MOBILE ONLINE CLASS NOTES:

USAGE PATTERNS OF SECONDARY STUDENTS IN TURKEY

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DECLARATION OF ORIGINALITY

I, Muhammet Furkan Taşel, certify that

- I am the sole author of this thesis and that I have fully acknowledged and documented in my thesis all sources of ideas and words, including digital resources, which have been produced or published by another person or institution;
- this thesis contains no material that has been submitted or accepted for a degree or diploma in any other educational institution;
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ABSTRACT

Mobile Online Class Notes:

Usage Patterns of Secondary Students in Turkey

The use of information and communication technology (ICT) in education has been consistently increasing in the last decade. Prior research mainly examined the self-declared usage behavior of the adoption of ICT in education. The purpose of this study is to measure the technology adoption levels of mobile online class notes (MOCN) of Turkish high school students. Two hundred eighty-three high school students amongst 8,000 monthly active users of a MOCN platform, Lideno, participated in the study and completed the online survey. An adaptation of Venkatesh et al.'s Unified Theory of Acceptance and Use of Technology (UTAUT) model is used to measure the level of technology adoption of the MOCN platform. Actual access frequencies are recorded to examine user behavior. Findings show that five of the UTAUT constructs, (1) performance expectancy, (2) effort expectancy, (3) social influence, (4) facilitating conditions, and (5) habit, influence the intention to use the MOCN platform. Moreover, the intention to use the MOCN platform was found to both the platform's actual and perceived use. Results also indicate that age and grade level differences amongst students impact the actual use but have no significant effect on perceived use. The dissertation contributes to the literature and the practice by comparing the self-declared and actual use behavior of MOCN for the first time in secondary education in Turkey and provides a basis for further research on the topic.

ÖZET

Ortaöğretimde Çevrimiçi Ders Notu Kullanımının Ölçümlenmesi: Türkiye Örneği

Ortaöğretimde bilgi ve iletişim teknolojilerinin (BİT) kullanımı son on yılda sürekli olarak artmaktadır. Önceki araştırmalar eğitimde BİT adaptasyonu konusunu kullanıcı beyanı usulüne göre ele almışlardır. Bu araştırmanın amacı Türk lise öğrencilerinin mobil çevrimiçi ders notu (MÇDN) kullanımının teknolojiye uyum düzeylerini ölçümlemektir. Bu kapsamda, MÇDN platformu Lideno'nun aktif 8,000 öğrencisi arasından 283 lise öğrencisi çalışmaya katılmış ve çevrimiçi anketi tamamlamıştır. MÇDN platformunun teknoloji benimseme düzeyini ölçmek için Venkatesh vd. tarafından yayınlanan Birleştirilmiş Teknoloji Kabul ve Kullanım (BTKK) modelinin bir uyarlaması kullanılmıştır. Kullanıcı davranışlarını incelemek için kullanıcıların gerçek erişim sıklıkları kaydedilmiştir. Bulgular BTKK yapılarının beşinin (1) performans beklentisi, (2) çaba beklentisi, (3) sosyal etki, (4) kolaylaştırıcı etkenler ve (5) alışkanlığın MÇDN platformunu kullanma niyetini etkilediğini göstermektedir. İlaveten, MÇDN platformunu kullanma niyeti, platformun hem gerçek hem de algılanan kullanımını etkiler. Sonuçlar öğrenciler arasındaki yaş ve sınıf düzeyi farklılıklarının gerçek kullanım üzerinde bir etkisi olduğunu, ancak algılanan kullanım üzerinde önemli bir etkisi olmadığını da göstermektedir. Bu tez, Türkiye'de orta öğretimde ilk kez MÇDN kullanıcılarının beyan ettiği ve gerçekleştirdiği kullanım davranışını karşılaştırarak literatüre ve uygulamaya katkıda bulunacak ve konuyla ilgili daha fazla araştırma için bir temel oluşturulacaktır.

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LIST OF TABLES

CHAPTER 1

INTRODUCTION

Information and communication technologies (ICT) in education are becoming more widespread as their positive impact on learning is revealed. Studies show that ICT use in learning increases the academic performance of students (Mothibi, 2015). Students in distance learning programs, frequent ICT users for learning, surpass traditional students in terms of performance (Allen et al., 2004). The positive impact of ICT on academic performance highlighted the interest in the academic arena to determine which factors lead to acceptance and use of these technologies. One of the widely used models of technology acceptance is Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003; 2012), an extension of the Technology Acceptance Model (TAM) (Davis et al., 1989). The model measures the usage of technology through intention to use it and the antecedents of intention.

The literature exploring the technology acceptance of ICT is extensive. The studies include thorough examinations of differing age groups and geographies. Two prominent research, Göğüş et al. (2012) and Nistor et al. (2013) use UTAUT to investigate the use of ICTs in different cultures (i.e. Turkey, Germany, and Romania). The studies were performed on a general adult population with the inclusion of non-students and the research is based on self-reported use of ICT. It necessitates further studying of the constructs to explain which factors are at play for secondary education level in Turkey and take actual use of ICT into account. This dissertation aims to contribute to the literature by examining the self-reported and actual adoption of mobile online class notes (MOCN) among Turkish high school students. The examination starts with the research question “What factors influence the MOCN

adoption of high school students in Turkey and whether demographic differences exist among these students?". An extended version of UTAUT is to be used to propose an answer to the research question. A MOCN solution, Lideno, was selected as the medium of the research as it provides a reliable, objective data source. The research has three main contributions to the literature and the practice. Firstly, it measures the acceptance of a mobile technology for e-learning. Secondly, it aims to measure the MOCN adoption of a particular geography, Turkey, focusing on high school students and recent graduates who are using ICT supplementing their studies. Thirdly, it compares the self-reported ICT use with actual use.

CHAPTER 2

LITERATURE REVIEW

2.1 ICT and First Use Cases in Education

According to Pelgrum and Law (2003), the idea of using computers in education caught educational policy makers' attention around the 1980s. The aforementioned book's introduction section indicates that the word "computers" was transformed to the word "IT", the acronym of information technology, by the end of the decade. Pelgrum and Law (2003) states that the term was broadened to Information and Communication Technology (ICT) after the email was introduced.

Bates (2015) points out that one of the first uses of computers in education was conducted by Skinner in 1954 with "teaching machines". Another significant system mentioned by the author before the internet era is PLATO which was developed in the late 1970s at University of Illinois. Unlike teaching machines, PLATO was built on networked mainframe computers accessible from terminals and comprised of interactive elements such as forums, message boards, chatrooms, instant messaging as well as online examination functionalities.

After the introduction of ARPANET, notable pioneering online learning environments that utilized the internet included University of Guelph's CoSy which is known to be an ancestor of forums in today's learning management systems in the 1980s, and Open University's course DT200 which could be accepted as the first mass open online course (MOOC) with 1200 students registered (Bates, 2015).

2.2 Evolution of the Reference to the Use of ICT in Education

Similar to evolution in means of the use of ICT with increasing internet penetration, words used to refer to the use of ICT in education evolved in time, and they include but are not restricted to the following (Bozkurt et al. 2015):

- Distance Education
- Online Learning
- E-learning
- Distance Learning
- Online Education / Online Teaching / Online Courses
- Blended Learning
- Open and Distance Learning
- Open Education

These words are often used in similar contexts in the literature.

2.3 Educational Technology, Internet Penetration and Transition to Mobile

According to the UN's International Telecommunication Union Agency's (ITU) 2020 data, individuals using the internet rose gradually over the period 2001 to 2019 from 8 per 100 inhabitants to 51.4 per 100 inhabitants ("Statistics - Individuals Using the Internet", 2020). A similar pattern can be observed in the rise of fixed broadband users during the same period, and a steeper increase could be observed in mobile internet users over the years 2007 to 2019 ("Statistics - Individuals Using the Internet", 2020).

