing faculty surveyed, 46% owned a smartphone device; hence pointing to the idea that mobile device ownership is continuing to grow among nursing educators. Day-Black and Merrill (2015) stated that mobile devices are continuously becoming important tools in the healthcare environment; which, could be another driving factor as to why mobile device ownership among nursing educators is on the rise.

The study found that 92.5% (n = 111) of nursing faculty participants identified their level of use of mobile devices as advanced, meaning that they used a mobile device many times throughout the day. This was followed by 6.7% (n = 8) indicating that their level of use of mobile devices was intermediate, indicating that they used a mobile device at least once per day. No participants identified as novice or no experience related the level of use of mobile devices; which further supported that faculty members were comfortable with mobile device technology.

Over 5% of nursing faculty participants (n = 7) reported using a mobile device at least 8 to 11 hours each day. This was followed by 48.3% (n = 58) indicating they used a mobile device between 4 and 7 hours per day. Finally, 45% (n = 54) acknowledged using a mobile device at least none to 3 hours per day. There were no participants who identified using their device 12 hours or more per day. Thus, over 90% of those nursing faculty surveyed reported using their mobile devices between 0 to11 hours per day. Unfortunately, there is little research that exists regarding the how long mobile devices are being used by nursing faculty. However, results from this study do further support that nursing faculty are using their mobile devices frequently on a day-to-day basis.

It was interesting to note that 94.2% (n = 113) of nursing faculty participants indicated they had used mobile devices for learning purposes. In contrast, only 5% (n = 6) responded to not ever having used a mobile device for learning. Kenny et al. (2012) noted that 65% of participants surveyed used their mobile devices in their teaching and learning. However, Willemese et al. (2014) noted that in nursing clinical courses, m-learning has been used to connect educators and students through the use of mobile devices at the point of patient care; this creates quality teaching moments. Research regarding the use of mobile devices and m-learning in nursing education at all levels is continuing to be published.

Of the activities nursing faculty perform on their mobile devices, information seeking was the activity ranked highest (95.8%, $n = 115$). This was followed by business or work activities (94.2%, $n = 113$). Both entertainment and educational purposes were equally ranked (81.7%, $n = 98$). The last activity was social networking (80.8%, $n = 97$). These findings are consistent with Patten, Sanchez, and Tangney (2006), who found three overarching categories of functions educators perform on their mobile devices: administrative functions, reference functions, and interactive functions. Similar results were noted by Doyle, Garrett, and Currie (2014) in a literature review that explored the ways that nursing faculty are utilizing mobile technology. Results from the review revealed that nursing faculty used mobile devices to access information due to time savings and having access to resources at any time and at any location with their mobile devices, thus indicating that participants were using their mobile devices to help access and learn information.

Research Question 2

Do performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), hedonic motivation (HM), price value (PV), habit (HB), and behavioral intention (BI) impact undergraduate nursing faculty's adoption of m-learning?

Behavioral intention demonstrates the motivational factors that impact behavior and elude to indicators of how hard individuals are willing to try and the efforts they will put forth to engage in a behavior (Mafe, Blas, & Taveera-Mesias, 2010). In this study, BI was a measure that reflected the attitudes of participants toward continuing to use m-learning. Participants agreed to somewhat agreed that they intended to continue using m-learning. The BI construct served as the dependent variable for this study.

Regression analysis results for Research Question 2 revealed that the variables of EE, FC, PE, SI, HM, and HB did have a statistically significant impact on BI of undergraduate nursing faculty toward adopting m-learning. It was also found that PV did not have a statistically significant effect on BI for those surveyed. Furthermore, the relationship for EE, FC, PE, SI, HM, and HB was a positive one. As the independent variable increased, so did BI. Therefore, the null hypothesis was rejected.

The variables of PE, EE, SI, FC, HM, PV, HB, and BI have all been used in a variety of situations to examine various types of technology acceptance (Chang, 2012; Limayem et al., 2007; Masrek, 2015). Kang et al. (2015) explored m-learning acceptance among Korean university students. The researchers found that five out of the seven variables, PE, SI, FC, HM, and HB, were significant determinants of BI to use m-learning. Lewis et al. (2013) studied business faculty members' attitudes toward the use of both conventional and emerging technologies using the UTAUT framework. It was found that PE, EE, SI, and HB were important predictors for adoption. In terms of significant predictors, this study found that PE, EE, SI, FC, HM, and HB were all statistically significant predictors of m-learning adoption among undergraduate nursing faculty. Furthermore, all six of the predictors yielded a positive relationship to BI. Ultimately, differences in research results is due to a variety of reasons. For one, each study surveys a unique population and thus reveals a unique set of adoption predictors. As mentioned previously, little research has been done examining the predictors of m-learning adoption among nursing faculty. Further research is needed to confirm or dispute the results of this study along with expanding the population to include nursing educators at a variety geographical locations and different program levels.

Research Question 3

What differences do gender, age, education level, and type of nursing program have on undergraduate nursing faculty behavioral intention (BI) to adopt m-learning?