With the adoption of the internet, students started interacting with the faculty using emails which allowed them not only to transfer text but also share class materials using visual multimedia elements (Li, 2018). After the early 2000s, the learning content in ICT environments included learning objectives, online games and

personalized content (Kahiigi et al, 2008). Web 2.0, occasionally referred to as participative web, passed on the content creation role to the users via rating, subscribing, and collaborating (Hylen, 2007). High-speed internet accelerated the embracement of the open educational resources (OER), learning management systems (LMS), and massive open online courses (MOOCs) by students (Hylen 2007; Pireva et al., 2015).

In the spring of 2001, the lasting, exemplar OER platform, MIT OpenCourseWare (OCW) was launched as an open alternative to dotcom e-learning providers (Abelson, 2007). By 2006, it hosted more than 3000 courses online (Abelson, 2007). Content indexed was comprised of audio and video lectures with generated transcripts. Organization for Economic Co-operation and Development's (OECD's) 2007 report recognizes this wave in education as the "emergence of creative participation in the development of digital content in the education sector" (Hylen, 2007, p. 21). The significance of OERs compared to other platforms is related to the complementariness, high availability over internet without overwhelming technical and legal restrictions (Hylen, 2007).

Pireve et al. (2015) believes that Coursera, edX and Udacity are amongst the most noticeable MOOC providers. In 2015, these MOOC providers started out issuing digital degrees (Warr, 2016). Udacity's Nanodegrees, Coursera's Specializations and edX's Xseries provide cheap alternatives to physical certifications (Warr, W. 2016). These certifications are accredited by a large number of employers and universities ("Coursera | Online Professional Certificate Programs", 2020; "Get Hired | Udacity", 2020; "Online Professional Certificates | edX", 2020).

Kakasevski et al. (2008) defines LMS as an information system in which the courses are provided and the user's learning path is tracked. LMS' give the users the

ability to engage in discussions via threads, video conferencing, or online chat; access image, text, and video-based materials; participate in quizzes; access content repositories; and perform peer reviews and submission of graded material (Kakasevski et al., 2008; Crompton, 2013; Walker et al., 2016). Unlike MOOCs and OERs, LMS is used by educational institutions, and adoption is usually authority driven (Walker, 2016). LMS usage is considered as mainstream in Western higher education in the last decade (McGill and Klobas, 2008; Crompton, 2013; Walker et al., 2016). Pireve et al. (2015) names Moodle, Atutor, Blackboard and Fronter as market leaders in LMS.

One of the latest branches of the literature on the use of ICT in literature is mobile learning (ML) (Crompton, 2013). Accelerated use of wireless means of communication and mobility is taught to be the cause of gradual increase in the emphasis on ML (Chu et al., 2010). Performing learning on laptops, tablet PCs, cellular phones, and e-book readers could be classified as ML (Sung et al., 2016). Shift towards smartphones and tablets offered new learning opportunities for the students (Crompton, 2013). E-learning providers are developing software specifically targeting these platforms, especially in mobile applications, utilizing advanced functionalities in the device (Sarrab et al., 2012).

2.4 ICT Impact on Students

Findings in Mothibi (2015) imply a positive relationship of ICT use on student's academic achievement. The study data was collected between 2010 and 2013 by a systematic sampling design with meta-analysis through 15 research studies in South Africa. Merchant et al. (2013) provides a similar meta-analysis of 69 studies to investigate Virtual Reality (VR) use in K-12 and higher education institutions. Conclusion of the investigation was in parallel with Mothibi (2015), indicating that

there is a statistical significance between the use of a sub-ICT technology, VR, and improved learning outcomes. A more recent review by Crompton & Burke (2018) examines 72 research studies, 23 of which were related to mobile learning's impact on student achievement. Seventy percent of the studies found a positive correlation between the use of mobile learning platforms and student achievement.

2.5 Behavioral Models to Explain Technology Adoption

Ajzen joined Fishbein in the late 1960s to work on the relationship between the the attitude and behavior (Ajzen, 2012). Inspired by Dulany's theory of positional control, Fishbein and Ajzen dig more in-depth about the relationship between attitude, behavior, and intention (Ajzen, 2012). Fishbein and Ajzen (1975) found out that the sum of attitudes towards behavior and the sum of subjective norms together imply behavioral intention, and the behavioral intention implies behavior; consequently, they developed the phenomena (see Figure 1), which would be called as the theory of reasoned action (TRA).

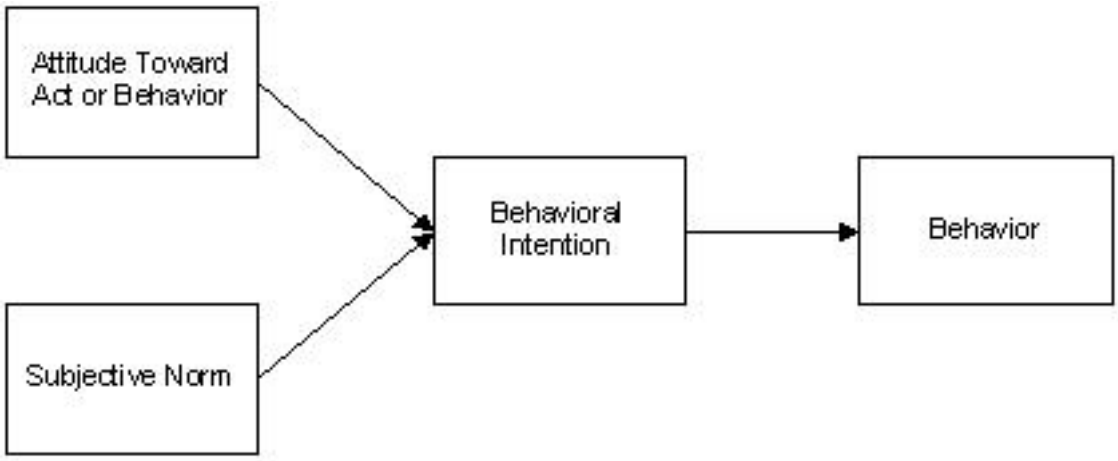

Figure 1. Theory of Reasoned Action. Reprinted from *Belief, attitude, intention, and behavior: An introduction to theory and research* by Fishbein, M. & Ajzen, I., 1975

Ajzen (1985) extends the definition of TRA with taking behavioral control into account. Resulting theory that lifts limitations of TRA is known as Theory of Planned Behavior (TPB) and could be examined in the figure below (Ajzen, 2012).

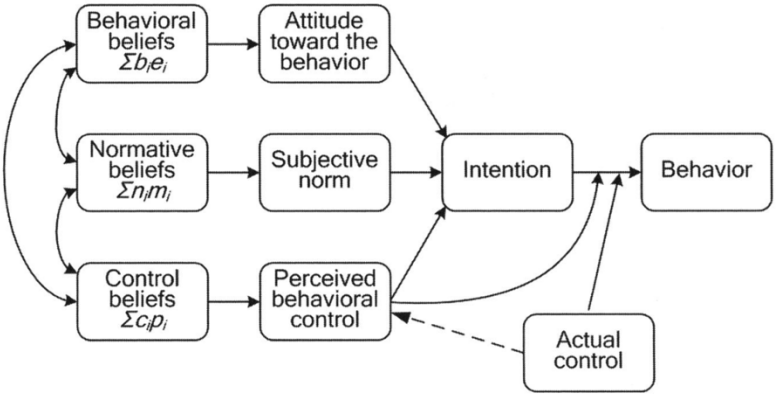

Figure 2. Theory of Planned Behavior. Reprinted from *Martin Fishbein's Legacy: The Reasoned Action Approach* by Ajzen, I, 2012

2.6 Transition to TAM and UTAUT

Perceived usefulness and perceived ease of use terms are introduced to the literature by Davis et al. (1989). The model proposed by Davis et al., Technology Acceptance Model (TAM) (Figure 3) is built on TRA and TPB and widely accepted to inspect usage behavior when a new technology emerges. It is found that these two independent variables have a positive correlation with the adoption of users.