For this study, gender had to be excluded from the analysis process because of lack in variability. The population under investigation was primarily represented by females, 95.8% (n = 115), which is very representative of the nursing profession. Men in the field of nursing characterize an underrepresented group, which is quite consistent with the current healthcare labor force. Additionally, this study found that age, level of education, and type of nursing program did not yield any level of statistical significance toward BI to adopt m-learning. Therefore, the null hypothesis was not rejected. Few studies have focused on which predictors drive m-learning adoption among nursing faculty. One important aspect to consider when comparing results of this study to prior research is the uniqueness of the population under investigation. Further research is needed in order to refute or confirm the results found in this study.

There are many variables that can be explored to determine if they have an impact on BI. In the original research by Venkatesh et al. (2003, 2012) moderating factors such as age, gender, experience, and voluntariness of use were used to examine if any impact was made upon the sample's BI to adopt technology. In 2003, Venkatesh et al. made some important discoveries in relation to how age and gender impact participant's technology acceptance. It was found that age moderated all of the key relationships in the UTAUT model. Gender was also found to be a key moderating factor, but it was also discovered that gender and age worked together. This was something that had not been previously revealed in technology adoption research (Venkatesh et al., 2003). Furthermore, the researchers offered some conclusions to help understand the influence that age and gender may offer. Results from the study yielded that as younger employees mature in the workforce, gender difference in how a male or female perceives technology may dissolve (Venkatesh et al., 2003).

In 2012, Venkatesh et al. expanded the UTAUT model by adding new constructs, including HM, PV, and HB. The researchers again examined how both age and gender could moderate the impact of HM, PV, and HB. The researchers were able to confirm that age and gender did moderate the effect of HM, such that BI was stronger among younger men in early levels of experience. It was found that both age and gender did moderate PV on BI, such that older women were found to have a greater BI. Finally, the researchers were able to support the hypothesis that HB is stronger as a predictor of BI for older men (Venkatesh et al., 2012).

Wang et al. (2008) aimed to investigate the variables of age and gender in reference to acceptance of mobile learning among university students in Taiwan. Results of this study demonstrated that age and gender both had impacts on BI of students. Lewis et al. (2013) examined how both age and gender impacted the adoption of established and emerging information technologies among business faculty members. The variables of PE, EE, SI, FC, HM, and HB were all tested. Results of the study demonstrated that both age and gender did impact several of the aforementioned variables.

Conclusions

The findings of this study resulted in four major conclusions as follows:

1. This study revealed that undergraduate nursing faculty currently own and use mobile technology on a routine basis. Participants noted that mobile device ownership was high for

smart phones. Other types of mobile device ownership included tablets, netbooks, laptops, and MP3/MP4 players. Undergraduate nursing faculty are using mobile devices regularly. Greater than 90% of those surveyed identified their level of device use as advanced, meaning that participants are experienced mobile device users and feel they are well prepared to use mobile devices.

2. Faculty are also using their devices for multiple activities. Results revealed that faculty used their devices on a regular basis throughout the day for information seeking, business-related activities, and entertainment purposes. Information seeking may be directly or indirectly related to educational uses. For example, devices may be used to research a telephone number needed or employ a medication app to locate specific drug information in the clinical environment. Examples of business activities include checking emails, responding to students via text or telephone, and/or accessing an LMS. Finally, entertainment activities include game apps, social media access, and viewing of information for pleasure.

3. The study also found that six of the seven variables, EE, FC, PE, SI, HM, and HB, were found to be significantly related to participants' BI to adopt m-learning. This means that nursing faculty are more likely to adopt m-learning if they feel it is easy to use (EE), if they feel they have the necessary resources and organizational support in place (FC), if they believe it will assist them in improving their job performance (PE), if people whose opinions they value think it is important to use (SI), if they feel it is fun to use (HM), and if they develop a routing using it (HB). Price value (PV) was the only variable that was found to not be a significant predictor of BI, meaning nursing faculty did not find the cost of mobile technology to be a factor in their decision to use m-learning.

4. Interestingly, of those surveyed, age, education level, and type of nursing program did not significantly impact BI. These findings suggest that undergraduate nursing education faculty age, education level, and type of program in which they teach are not factors in their use of m-learning.

Recommendations for Practice

Research findings from this study can help to provide insight related to those factors or predictors of m-learning adoption among nursing faculty. Findings from this study maybe useful for nursing education administrators and leaders. It is important that stakeholders be informed regarding the predictors that help to promote m-learning adoption among undergraduate nursing faculty.

The following are recommendations as to how this research might influence the current nursing education practice environment.