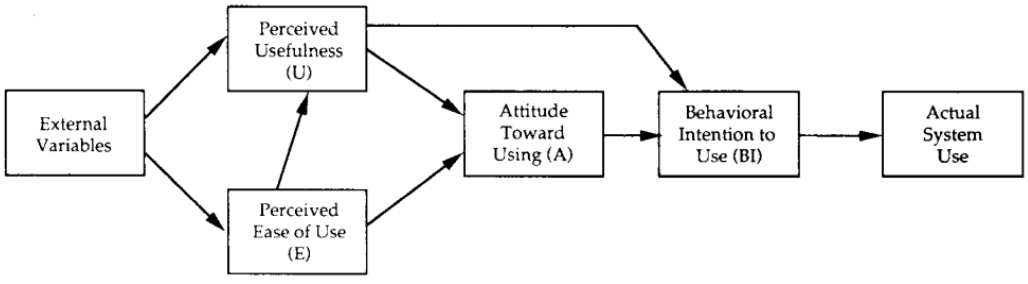

Figure 3. Technology Acceptance Model. Reprinted from *User Acceptance of Computer Technology: A Comparison of Two Theoretical Models* by Davis et al., 1989

Venkatesh et al. (2003) examined different models of behavior and behavioral intention such as TAM (Davis et al., 1989), Theory of Reasoned Action (Fishbein and Ajzen, 1975), Theory of Planned Behavior (Ajzen, 1985), and extended TAM and called it the Unified Theory of Acceptance and Use of Technology (UTAUT). UTAUT is found to better explain technology acceptance (explained 69 percent) compared to eight individual models of acceptance. Two additional data sets verified the finding (explained 70 percent). Venkatesh et al. (2012) further extended the model and called it UTAUT2 (Figure 4). The authors conducted a two-stage online survey with 1512 participants and found UTAUT2 to show improvements in explaining the intention and behavior to use technology.

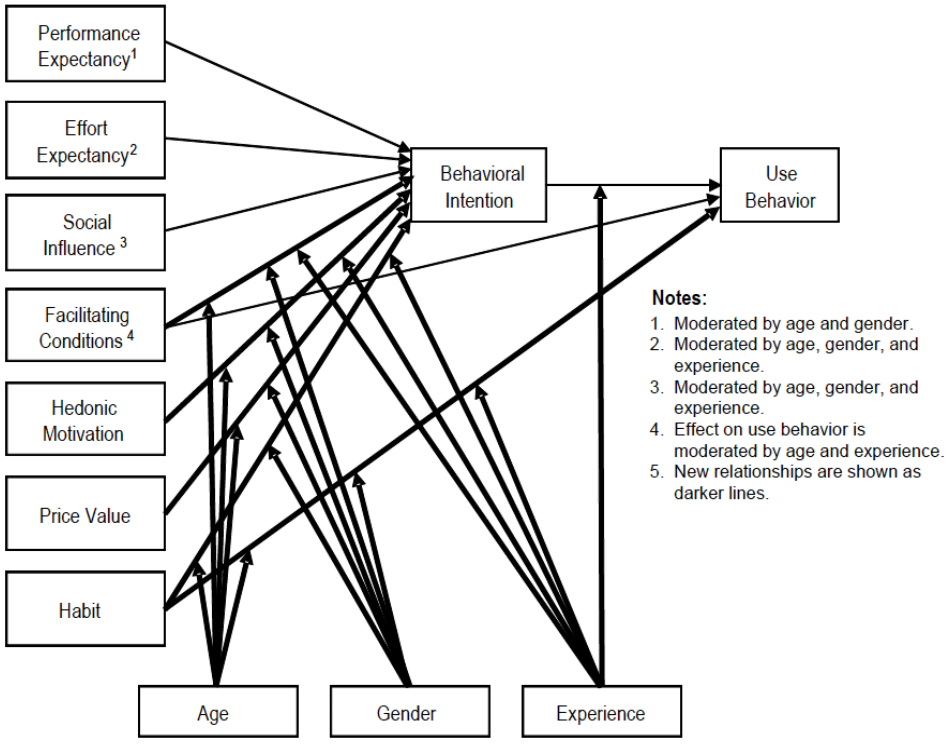

Figure 4. UTAUT2. Reprinted from *Consumer Acceptance and Use of Information Technology: Extending the Unified Theory of Acceptance and Use of Technology* by Venkatesh et al., 2012

2.7 Adoption of Educational Technology

Chen (2011) mentions that the ongoing research examines both learning expectancy and technology acceptance of students in e-learning solutions. His study uses UTAUT through a sample of 626 chosen from Cyber University System (CUS), an e-learning platform used by Taiwanese university students. It is found that performance expectancy, effort expectancy, social influence, and facilitating conditions have statistical significance on technology expectancy. Besides, the technology expectancy is found to be correlated to e-learning acceptance with behavioral intention as a mediating variable. The findings support this dissertation to further examine the relationships of aforementioned factors on use intention of an e-learning system.

Nistor et al. (2013) screens whether the UTAUT model extends to a diversified sample with including students from Romania, Germany, and Turkey in an individual study. It has been discovered that UTAUT applies across the sample cultures in terms of validity and measurement.

2.8 Educational Technology in Turkey

Kucuk et al. (2013) explores the trends in e-learning literature in Turkey from 1990 to 2011, with scanning 1151 journal articles written in indexed journals of Social Science Citation Index, Science Citation Index, and Education Resources Information Center. Educational technology articles of Turkey dominantly use quantitative methods and convenience sampling. The studies' emphasis is on higher education, and only 9.6% of the subjects of the studies are high school students.

Kimiloglu et al. (2013) reveal that the e-learning systems used in the top 500 companies in Turkey adopted ICT solutions on learning in a preliminary level. With

the further examination of the literature, it could be seen that educational technology adoption is at same preliminary level in the educational institutions in Turkey.

2.9 Online Class Notes and Mobile Device Usage

Murray et al. (2012) conducts a study to determine students' interaction with the online course content for a digital literacy course that consists of 92 online university level resources. 63% of the students accessed all of the online course content. When asked to students themselves, 78% of the students indicated frequent use (i.e., marked "always" and "usually" in the questionnaire) (Murray et al. 2012). While this study does not specify any figures related to the access medium, it may be assumed that it is a significant guide for measuring usage in mobile medium.

There are several studies related to mobile phone usage in the educational context. In one particular 2013 study, Chen & Denoyelles show that 629 out of 1082 university students use their phones for educational purposes. Kuznekoff & Titsworth's (2013)'s study finds that class members who do not use their cell phones frequently for social media services and texting had more information stored on their paper when note-taking. Their notes were more detailed and organized. Additionally, non-frequent texters/posters scored higher on the multiple-choice test compared to frequent texters/posters (Kuznekoff & Titsworth, 2013). However, it's found that students with better academic standing are using their phones less than those with worse academic standing (Chen & Denovelles, 2013). This raises the question of whether the negative correlation between note taking and mobile phone usage is due to the student's particular academic interest.

CHAPTER 3

METHODOLOGY AND RESEARCH DESIGN

3.1 Context

The study is conducted in Turkey among high school students who can to access class notes on their mobile devices. It aims to collect the self-expressed and actual usage data of users of a MOCN application. The platform chosen to be studied is Lideno application as it is a class notes platform with over 8,000 monthly active users, and it is accessible on Apple App Store and Google Play Store, which allows for picking a sufficient number of survey participants for the purpose of the research (see 3.4 Sampling Design). The motivation of students to use the platform was not previously studied. Hence, the research can underline the primary motivators of usage and retention of the students who use the platform.