1. Given that many of those surveyed have used their mobile devices previously for the purposes of learning, it therefore makes sense that the use of m-learning methodologies would be beneficial for nursing educators. Administrators should consider how to provide additional information to support and train undergraduate nursing faculty and assist them to incorporate the use of mobile devices in teaching and learning. It would also be advantageous for healthcare textbook publishers and nursing content providers to take into account how nursing educators are using mobile devices and m-learning. It is important to support nursing faculty with resources and instruments that can be used on mobile devices;

2. When examining ways to promote m-learning adoption among undergraduate nursing faculty, administrators should understand how each predictor impacts the BI of nursing faculty. It is important to consider m-learning devices and programs that are easy to use (EE). This can

be done by having a sample of nursing faculty test planned educational materials before investing resources into it. It should be considered how resources and organizational support are provided for m-learning (FC). A successful m-learning initiative requires that nursing faculty should have appropriate m-learning technology, time to complete m-learning activities, and technical support for problem solving. By providing case studies, activities, and examples, nursing faculty can engage in experiencing how m-learning can be incorporated into the learning process and therefore into their expected job performance (PE). It is recommended that m-learning champions or super users be established in order to serve as role models and to provide examples as to how colleagues might incorporate and utilize m-learning (SI). Equally important is to create an environment that makes m-learning fun to use (HM). Mandating m-learning without creating a positive environment can create a situation in which faculty do not embrace the technology. Finally, helping to support faculty in using m-learning on a regular basis and thus establishing a regular routine in using it in the teaching and learning process will help faculty to embrace this technology (HB). It is important to consider each of the variables and their order of importance, EE, FC, PE, SI, HM, and HB. Results demonstrated that as each variable was added in the aforementioned order, then predictability of BI increased with each variable up to 65%. These factors can apply to many groups in a variety of ways. For example, not only does this pertain to nursing administrators looking to implement an m-learning initiative but can also help to guide textbook/curriculum publishing companies and nursing education technologists. By carefully taking into account these suggestions in their respective order during development and/or implementation, nursing administrators, nursing educators, and other audiences can implement successful programs and/or initiatives to ensure that m-learning adoption does occur. Each variable plays an important role in the adoption process.

3. Mobile device technology and m-learning have the potential to leverage a wealth of resources in regard to current teaching and learning modalities, such as flipped classrooms and online courses. Due to the cost effectiveness of mobile devices, the digital divide is often reduced or even eliminated. Mobile devices are offering both the educator and student new tools to communicate and engage with learning content from virtually any location. Since faculty are currently using mobile devices, it makes sense that these devices can be easily integrated into the teaching and learning process through successful m-learning initiatives.

Recommendations for Future Research

Results from this study provide some opportunities for future research related to m-learning and faculty adoption.

1. This study should be replicated in other states to determine if the results of this study are comparable to results from other geographical areas. Additional research using undergraduate nursing faculty will help to establish the generalizability of the results of this data to other parts of the United States.

2. Educational and/or nursing researchers should consider other levels of nursing education when exploring the predictors of mobile learning adoption among nursing faculty. It is suggested that others consider surveying graduate faculty as a whole or consider exploring masters' level nursing faculty separate from doctoral nursing faculty. Additionally, it might be beneficial to explore the predictors of mobile learning adoption among nursing faculty prepared at the clinical doctorate level (i.e., DNP) versus the traditional research doctorate (i.e., PhD or EdD).

3. It might be beneficial to explore how predictors of m-learning adoption differ between nursing faculties that teach in traditional methods (i.e., face-to-face) versus those that use online methodologies.

4. Venkatesh's (2003, 2012) original research on the UTAUT and UTAUT2 incorporated certain moderating factors. While this study did not take into account the moderating factors of age, gender, and experience, this is something that could be explored in future research using the UTAUT or UTAUT2.

5. This research study focused mainly on quantitative research methods to explore predictors of m-learning acceptance among undergraduate nursing faculty. Other educational and/or nursing researchers might explore qualitative methods to understand what factors might exist leading to nursing faculty acceptance of m-learning.

6. Other researchers might explore other linear orders for the seven constructs that were explored in this study. For this study, EE was ranked as one, FC as two, PE as three, SI as four, HM as five, HB as six, and PV as seven. This ranked order was developed based upon experts in the field of nursing and educational technology. Other researchers may consider if variables entered in a different order for regression analysis impact the significance of the variable on BI.

7. Other researchers might continue to use the adapted survey instrument, the *Modified UTAUT2 for Assessment of m-learning Adoption* survey, to establish further reliability and validity for assessing m-learning adoption.

8. For future research one might include looking outside of nurse educators and explore what predictors might influence practicing nurses and/or pre-nursing students to engage in m-learning. As technology and mobile devices continue to play important roles in the realm of education, it would be important to know what predictors influence nurses and nursing students.

Limitations of the Study

This study focused on exploring variables related to m-learning adoption among undergraduate nursing faculty in a southeastern state. The following were found to be limitations.

1. Geographical limitations imposed by using one state limits the generalizability of these results to undergraduate nursing faculty across the United States. There were several reasons as to why the researcher aimed at a single geographical location. Primarily, the decision to limit the geographical location for this study was due to the limitations of time and resource constraints;

2. Only undergraduate nursing faculty in ASN, BSN, and RN mobility programs from a single southeastern state were recruited; as a result, this imposes further limits toward the ability to generalize these results to other nursing faculty groups. in the profession of nursing education there a variety of undergraduate and graduate faculty groups. For example, at the undergraduate level you might consider additional groups like diploma program faculty and licensed practical nursing program faculty. Additionally, there are additional faculty groups at the graduate level; and

3. While the sample size did meet the requirements set by the power analysis, a larger sample size could impact the study further. There were also low sample variability related to three of the demographic variables, age, gender, and level of education. As a result of the low sample size in each of the three categories, the data required additional manipulation. While both one-way ANOVA and three-way ANOVA analyses demonstrated no significant relationship on BI, this potentially could be a result of the demographic makeup of this study. Potentially having a greater sample variability could yield different statistical results.

Summary

The purpose of this study focused on exploring the predictors of mobile learning adoption among undergraduate nursing faculty in a single southeastern state. The UTAUT2 served as the guiding framework for this study. The study specifically focused on nursing faculty teaching in ASN/ADN, BSN, and RN Mobility programs in a single southeastern state. A total of 120 participants took part in the online Qualtrics survey aimed at gaining an understanding of how performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and habit had on behavioral intention of nursing faculty to adopt mobile learning. Three research questions guided this study.

Results from descriptive and inferential statistics revealed several statistically significant findings. Results revealed that of those who were surveyed device ownership, use, and level of experience with mobile devices were high. Data also revealed that a majority of those surveyed did indicate they had used a mobile device for the purposes of learning prior to being surveyed. Participants also indicated that they use their mobile devices for a variety of activities. Additionally, statistical significance was found among each of the independent variables, EE, FC, PE, SI, HM, and HB, and their impact to predict behavioral intention. Price value was found to not be a significant predictor of BI in those surveyed. Finally, it was found through one-way ANOVA and three-way ANOVA analyses that age, level of education, and type of nursing program had no statistical relationship on BI of undergraduate nursing faculty to adopt mobile learning. Overall, this study provides significant implications toward predictors of mobile learning adoption by undergraduate nursing faculty. Furthermore, and probably most importantly, it expands the current understanding and existing body of knowledge surrounding nursing education and mobile learning adoption.

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APPENDIX A

SURVEY INSTRUMENT

Demographic Data Profile:

Q1. What is your gender?
Male
Female

Q2. What is your age?
Less than 25 years
25–35 years
36-45 years
46-55 years
56-65 years
66-and over

Q3. What is your highest level of education?
Baccalaureate (BSN)
Masters (MSN)
Clinical Doctorate (DNP)
Research Doctorate (EdD, PhD)

Q4. What type of nursing program do you teach within?
Associate Degree (ADN or ASN)
Baccalaureate (BSN)
RN Mobility (RN to BSN)

Mobile Device Use Data:

Q5. Do you currently own any of the following mobile devices? (Select all that apply.)
Basic Cellular Phone
Smart Phone (i.e. iPhone, Motorola Droid, Samsung Galaxy, etc.)
MP3/MP4 Player (i.e. iPod, Zune, etc.)
Tablet (i.e. iPad, Microsoft Surface, etc.)
E-reader (i.e. Amazon Kindle, Nook eReader, etc.)
Netbook
Laptop
Other, please specify: ________________
I do not own a mobile device.

Q6. How would you describe your level of experience using mobile devices?
None (I have no experience.)
Novice (I use a mobile device around 1 to 3 times per week.)
Intermediate (I use a mobile device at least once per day.)
Advanced (I use a mobile device many times throughout the day.)

Q7. Have you ever used mobile devices for learning purposes?

Yes
No

Q8. How many hours do you spend on your mobile device per day?

0-3 hrs
4-7 hrs
8-11 hrs
12 or more hrs

Q9. What kind of activities do you usually do while on your mobile device? (Select all that apply.)

Entertainment (i.e. Listen to music, Watch videos, Play games, etc.)
Social Networking (i.e. Facebook, Snapchat, Instagram, Twitter, etc.)
Seeking Information (i.e. News, Weather, Online searches, etc.)
Business/Work (i.e. Monitor and responding to emails, etc.)
Educational Purposes (i.e. Accessing course materials.)

UTAUT2 Data:

	Question	Strongly Disagree	Somewhat Disagree	Disagree	Neutral	Agree	Somewhat Agree	Strongly Agree
	Performance Expectancy (PE)							
PE1	I find m-learning useful in my daily life.	1	2	3	4	5	6	7
PE2	Using m-learning allows me to accomplish things more quickly.	1	2	3	4	5	6	7
PE3	Using m-learning increases my productivity.	1	2	3	4	5	6	7
	Effort Expectancy (EE)							
EE1	Learning how to use m-learning is easy for me.	1	2	3	4	5	6	7
EE2	My interaction with m-learning is clear and understandable.	1	2	3	4	5	6	7
EE3	I find m-learning easy to use.	1	2	3	4	5	6	7
EE4	It is easy for me to become skillful at using m-learning.	1	2	3	4	5	6	7
	Social Influence (SI)							
SI1	People who are important to me think that I should use m-learning.	1	2	3	4	5	6	7