The study focuses on Turkey due to a number of reasons. First, mobile technologies in education are understudied for education in Turkey. Most of the existing studies focus on online platforms or in-class digital platforms to see their effects on student performance but not mobile applications. However, in today's world, people spend time on their mobile phones or tablets even when watching TV or studying (Calderwood et al., 2014). Consequently, usage of mobile platforms for educational purposes becomes an area of interest to see whether they differ from other digital platforms in terms of adoption. Second, it has been observed that Turkish students have differing motivations for studying, and not all online or mobile platforms are accepted and widely used. In Turkey, supporting digital learning platforms have been used previously but have never been popular among students. Early examples such as Mavikep had short product life cycles and vanished (Muradoglu, 2017).

Constructs of the thesis model can shed some insight into why these platforms have been unsuccessful in the past. Also, it can help explain whether mobile platforms will have a sustainable future in e-learning. Third, even though there are government efforts to diminish the inequality in education, access to education is not distributed uniformly in Turkey (Kose & Guven, 2007). This creates a problem in education in Turkey, and students are exploring new ways to improve their academic success. The current research can contribute to factors that influence the adoption of ICTs so that students can improve themselves with self-effort to even-out the inequalities in accession to education.

High school students are chosen in the current study because, as shown by Küçük et al. (2013), only 9.6 percent of studies on educational technology use samples of high school students. The majority of the Turkish studies focus on educational technologies utilized in higher education; however, e-learning platforms exist on lower levels of education and are used by high school students. Therefore, the need to examine the usage of these students is necessary.

3.2 Research Design

In the current research, a pragmatic approach is adopted. Pragmatism is defined as "a position that argues that the most important determinant of the research philosophy adopted is the research question" and defends the possibility of working "within both positivist and interpretivist positions" (Saunders et al. 2009, p. 598). This approach helps to utilize theory and practice together to answer a research question.

The dissertation uses quantitative research methods by conducting a self-administered online survey to measure the independent and dependent variables. The survey data collection is cross-sectional and was collected between the 23rd of

February 2019 and the 15th of April 2019. During this time, secondary data of MOCN usage is collected and gathered from the Lideno application from the same individuals who participate in the survey.

The survey is conducted online on Surveymonkey.com surveying platform. The survey is served only online, aiming to avoid the instrumentation effect. After the data is collected, it is analyzed by IBM SPSS software. Descriptive analysis, mean comparisons, reliability analysis, and validity analysis is conducted for each inquiry. The data is checked for linearity and normality, data accuracy, missing data and outliers before conducting these analyses. Hypothesis testing is conducted through linear regression analysis and comparisons of means amongst the groups using ANOVA and independent samples t-test. The results are reported in the upcoming sections, and implications for theory and practice are given.

3.3 Conceptual Framework

The relationship between behavior and intention is explained by different models such as TRA, TPB, TAM, UTAUT, and UTAUT2. Intention is defined as "an individual's subjective likelihood of performing some certain behavior" (Fishbein & Ajzen, 1975, p. 289).

Even though Venkatesh et al. (2003) found moderation effects of experience and voluntariness, these effects are not investigated in this study. This is because most users of e-learning technologies are of similar experience levels. Furthermore, usage of the measured MOCN platform is voluntary, and voluntariness is not applicable.

3.3.1 Proposed Model

Based on the literature, a conceptual framework is presented. The variables drawn from the literature are used in the current dissertation to propose and test a model of MOCN acceptance. According to the proposed model, MOCN usage is explained by the intention to use MOCN. Moreover, the antecedents of intention are given as performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), habit (HBT), and MOCN anxiety (ANX). The model for the research is slightly altered to benefit from both primary and secondary data sources. Inclusion of both self-declared usage and actual usage in the model aims to assist further research to control for potential discrepancies between the constructs. The relationship between the MOCN use intention to self-declared usage is examined in previous UTAUT examinations (see Figure 5). The data provided from Lideno's database; the actual usage data is used as a descendant of MOCN use intention data gathered from the model's survey. The relationship between both of the usage data is also questioned. The effects of differing group demographics are also examined for both perceived and actual MOCN usage. The dissertation tests 16 different hypotheses with the constructed model.

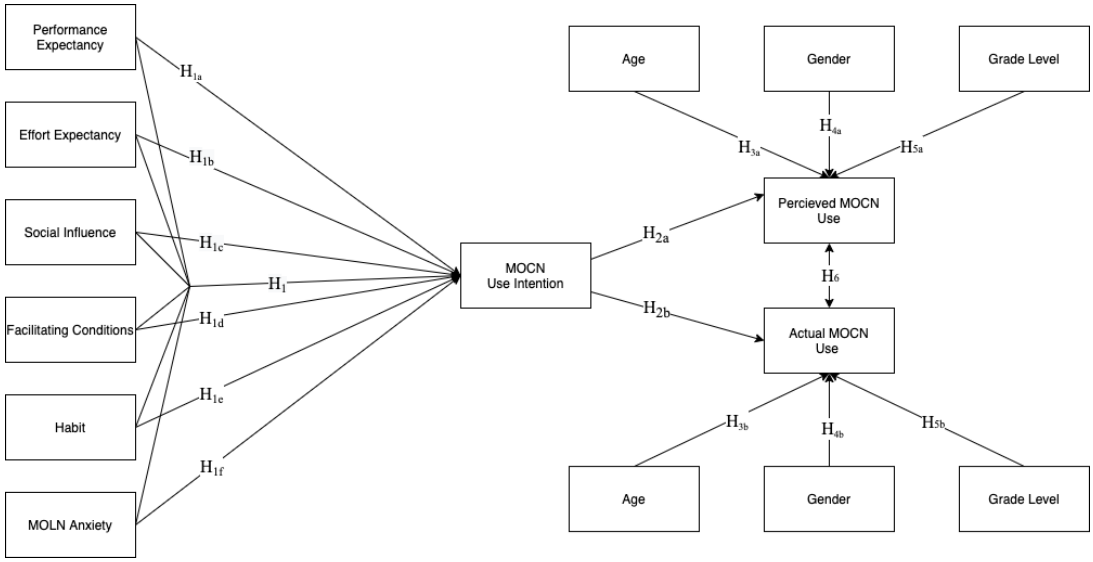

Figure 5. Model diagram for comparing survey data with perceived & actual use

3.3.1.1 Performance Expectancy

Similar to the perceived usefulness mentioned in TAM model of Davies et al. (1989), performance expectancy defined by Venkatesh et al. (2003) proposes that the user's belief of benefit would set behavior for the user. Although Venkatesh et al. uses moderating factors of gender of age, for purposes of this study dissertation only seeks relation on behavioral intention.

H_{1a}: Performance expectancy has a positive effect on behavioral intention to use.

3.3.1.2 Effort Expectancy

Derived from TAM model of Davies et al. (1989), effort expectancy is directly related to perceived ease of use (Venkatesh et al., 2003). Effort expectancy refers to "the person's ease in using the new technology". Potential complications in using the system constructs barrier for behavior.

H_{1b}: Effort expectancy has a positive effect on behavioral intention to use.

3.3.1.3 Social Influence

Social influence and social norms are used interchangeably in the literature when measuring the impact of norms on behavioral intention. It refers to "the person's perception that most people who are important to him think he should or should not perform the behavior in question" (Venkatesh et al. 2003, p. 452). Accordingly, the following hypothesis is developed:

H_{1c}: Social influence has a positive effect on behavioral intention to use.

3.3.1.4 Facilitating Conditions

Environmental support and its role in behavioral reactions as well as the person's sense of control and knowledge in the system is worth observing when new technology is used (Venkatesh et al., 2003). The term facilitating conditions might be comprehended as the opposite of performing the technology use by the person themselves. It is expected to have an effect on behavior leading to the construction of the hypothesis below:

H_{1d}: Facilitating conditions have a positive effect on behavioral intention to use.