SI2	People who influence my behavior think that I should use m-learning.	1	2	3	4	5	6	7
SI3	People whose opinions that I value prefer that I use m-learning.	1	2	3	4	5	6	7
	Facilitating Conditions (FC)							
FC1	I have the resources necessary to use m-learning.	1	2	3	4	5	6	7
FC2	I have the knowledge necessary to use m-learning.	1	2	3	4	5	6	7
FC3	M-learning is compatible with other technologies that I use.	1	2	3	4	5	6	7
FC4	I can get help from others when I have difficulties in using m-learning.	1	2	3	4	5	6	7
	Hedonic Motivation (HM)							
HM1	Using m-learning is fun.	1	2	3	4	5	6	7
HM2	Using m-learning is enjoyable.	1	2	3	4	5	6	7
HM3	Using m-learning is very entertaining.	1	2	3	4	5	6	7
	Price Value (PV)							
PV1	M-learning technology is reasonably priced.	1	2	3	4	5	6	7
PV2	M-learning technology is a good value for the money.	1	2	3	4	5	6	7
PV3	At the current price, m-learning provides a good value.	1	2	3	4	5	6	7
	Habit (HB)							
HB1	The use of m-learning has become a habit for me.	1	2	3	4	5	6	7
HB2	I will get addicted to using m-learning.	1	2	3	4	5	6	7
HB3	I must use m-learning.	1	2	3	4	5	6	7
	Behavioral Intention (BI)							
BI1	I intend to continue using m-learning in the future	1	2	3	4	5	6	7
BI2	I will always try to use m-learning in my daily activities.	1	2	3	4	5	6	7
BI3	I plan to continue to use m-learning frequently.	1	2	3	4	5	6	7

Challenge Question for an opportunity to participate in an incentive.

Q36. Who is the mascot for the University of Alabama?

a. T-Roy
b. Aubie
c. Blaze
d. Big Al

APPENDIX B

MODIFIED VERSION OF THE UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY (UTAUT2)

[Original Survey Items by Venkatesh et al. (2012)]

	Question	Strongly Disagree	Somewhat Disagree	Disagree	Neutral	Agree	Somewhat Agree	Strongly Agree
Performance Expectancy (PE)								
PE1	I find mobile internet useful in my daily life.	1	2	3	4	5	6	7
PE2	Using mobile internet increases my chances of achieving things that are important to me. (dropped)	1	2	3	4	5	6	7
PE3	Using mobile internet helps me to accomplish things more quickly.	1	2	3	4	5	6	7
PE4	Using mobile internet increases my productivity.	1	2	3	4	5	6	7
Effort Expectancy (EE)								
EE1	Learning how to use mobile internet is easy for me.	1	2	3	4	5	6	7
EE2	My interaction with mobile internet is clear and understandable.	1	2	3	4	5	6	7
EE3	I find mobile internet easy to use.	1	2	3	4	5	6	7
EE4	It is easy for me to become skillful at using mobile internet.	1	2	3	4	5	6	7
Social Influence (SI)								
SI1	People who are important to me think that I should use mobile internet.	1	2	3	4	5	6	7
SI2	People who influence my behavior think that I should use mobile internet.	1	2	3	4	5	6	7
SI3	People whose opinions that I value prefer that I use mobile internet.	1	2	3	4	5	6	7
Facilitating Conditions (FC)								
FC1	I have the resources necessary to use mobile internet.	1	2	3	4	5	6	7
FC2	I have the knowledge necessary to use mobile internet.	1	2	3	4	5	6	7
FC3	Mobile internet is compatible with other technologies I use.	1	2	3	4	5	6	7

FC4	I can get help from others when I have difficulties using mobile internet.	1	2	3	4	5	6	7
Hedonic Motivation (HM)								
HM1	Using mobile internet is fun.	1	2	3	4	5	6	7
HM2	Using mobile internet is enjoyable.	1	2	3	4	5	6	7
HM3	Using mobile internet is very entertaining.	1	2	3	4	5	6	7
Price Value (PV)								
PV1	Mobile internet is reasonably priced.	1	2	3	4	5	6	7
PV2	Mobile internet is a good value for the money.	1	2	3	4	5	6	7
PV3	At the current price, mobile internet provides a good value.	1	2	3	4	5	6	7
Habit (HB)								
HB1	The use of mobile internet has become a habit for me.	1	2	3	4	5	6	7
HB2	I will get addicted to using mobile internet.	1	2	3	4	5	6	7
HB3	I must use mobile internet.	1	2	3	4	5	6	7
HB4	Using mobile internet has become natural to me. (dropped)	1	2	3	4	5	6	7
Behavioral Intention (BI)								
BI1	I intend to continue using mobile internet in the future	1	2	3	4	5	6	7
BI2	I will always try to use mobile internet in my daily life.	1	2	3	4	5	6	7
BI3	I plan to continue to use mobile internet frequently.	1	2	3	4	5	6	7

APPENDIX C

IRB APPROVAL

THE UNIVERSITY OF ALABAMA® | Office of the Vice President for Research & Economic Development
Office for Research Compliance

December 7, 2017

Jeffery Wade Forehand
Department of ELPTS
College of Education
The University of Alabama
Box 870302

Re: IRB # EX-17-CM-089 "Predictors of Mobile Learning Adoption among Undergraduate Nursing Faculty in a Southeastern State"

Dear Mr. Forehand:

The University of Alabama Institutional Review Board has granted approval for your proposed research. Your protocol has been given exempt approval according to 45 CFR part 46.101(b)(2) as outlined below:

(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless:
(i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Your application will expire on December 6, 2018. If your research will continue beyond this date, complete the relevant portions of Continuing Review and Closure From. If you wish to modify the application, complete the Modification of an Approved Protocol Form. When the study closes, complete the appropriate portions of FORM: Continuing Review and Closure.

Please use reproductions of the IRB approved informed stamped consent form to obtain consent from your participants.

Should you need to submit any further correspondence regarding this proposal, please include the assigned IRB application number.

Good luck with your research.

Sincerely,

Director & Research Compliance Officer
Office for Research Compliance

358 Rose Administration Building | Box 870127 | Tuscaloosa, AL 35487-0127
205-348-8461 | Fax 205-348-7189 | Toll Free 1-877-820-3066

Informed Consent

AAHRPP Document # 119

THE UNIVERSITY OF ALABAMA
HUMAN RESEARCH PROTECTIONS PROGRAM

Put "Research Invitation" on the message line of an e-mail or the title of a webpage.

Wade Forehand, Principal Investigator from the University of Alabama, is conducting a study called Predictors of Mobile Learning Adoption among Undergraduate Nursing Faculty in the state of Alabama. He wishes to explore the predictors for the adoption of mobile learning among undergraduate nursing faculty members within the state of Alabama.

Taking part in this study involves completing a web survey that will take about 30 minutes. This survey contains questions about demographic data, mobile device use, and predictors of mobile learning behavioral intentions.

We will protect your confidentiality by not requesting your identification. Only Wade Forehand will have access to the data. The data are password protected through the use of a survey program called Qualtrics. Only summarized data will be presented at meetings or in publications.

Participants that complete the study will be eligible to attempt a challenge question that will enter them into pool for an incentive, a free Apple Watch Series 3. Only one participant will be selected as a recipient for the Apple Watch. In order to attempt the challenge question for the incentives you must complete the survey. At the end of the survey, you will be taken from the survey into a separate area to attempt the challenge question and enter your contact information. Your survey and your attempting of the challenge question will not be connected. The findings from this research will be useful to other nurse educators and technology researchers regarding what factors are predictors of mobile learning adoption among undergraduate nursing faculty members.

The chief risk is that some of the questions may make you uncomfortable. You may skip any questions you do not want to answer or withdraw from the survey at any point without penalty. If you do exit the survey without completing it you will not be allowed to enter into the Apple Watch incentive.

If you have questions about this study, please contact Wade Forehand at (334-670-3745) or by email (jwforehand@crimson.ua.edu). You may also contact my UA faculty advisor, Dr. Angela Benson at (205) 348-7824 if you have any questions. If you have questions about your rights as a research participant, contact Ms. Tanta Myles (the University Compliance Officer) at (205) 348-8461 or toll-free at 1-877-820-3066. If you have complaints or concerns about this study, file them through the UA IRB outreach website at http://osp.ua.edu/site/PRCO_Welcome.html. Also, if you participate, you are encouraged to complete the short Survey for Research Participants online at this website. This helps UA improve its protection of human research participants.

UNIVERSITY OF ALABAMA IRB
CONSENT FORM APPROVED: 12-7-17
EXPIRATION DATE: 12-6-18

YOUR PARTICIPATION IS COMPLETELY VOLUNTARY. You are free not to participate or stop participating any time before you submit your answers.

If you understand the statements above, are at least 19 years old, and freely consent to be in this study, click on the I AGREE button to begin.

UNIVERSITY OF ALABAMA IRB
CONSENT FORM APPROVED: 12-7-17
EXPIRATION DATE: 12-6-18

APPENDIX D

REQUEST FOR FACULTY PARTICIPATION EMAIL

Greetings Nurse Administrator,

You are receiving this email because of your involvement with the Alabama Education Council of Administrators of Professional Nursing Education Programs. On behalf of Wade Forehand, a PhD student at the University of Alabama and member of ACAPNEP, your assistance is being requested to share the below call for research participation with your undergraduate nursing faculty (ASN, BSN, and/or RN to BSN).

The only requirements for participation in the research study is that the faculty members must be over the age of 19 and teaching undergraduate nursing students in the state of Alabama. For those faculty members that participate in the survey and complete it, he or she will have the opportunity to win an incentive, a free Apple Watch Series 3.

Participation is completely voluntary and any participant may exit the survey at any point. Taking part in this study involves completing a web survey that will take about 30 minutes or less. This survey contains questions about demographic data, mobile device use, and predictors of mobile learning behavioral intention.