3.3.1.5 Habit

Developing a habit in technology use has been used in literature prior to the conceptualization of UTAUT (Venkatesh et al., 2012). Habit in this context outlines the effect of earlier use of similar technology. Repeating experience's effect on behavior leads to the following hypothesis to develop:

H_{1e}: Habit has a positive effect on behavioral intention to use.

3.3.1.6 MOCN Anxiety

The anxiety of a particular behavior is emotional uneasiness when performing that behavior (Venkatesh et al., 2003, p432). Venkatesh et al. (2003) give the context of computer usage under the explanation of the term. The dissertation seeks if the hypothesis holds for the context of MOCN as well:

H_{1f}: MOCN anxiety has a positive effect on behavioral intention to use.

3.3.1.7 Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Conditions, Habit and MOCN Anxiety

The constructs performance expectancy, effort expectancy, social influence, facilitating conditions, habit, and MOCN anxiety are UTAUT constructs that predict behavioral intention. The dissertation seeks if the hypothesis holds for the context of MOCN as well:

H_1: Performance expectancy, effort expectancy, social influence, facilitating conditions and MOCN anxiety will predict behavioral intention to use.

3.3.1.8 MOCN Use Intention

The behavioral intention construct of UTAUT is denoted as use intention in this research. The dissertation expects behavioral intention to have an effect on perceived and actual usage behavior. Venkatesh et al. (2003) denotes previous studies that UTAUT is built on also rely on this construct.

H_{2a}: MOCN use intention has a positive effect on perceived MOCN perceived usage.

H_{2b}: MOCN use intention has a positive effect on perceived MOCN actual usage.

3.3.1.9 Age

In the studies TPB and UTAUT2, the construct of age of the technology users was considered to have a mediating role (Venkatesh et al., 2003). The dissertation seeks if age has an impact on perceived and actual usage.

H_{3a}: There is a significant difference on perceived MOCN usage for different age groups.

H_{3b}: There is a significant difference on actual MOCN usage for different age groups.

3.3.1.10 Gender

Gender is also an essential criterion that dissertation seeks on the perceived and actual usage. Previous studies TAM2, TPB and UTAUT2 have shown there is an influence of gender on the study variables (Venkatesh et al., 2003).

H_{4a}: There is a significant difference on perceived MOCN usage for different genders.

H_{4b}: There is a significant difference on actual MOCN usage for different genders.

3.3.1.11 Grade Level

As the curriculum and assessments differ in different grade level usage could be affected. The dissertation seeks if the curriculum difference has a significant effect on perceived and actual usage with inspecting the grade level data.

H_{5a}: There is a significant difference on perceived MOCN usage for different grade levels.

H_{5b}: There is a significant difference on actual MOCN usage for different grade levels.

3.3.1.12 Relationship Between Perceived Use and Real Usage Data

Perceived usage or the usage declaration collected from the survey is compared against the real usage gathered by secondary data for inspecting potential relationships.

H_6: There is a correlation between perceived usage and real MOCN usage.

3.4 Sampling Design

In the current research, the sample is chosen from users of the Lideno application. Because the providers know the average monthly number of users, the probability sampling method is chosen. Probability sampling is defined as the "selection of sampling techniques in which the chance, or probability, of each case being selected from the population is known and is not zero" (Saunders et al. 2009, p. 598). Accordingly, one probability sampling technique, namely simple random sampling, is chosen for this study. The sample is randomly selected among the users of Lideno.

The sampling size of a population is calculated differently by different researchers. Most studies use Cochran (1977)'s formula for determining sample size at 95 percent confidence level and five percent margin of error and aim for a minimum of 384 participants for appropriateness of analysis. Saunders et al. (2009, p. 215) show that for a population of 10,000 at 95 confidence level with a five percent margin of error, the minimum sample size should be 370. In this research, a minimum of 400 participants was aimed prior to data collection, which is over the minimum required sample size. The actual number of participants could be seen in the data elimination section of the dissertation.

3.4.1 Collection of Primary Data

The survey was hosted on SurveyMonkey and was reachable between the 23rd of February 2019 and the 15th of April 2019. A banner on the main screen of the Lideno application provided a link to the questionnaire. In order to increase participation, mobile notifications are sent to the users. Users of the application also received an email and a follow-up email regarding the study including a call to action encouraging participation to the survey.

3.4.2 Collection of Secondary Data

The dissertation makes use of secondary data for measuring the use behavior of the subjects of the research. Lideno application's user data was collected between the 1st of December 2018 and the 1st of May 2019. Raw data is collected through audit logging. Each request on the mobile application screen is saved, including the user's id, email and timestamp. Events are categorized and saved with the tuple inserted as the log. When data is presented, accession frequencies are grouped by a minimum time delta. This delta is selected to be a minute. Email is used as a pivot when matching the data with the survey.

3.5 Survey Design

The study uses an online questionnaire with three pages. To measure the variables proposed in the model, scales in previous studies are drawn from the literature. A 5-point Likert-type scale is used, and the participants are asked whether they agree or disagree (1-strongly disagree, 5-strongly agree) with the given statements. Table 1 shows the scale items and sources.

The introductory part contains an explanation about the study and the required time to complete it. Th first part of the questionnaire comprises of 15 questions of the

31 questions drawn from the literature. The second part of the questionnaire contains the remaining questions gathered from the literature. Questions 32 to 35 are related to the participant's demographic background, and age, gender, high school grade level, and high school type is collected in this section. Email information is the final piece of information requested in the last part to be used as a pivot for comparing the survey data with actual data.

Table 1. Survey and Related Literature

Variable	Label	Item	Author (Year)
Performance Expectancy (PE)	pe1	I find mobile internet useful in my daily life.	Venkatesh et al. (2012)
	pe2	Using mobile internet increases my chances of achieving things that are important to me.	
	pe3	Using mobile internet helps me accomplish things more quickly.	
	pe4	Using mobile internet increases my productivity.	
Effort Expectancy (EE)	ee1	Learning how to use mobile internet is easy for me.	Venkatesh et al. (2012)
	ee2	My interaction with mobile internet is clear and understandable.	
	ee3	I find mobile internet easy to use.	
	ee4	It is easy for me to become skillful at using mobile internet.	
Social Influence (SI)	si1	People who are important to me think that I should use mobile internet.	Venkatesh et al. (2012)
	si2	People who influence my behavior think that I should use mobile internet.	
	si3	People who influence my behavior think that I should use mobile internet.	
Facilitating Conditions (FC)	fc1	I have the resources necessary to use mobile Internet.	Venkatesh et al. (2012)
	fc2	I have the knowledge necessary to use mobile Internet.	
	fc3	Mobile internet is compatible with other technologies I use.	
	fc4	I can get help from others when I have difficulties using mobile internet.	
Habit (HBT)	hbt1	The use of mobile internet has become a habit for me.	Venkatesh et al. (2012)
	hbt2	I am addicted to using mobile internet.	
	hbt3	I must use mobile internet.	
	hbt4	Using mobile internet has become natural to me.	
MOCN Anxiety (ANX)	anx1	I feel apprehensive about using the system.	Venkatesh et al. 2003
	anx2	It scares me to think that I could lose a lot of information using the system by hitting the wrong key.	
	anx3	I hesitate to use the system for fear of making mistakes that I cannot correct.	
	anx4	The system is somewhat intimidating to me.	
MOCN Use Intention (INT)	int1	I intend to continue using mobile internet in the future.	Venkatesh et al. (2012)
	int2	I will always try to use mobile internet in my daily life.	
	int3	I plan to continue to use mobile internet frequently.	
MOCN Usage (USE)	use1	On average, the frequency I use MOCN is: (I frequently use MOCN)	Ku (2009)
	use2	On average, the length of time I spent every time on MOCN is: (I spend a long time on MOCN on average)	
	use3	Generally speaking, the effect of using online education service makes me feel satisfied	Haghshenas et al. (2012)
	use4	Generally speaking, using online education to engage in various kinds of activities makes me feel satisfied	
	use5	Generally speaking, the experience that I used online education service in the past is happy	

Note: Adapted from *Consumer acceptance and use of information technology: Extending the Unified Theory of Acceptance and Use of Technology* by Venkatesh et al., 2012 and *Extending The Technology Acceptance Model Using Perceived User Resources In Higher Education Web-Based Online Learning Courses* by Ku, 2009 and *Does educational level matter in adopting online education? A Malaysian perspective* by Haghshenas et al., 2012

CHAPTER 4

ANALYSIS

4.1 Data Cleaning and Handling Missing Values

Six hundred thirteen users participated in the survey. There were two separate sources for the email fields in the collected data. As mentioned in the previous section, one of the email fields was included in the questionnaire as question 36. An additional email field was acquired from the mailing list collector function of Survey Monkey. Typos corrected in the domain fields for the manually entered email column. These potentially redundant columns are combined to a single column.