If you have questions about this study, please contact Wade Forehand at (334) 670-3745 or by email (jwforehand@crimson.ua.edu). You may also contact my UA faculty advisor, Dr. Angela Benson at (205) 348-7824 if you have any questions. If you have questions about your rights as a research participant, contact Ms. Tanta Myles (the University Compliance Officer) at (205) 348-8461 or toll-free at 1-877-820-3066. If you have complaints or concerns about this study, file them through the UA IRB outreach website at http://osp.ua.edu/site/PRCO_Welcome.html.

Once again, I am requesting that you send the below call for participation out to all of your undergraduate nursing faculty (ASN, BSN, and RN to BSN). Your help in spreading the word is greatly appreciated.

Message to be forwarded to eligible faculty members:

Invitation Email

Wade Forehand, Principal Investigator from the University of Alabama, is conducting a study called Predictors of Mobile Learning Adoption among Undergraduate Nursing Faculty in a southeastern state. He wishes to explore the predictors for the adoption of mobile learning among undergraduate nursing faculty within the state of Alabama.

Taking part in this study involves completing a web survey that will take about 30 minutes or less. This survey contains questions about demographic data, mobile device use, and predictors of mobile learning behavioral intentions.

We will protect your confidentiality by not requesting your identification. Only Wade Forehand will have access to the data. The data are password protected through the use of a survey program called Qualtrics. Only summarized data will be presented at meetings or in publications.

In order to participate in the research study, you must be at least 19 years or older and teach undergraduate nursing students (ASN, BSN, or RN to BSN) in the state of Alabama. Participants that complete the entire survey and answer a challenge question will be eligible for a chance to win a free Apple Watch Series 3. Only one participant will be selected as a recipient for the Apple Watch. In order to answer the challenge question, you must complete the survey. At the end of the survey, you will be taken to the challenge question and given the opportunity to enter your contact information (name and email address) for the incentive. Your survey and your answering of a challenge questions will not be connected. The findings from this research will be useful to other nurse educators and technology researchers regarding what factors are predictors of mobile learning adoption among undergraduate nursing faculty.

The chief risk is that some of the questions may make you uncomfortable. You may skip any questions you do not want to answer or withdraw from the survey at any point without penalty. If you do exit the survey without completing it, you will not be allowed to answer the challenge question for a chance to earn the Apple Watch incentive.

If you have questions about this study, please contact Wade Forehand at (334) 670-3745 or by email (jwforehand@crimson.ua.edu). You may also contact my UA faculty advisor, Dr. Angela Benson at (205) 348-7824 if you have any questions. If you have questions about your rights as a research participant, contact Ms. Tanta Myles (the University Compliance Officer) at (205) 348-8461 or toll-free at 1-877-820-3066. If you have complaints or concerns about this study, file them through the UA IRB outreach website at http://osp.ua.edu/site/PRCO_Welcome.html. Also, if you participate, you are encouraged to complete the short Survey for Research Participants online at this website. This helps UA improve its protection of human research participants.

YOUR PARTICIPATION IS COMPLETELY VOLUNTARY. You are free not to participate or stop participating any time before you submit your answers.

If you would like to participate in survey, please visit the following link to begin: https://universityofalabama.az1.qualtrics.com/jfe/form/SV_5mtLzjRqt70MNAV. Thank you for your consideration.

Best,
Wade Forehand

APPENDIX E

INVITATION EMAIL

Wade Forehand, Principal Investigator from the University of Alabama, is conducting a study called Predictors of Mobile Learning Adoption among Undergraduate Nursing Faculty in a southeastern state. He wishes to explore the predictors for the adoption of mobile learning among undergraduate nursing faculty within the state of Alabama.

Taking part in this study involves completing a web survey that will take about 30 minutes or less. This survey contains questions about demographic data, mobile device use, and predictors of mobile learning behavioral intentions.

We will protect your confidentiality by not requesting your identification. Only Wade Forehand will have access to the data. The data are password protected through the use of a survey program called Qualtrics. Only summarized data will be presented at meetings or in publications.

In order to participate in the research study, you must be at least 19 years or older and teach undergraduate nursing students (ASN, BSN, or RN to BSN) in the state of Alabama. Participants that complete the entire survey and answer a challenge question will be eligible for a chance to win a free Apple Watch Series 3. Only one participant will be selected as a recipient for the Apple Watch. In order to answer the challenge question, you must complete the survey. At the end of the survey, you will be taken to the challenge question and given the opportunity to enter your contact information (name and email address) for the incentive. Your survey and your answering of a challenge questions will not be connected. The findings from this research will be useful to other nurse educators and technology researchers regarding what factors are predictors of mobile learning adoption among undergraduate nursing faculty.

The chief risk is that some of the questions may make you uncomfortable. You may skip any questions you do not want to answer or withdraw from the survey at any point without penalty. If you do exit the survey without completing it, you will not be allowed to answer the challenge question for a chance to earn the Apple Watch incentive.

If you have questions about this study, please contact Wade Forehand at (334) 670-3745 or by email (jwforehand@crimson.ua.edu). You may also contact my UA faculty advisor, Dr. Angela Benson at (205) 348-7824 if you have any questions. If you have questions about your rights as a research participant, contact Ms. Tanta Myles (the University Compliance Officer) at (205) 348-8461 or toll-free at 1-877-820-3066. If you have complaints or concerns about this study, file them through the UA IRB outreach website at http://osp.ua.edu/site/PRCO_Welcome.html. Also, if you participate, you are encouraged to complete the short Survey for Research Participants online at this website. This helps UA improve its protection of human research participants.

YOUR PARTICIPATION IS COMPLETELY VOLUNTARY. You are free not to participate or stop participating any time before you submit your answers.

If you would like to participate in survey, please visit the following link to begin: https://universityofalabama.az1.qualtrics.com/jfe/form/SV_5mtLzjRqt70MNAV. Thank you for your consideration.

Best,
Wade Forehand

APPENDIX F

INFORMED CONSENT WAIVER

AAHRPP DOCUMENT # 117

THE UNIVERSITY OF ALABAMA

HUMAN RESEARCH PROTECTIONS PROGRAM

FORM: Request for Waiver of Written Documentation of Informed Consent

Directions: Address the criteria listed below and attach this form to your application. Also, state in your application that you are requesting a waiver of written documentation of informed consent and describe what you will do to obtain consent in the procedure section of your application. The IRB often requires investigators to provide participants with a written information statement about the research when written documentation is waived; you may wish to include one in your initial application.

NOTE that the UA IRB does not allow passive consent .

You are welcome to call Research Compliance staff at 205-348-8461 to discuss your need for a waiver in advance of application submission.

(1) The only record linking the subject and the research would be the consent document and the principal risk would be potential harm resulting from a breach of confidentiality; subjects must be asked whether they want documentation linking themselves to the project or not (and the participants' wishes will prevail); OR

(2) The research presents no more than minimal risk of harm to subjects and involves no procedures for which written consent is normally required outside of the research context.

Participants will not be exposed to any risk of harm. Taking part in the survey is completely voluntary and participants may withdraw or not complete the survey at any time. The only risk participants may experience is some uncomfortableness related to the questions.

NOTE: The first criterion is not included in FDA. The second is in both FDA and HHS regulations, 21 CFR 56.109 (c). In cases where documentation is waived, the IRB may require PIs to provide subjects with a written statement about the research.

APPENDIX G

REMINDER EMAIL

Greetings Nurse Administrator,

Please share the below friendly email reminder with your undergraduate faculty members regarding the recent survey request.

This is a friendly email reminder requesting your participation in the study called Predictors of Mobile Learning Adoption among Undergraduate Nursing Faculty in a southeastern state. Please ignore this email if you have already participated.

Wade Forehand, Principal Investigator from the University of Alabama, is conducting a study called Predictors of Mobile Learning Adoption among Undergraduate Nursing Faculty in the state of Alabama. He wishes to explore the predictors for the acceptance of mobile learning among undergraduate nursing faculty within the state of Alabama.

Taking part in this study involves completing a web survey that will take about 30 minutes. This survey contains questions about demographic data, mobile device use, and predictors of mobile learning behavioral intentions.

We will protect your confidentiality by not requesting your identification. Only Wade Forehand will have access to the data. The data are password protected through the use of a survey program called Qualtrics. Only summarized data will be presented at meetings or in publications.

In order to participate in the research study, you must be at least 19 years or older, teach undergraduate nursing students (ASN, BSN, or RN to BSN programs) in the state of Alabama, and work for a nursing program that is nationally accredited. Participants that complete the study will be eligible to answer a challenge question for chance to win a free Apple Watch Series 3. Only one participant will be selected as a recipient of the Apple Watch. In order to answer the challenge question, you must complete the survey. At the end of the survey, you will be taken from the survey into a separate area to attempt the challenge question and enter your contact information for the incentive. Your survey and your answering of a challenge questions will not be connected. The findings from this research will be useful to other nurse educators and technology researchers regarding what factors are predictors of mobile learning adoption among undergraduate nursing faculty.

The chief risk is that some of the questions may make you uncomfortable. You may skip any questions you do not want to answer or withdraw from the survey at any point without penalty. If you do exit the survey without completing it, you will not be allowed to answer the challenge question for a chance to earn the Apple Watch incentive.

If you have questions about this study, please contact Wade Forehand at (334) 670-3745 or by email (jwforehand@crimson.ua.edu). You may also contact my UA faculty advisor, Dr. Angela Benson at (205) 348-7824 if you have any questions. If you have questions about your rights as a research participant, contact Ms. Tanta Myles (the University Compliance Officer) at (205) 348-8461 or toll-free at 1-877-820-3066. If you have complaints or concerns about this study, file them through the UA IRB outreach website at http://osp.ua.edu/site/PRCO_Welcome.html. Also, if you participate, you are encouraged to complete the short Survey for Research Participants online at this website. This helps UA improve its protection of human research participants.

YOUR PARTICIPATION IS COMPLETELY VOLUNTARY. You are free not to participate or stop participating any time before you submit your answers.

If you would like to participate in survey, please visit the following link to begin: https://universityofalabama.az1.qualtrics.com/jfe/form/SV_5mtLzjRqt70MNAV. Thank you for your consideration.

Best,
Wade Forehand