Elimination of the responses with missing fields in the questionnaire reduced the number of responses to 501. 445 of the 501 responses had at least one email column, which is essential due to the nature of the study. The number of rows with both parts of the questionnaire filled with a maximum of three responses missing with duplicates eliminated was 408, and 397 of these responses had in the email column. The distribution of missing values in other demographic fields could be seen in Table 2.

Missing values in the columns are filled utilizing the variables using SPSS. As the dissertation not only seeks to analyze the survey data but also to compare the actual usage data to the usage variable collected from the survey, emails in the survey that exist in the audit log database of Lideno quantifies the rows of survey data to be selected. Therefore, emails of 404 responses are queried in the audit log database. Two hundred ninety-seven unique users who completed the survey are found to use the application at least once between the 1st of December 2018 and the 1st of May 2019. The survey data is expanded with adding the additional frequency column deducted

from the database. The frequency uses the time delta of minutes. Accession requests of a particular unique lecture note in a minute by a unique user are counted as one accession in the deduced frequency column. Participants who are not high school students and recent graduates of high schools are eliminated, reducing the number to 293. Finally, data is reduced further by eliminating outliers in each column using the Mahalanobis' and Cook's distance resulting in a sample size of 283.

Table 2. Number of Participants

	Participated only in the survey	Participated in the survey and accessed lecture notes at least once
Total participation	613	440
Non-empty responses	501	338
Responses with 3 or less missing answers and duplicates removed (Min. accepted res.)	408	304
Min. accepted res. with email filled in	397	297
Min. accepted res. with age filled in	400	291
Min. accepted res. with gender filled in	388	282
Min. accepted res. with grade level filled in	407	296
Min. accepted res. with high school type filled in	405	295

4.2 Descriptive Statistics

The distribution of participants according to the high school types is non-uniform. Participants of the research mainly study in Anatolian High Schools, which totals up to 64.80% of the group. Science High Schools, Vocational High Schools, and Anatolian Imam and Preacher Schools comprise 12.80%, 10.00% and 6.60% of the participants respectively (see Table 3). The rest of the participants (N) are graduate students or go to Social Sciences High Schools.

As it might be expected, since the focus of the study is high school students, 86.70% of the student participants are aged between 15 and 18, as seen in Table 4. 126 of the participants are Male, whereas 151 of them are female (see Table 5).

Table 3. Number of Participants per School Type

	Pivoted (Survey Pivot on Actual)		Survey	
	# of Participants (N)	Percentage	# of Participants (N)	Percentage
Anatolian High School (Anadolu Lisesi)	185	65.40%	259	64.00%
Science High School (Fen Lisesi)	37	13.10%	50	12.30%
Social Sciences High School (Sosyal Bilimler Lisesi)	5	1.80%	6	1.50%
Anatolian Imam and Preacher School (Anadolu İmam Hatip Lisesi)	18	6.40%	29	7.10%
Vocational High School (Mesleki ve Teknik Anadolu Lisesi)	28	9.90%	41	10.10%
Others	9	3.20%	20	4.90%
Missing	1	0.40%	3	0.70%
Total	283		408	

Table 4. Distribution of Participants by Age Group

	Pivoted (Survey Pivot on Actual)		Survey	
	# of Participants (N)	Percentage	# of Participants (N)	Percentage
≤16	208	73.50%	284	69.61%
≥17	70	24.70%	116	28.43%
Missing	5	1.80%	8	1.96%
Total	283		408	

Table 5. Distribution of Participants by Gender

	Pivoted (Survey Pivot on Actual)		Survey	
	# of Participants	Percentage	# of Participants	Percentage
Male	192	42.00%	175	42.89%
Female	152	53.70%	213	52.21%
Missing	12	4.20%	20	4.90%
Total	283		408	

A relatively high percentage of the survey participants are 9th graders. They make 59.36% of the group (see Table 6). The frequencies of participants decrease as the grade level increase.

Table 6. Distribution of Participants by Grade Level

	Pivoted (Survey Pivot on Actual)		Survey	
	# of Participants	Percentage	# of Participants	Percentage
9	166	58.70%	222	54.42%
10,11,12 and graduate	116	41.00%	185	45.34%
Missing	1	0.40%	1	0.24%
Total	285		408	

4.3 Internal Consistency of the Scales

Table 7. Cronbach's Alpha Values for Variables

Variable	Cronbach's Alpha	Question Code Set
Performance Expectancy	0.735	pe1, pe2, pe3, pe4
Effort Expectancy	0.733	ee1, ee2, ee3, ee4
Social Influence	0.867	si1, si2, si3
Facilitating Conditions	0.688	fc1, fc2, fc3, fc4
Habit	0.781	hbt1, hbt2, hbt3, hbt4
MOCN Anxiety	0.876	anx1, anx2, anx3, anx4
MOCN Use Intention	0.722	int1, int2, int3
Perceived Use	0.726	use1, use2, use3, use4, use5

Survey design section of this dissertation specifies the literature thesis based on. The scales used are previously tested and widely accepted. However, due to combining questions from two different pieces of literature, the usage variable's consistency should be re-inspected. Table 7 shows the internal consistency of the variables in question supplied with the survey using the Cronbach's Alpha value as its

benchmark. Cortina (1993) declares that 0.7 is an acceptable Cronbach's Alpha. Overall, Cronbach's Alpha values for the variables are considerably high, all close to or greater than 0.7, hence the scales are internally consistent. There is no need to eliminate any variables to increase the internal consistency of the scale as the values are acceptable based on Cortina (1993).

4.4 Hypothesis Testing

Hypotheses supplied in the conceptual framework section of the dissertation were tested for acceptance. The hypotheses $H_{1a,}$ H_{1b} , H_{1c} , H_{1d} , H_{1e} , H_{1f} , H_{2a} , H_{2b} test linear regression while H_6 tests the correlation between two variables. Multiple regression is used to compute the inference of the dependent variable MOCN use intention with independent variables of H_1. The remaining tests H_{3a} , H_{3b} , H_{4a} , H_{4b} , H_{5a} , H_{5b} are examining the potential difference among the groups for the variables in question. Table 8 presents the respective methods and results of the hypotheses testing. Methods and significant numbers for the analysis are denoted.

Table 8. Hypotheses Testing Results

Hypothesis	Significance (p value)	Method	Accepted	Relation and T-test Quantifiers
H_{1a}	0.001	Regression	Yes	R^2= 0.180
H_{1b}	0.001	Regression	Yes	R^2 = 0.203
H_{1c}	0.001	Regression	Yes	R^2 = 0.138
H_{1d}	0.001	Regression	Yes	R^2 = 0.134
H_{1e}	0.001	Regression	Yes	R^2 = 0.189
H_{1f}	0.195	Regression	No	None
H_1	0.001	Multiple Regression	Yes	R^2 = 0.334
H_{2a}	0.001	Regression	Yes	R^2 = 0.433
H_{3a}	0.204	Independent Samples t-test	No	t = 1.274
H_{4a}	0.634	Independent Samples t-test	No	t = 0.477
H_{5a}	0.060	Independent Samples t-test	No	t = 1.885
H_{2b}	0.005	Regression	Yes	R^2 = 0.028
H_{3b}	0.001	Independent Samples t-test	Yes	t = 3.679
H_{4b}	0.11	Independent Samples t-test	No	t = -1.692
H_{5b}	0.001	Independent Samples t-test	Yes	t = 1.885
H_6	0.01	Correlation Analysis	Yes	r = 0.351

According to the performed analyses, the following relationships are found.

4.4.1 Regression Analysis between Performance Expectancy and MOCN Use Intention

The hypothesis H_{1a} is accepted as the result of the regression predicts 18.0% of the variance. It was found that performance expectancy significantly predicts MOCN use intention with $R^2 = 0.180$ and $p < 0.001$.

4.4.2 Regression Analysis between Effort Expectancy and MOCN Use Intention

The hypothesis H_{1b} is accepted as the result of the regression predicts 20.0% of the variance. It was found that performance expectancy significantly predicts MOCN use intention with $R^2 = 0.203$ and $p < 0.001$.

4.4.3 Regression Analysis between Social Influence and MOCN Use Intention

The hypothesis H_{1c} is accepted as the result of the regression predicts 13.8% of the variance. It was found that performance expectancy significantly predicts MOCN use intention with $R^2 = 0.138$ and $p < 0.001$.

4.4.4 Regression Analysis between Facilitating Conditions and MOCN Use Intention

The hypothesis H_{1d} is accepted as the result of the regression predicts 13.4% of the variance. It was found that performance expectancy significantly predicts MOCN use intention with $R^2 = 0.134$ and $p < 0.001$.

4.4.5 Regression Analysis between Habit and MOCN Use Intention

The hypothesis H_{1d} is accepted as the result of the regression predicts 18.9% of the variance. It was found that performance expectancy significantly predicts MOCN use intention with $R^2 = 0.189$ and $p < 0.001$.

4.4.6 Regression Analysis between MOCN Anxiety and MOCN Use Intention

The hypothesis H_{1f} is rejected as the result of the regression does not have statistical significance. MOCN anxiety does not predict MOCN use intention with $p = 0.196$.

4.4.7 Regression Analysis between MOCN Use Intention and Perceived MOCN Use

The hypothesis H_{2a} is accepted as the result of the regression predicts 33.4% of the variance. It was found that performance expectancy significantly predicts MOCN use intention with $R^2 = 0.\ 334$ and $p < 0.001$.

4.4.8 Regression Analysis between MOCN Use Intention and Actual MOCN Use

The hypothesis H_{2b} is accepted as the result of the regression predicts 43.3% of the variance. It was found that performance expectancy significantly predicts MOCN use intention with $R^2 = 0.433$ and $p < 0.001$.

4.4.9 Multiple Regression Analysis for Factors Affecting MOCN Use Intention

Multiple regression technique was used to measure factors performance expectancy, effort expectancy, social influence, facilitating conditions, habit, and MOCN anxiety's prediction of MOCN Use Intention. The independent variables explain 33.4% of the variation of MOCN Use Intention. The components of the regression social influence, MOCN anxiety, and facilitating conditions were not found

significant while the rest of the variables were significant. The hypothesis is partially supported with $F = 23.06$ with $p < 0.005$. The regression equation is as follows:

MOLN Use Intention = 1.014 + 0.023 x Social Influence - 0.08 x MOCN Anxiety + 0.224 x Habit + 0.189 x Performance Expectancy + 0.235 x Effort Expectancy + 0.105 x Facilitating Conditions

Table 9. Model Summary[b] for MOCN Use Intention Prediction

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.578[a]	0.334	0.319	0.6134

a. Dependent Variable: INT

b. Predictors: (Constant), Facilitating Conditions, MOCN Anxiety, Performance Expectancy, Habit, Social Influence, Effort Expectancy

Table 10. ANOVA for MOCN Use Intention Prediction

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	52.059	6	8.677	23.06	.000
	Residual	103.848	276	0.376		
	Total	155.907	282			

Table 11. Coefficients for MOCN Use Intention Prediction

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.014	0.312		3.252	0.001
	Social Influence	0.023	0.042	0.034	0.535	0.593
	MOCN Anxiety	-0.008	0.035	-0.014	-0.245	0.807
	Habit	0.224	0.05	0.281	4.513	0.000
	Performance Expectancy	0.189	0.064	0.181	2.929	0.004
	Effort Expectancy	0.235	0.081	0.196	2.887	0.004
	Facilitating Conditions	0.105	0.066	0.096	1.582	0.115

4.4.10 Independent Samples t-test for Age (Perceived MOCN Use)

The significance value for Levene's test is $p > 0.05$ which suggests assuming equal variances. The significance of t-test with equal variances assumed is greater than 0.05 with $t = 1.274$ and $p = 0.204$. Hence, hypothesis H_{3a} is rejected. There is no significant difference of means between age groups for perceived use.

4.4.11 Independent Samples t-test for Age (Actual MOCN Use)

The significance value for Levene's test is $p < 0.05$, which suggests equal variances should not be assumed. The hypothesis H_{3b} is accepted as there is a significant difference of means between age groups for real use with $p < 0.05$ having $t = 3.679$ and $p = 0.001$.

4.4.12 Independent Samples t-test for Gender (Perceived MOCN Use)

The significance value for Levene's test is $p > 0.05$, which suggests assuming equal variances. The hypothesis H_{4a} is rejected as there was no significant difference in scores for males and females with $t = 0.477$ and $p = 0.634$.

4.4.13 Independent Samples t-test for Gender (Actual MOCN Use)

The significance value for Levene's test is $p < 0.05$, which suggests equal variances shouldn't be assumed. The hypothesis H_{4b} is rejected as there was no significant difference in scores for males and females with $p > 0.05$ having $t = -1.692$ and $p = 0.092$.

4.4.14 Independent Samples t-test for Grade Level (Perceived MOCN Use)

The significance value for Levene's test is $p > 0.05$ which suggests assuming equal variances. The hypothesis H_{5a} is rejected as the significance value p is greater than 0.05 with $t = 1.885$ and $p = 0.060$. There is no significant difference of means between grade levels for perceived use.

4.4.15 Independent Samples t-test for Grade Level (Actual MOCN Use)

The significance value for Levene's test is $p < 0.05$ which suggests equal variances shouldn't be assumed. The hypothesis H_{5b} is accepted as there is a significant difference of means between age groups for real use with $p < 0.05$ having $t = 4.139$ and $p = 0.001$.

4.4.16 Correlation Analysis between Perceived MOCN Use and Actual MOCN Use

The hypothesis H_6 is accepted as Actual MOCN use is found to be correlated to perceived MOCN use with $r = 0.351$ and $p < 0.002$. The strength of the correlation is found to be weak.

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1 Interpretation of the Findings

The dissertation tests 16 different hypotheses to thoroughly examine factors affecting the adoption of MOCN in Turkey in secondary education. All of the hypotheses are drawn from the literature and are supported by empirical evidence. In this section, the results of the hypotheses testings are discussed.

Each of the independent variables, performance expectancy, effort expectancy, social influence, facilitating conditions, and habit were found to predict the dependent variable MOCN use intention as the hypotheses H_{1a}, H_{1b}, H_{1c}, H_{1d}, and H_{1e} are accepted. These relationships were expected as the UTAUT model is widely accepted in literature, and the dissertation uses an adapted version of the scale provided by Venkatesh et al. (2012). Additionally, hypothesis H_1 is partially supported with performance expectancy, effort expectancy, and habit significantly contribute to explain the regression model. The variables social influence, facilitating conditions, and MOLN anxiety do not significantly predict the multiple regression. Interestingly, both social influence and facilitating conditions linearly predict the MOCN use intention separately. While this is uncommon, a possible high correlation between the independent variables of the multiple regression might explain the behavior. Marginal contributions of performance expectancy, effort expectancy, and habit are higher than others in explaining the regression model.

According to Social Cognitive Theory (SCT), one of the underlying theories of UTAUT, computer anxiety is a determinant of use intention (Venkatesh et al., 2003). Computer anxiety was adapted as MOCN anxiety in this research as in this

particular sample; the construct could have a direct influence on use intention. Nevertheless, the hypothesis H_{1f} is rejected, and it is found out that MOCN anxiety has no significant effect on MOCN use intention. This goes parallel with the literature. Venkatesh et al. (2003) highlights that the relationship between computer anxiety and behavioral intention is insignificant as computer anxiety construct's effect on intention is captured by effort expectancy.

Perceived MOCN use construct in the questionnaire was not based on a single scale but was drawn from two different scales, namely Ku (2009) and Haghshenas et al. (2012). The remaining questions of the questionnaire were adapted from UTAUT's original survey.

Therefore, using this exact composition of questions is a distinct form of measuring the proposed model. H_{2a} is accepted, and the significance of the relationship between MOCN intention to use and perceived MOCN use shows that this exact set of questions could be tested further in the future.

The research examines the relationship between use intention and perceived MOCN use compares it to the relationship between use intention and actual MOCN use. The related hypotheses H_{2a} and H_{2b} were both accepted. These findings show that the declared use intention of the high school students who participated in the research is explains both self-declaration of the usage behavior and of its actual frequency of use. This is an original contribution of the current research to the literature. There was no priori study conducted in secondary education which included both perceived MOCN use and actual MOCN use constructs.

The dissertation tests whether there are meaningful differences in variances according to demographics for both perceived MOCN use and actual MOCN use. There are no significant differences according to age, gender, and grade levels for

perceived MOCN use construct as H_{3a}, H_{4a} and H_{5a} were rejected. Similarly, there was not a significant difference amongst different genders for actual MOCN use as H_{4b} is rejected. Interestingly, differences in age and grade level imply a difference for actual MOCN use according to ANOVA analysis performed while testing H_{3b} and H_{5b}. Descriptive statistics shown in Table 4 and Table 5 could imply that the distribution of the age groups tends to be similar to the distribution of grade levels. In further research, these two demographic groups might be united and examined accordingly.

The comparison of actual MOCN use to perceived MOCN use is one of the unique properties of this research. High school students of the MOCN platform Lideno's declaration of their usage behavior is found to be correlated to their actual usage of the platform as the related hypothesis H_6 is also accepted. This result could provide a basis for further research.

5.2 Limitations & Further Research

The dissertation measures the adoption with the previous research's theoretical constructs by supplying a survey to the sample in question. While the model in question is well tested and widely accepted, usage information is currently based on personal reflections of the user and measurement of the accession frequencies using the frequency of GET requests of the server. An individual participant's declarations can be misleading; hence, is not the best way to measure the usage. Also, due to the platform's nature and accessible data, metrics like time spend on page while accessing the class notes, areas of user focus and tap frequencies on the note were not measured. While the time delta chosen for the accession logs is meaningful and

helpful in eliminating potentially duplicate data, it might not measure churns or limited accession.

The study was performed during 2018-2019 academic year. The preceding academic year was the year of an unexpected global pandemic, COVID-19. Social distancing and measures taken in schools to avoid public health system failures both in Turkey and globally might have affected the student's behavior that were the subjects of the research. Further research should examine the short-term and long-term effects of COVID-19 in adopting e-learning platforms and MOCN platforms.

Research on educational technology in Turkey is promising; and articles in accepted global journals are frequently referencing the research. The number of papers on higher education and teacher education is currently dominating other research areas such as educational technology at the high school level.

While this dissertation is not the first piece in educational technology in Turkey, the research in particular focus area "Online Class Notes Accession in Mobile Devices" is limited. This research poses a starting point for further research on assessing the utility of the online class notes reached in differing mediums. New devices or technologies emerge other than mobile phones, and accessing course content on the new technologies should be considered a research topic.

APPENDIX

ACTUAL QUESTIONNAIRE

Page 1

Introductory description was included.

Page 2

1. Ders notlarına mobil bir cihazdan çevrimiçi ulaşabilmenin öğrenim hayatımı kolaylaştıracağını düşünüyorum.
   (I find mobile online class notes useful in my daily life.)
2. Ders notlarına mobil bir cihazdan çevrimiçi ulaşabilmek benim için önemli olan şeyleri başarma şansımı arttıracaktır.
   (Using mobile online class notes increases my chances of achieving things that are important to me.)
3. Ders notlarına mobil bir cihazdan çevrimiçi ulaşabilmek ders çalışmamı daha hızlı bitirmeme yardımcı olacaktır.
   (Using mobile online class notes helps me finish my studies quickly.)
4. Ders notlarına mobil bir cihazdan çevrimiçi ulaşabilmek benim üretkenliğimi artıracaktır.
   (Using mobile online class notes increases my productivity.)
5. Ders notlarına mobil bir cihazdan çevrimiçi ulaşabilmeyi öğrenmek benim için kolaydır.
   (Learning how to use mobile online class notes is easy for me.)
6. Ders notlarına mobil bir cihazdan çevrimiçi ulaşabilmek benim için net ve anlaşılabilirdir.
   (My interaction with mobile online class notes is clear and understandable.)
7. Ders notlarına mobil bir cihazdan çevrimiçi ulaşabilmenin kolay olduğunu düşünüyorum.
   (I find mobile online class notes easy to use.)
8. Ders notlarına mobil bir cihazdan çevrimiçi ulaşabilmek için gerekli becerileri geliştirmek benim için kolaydır.
   (It is easy for me to become skillful at using mobile online class notes.)

9. Önem verdiğim kişiler ders notlarına mobil bir cihazdan çevrimiçi ulaşmam gerektiğini düşünürler.
   (People who are important to me think that I should use mobile online class notes.)
10. Davranışlarımda model aldığım kişiler ders notlarına mobilden çevrimiçi ulaşabilmenin gerekli olduğunu söylerler.
    (People who influence my behavior think that I should use mobile online class notes.)
11. Düşüncelerine değer verdiğim kişiler ders notlarına mobil bir cihazdan çevrimiçi ulaşmamı tercih ediyorlar.
    (People whose opinions that I value prefer that I use mobile online class notes.)
12. Ders notlarına mobil bir cihazdan çevrimiçi ulaşabilmek için gerekli kaynaklara/olanaklara sahibim.
    (I have the resources necessary to use mobile online class notes.)
13. Ders notlarına mobil bir cihazdan çevrimiçi ulaşabilmede başarılı olmak için gerekli bilgi birikimine sahibim.
    (I have the knowledge necessary to use mobile online class notes.)
14. Ders notlarına mobil bir cihazdan çevrimiçi olarak ulaşabileceğim ortam, kullandığım diğer teknolojiler ile uyumludur.
    (Mobile online class notes are compatible with other technologies I use.)
15. Ders notlarına mobil bir cihazdan çevrimiçi ulaşırken zorluk yaşadığımda başkalarından yardım alabilirim.
    (I can get help from others when I have difficulties using mobile online class notes.)

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16. Ders notlarına mobil bir cihazdan çevrimiçi ulaşmak benim için alışkanlık haline geldi.
    (The use of mobile online class notes has become a habit for me.)
17. Ders notlarına mobil bir cihazdan çevrimiçi ulaşmak benim için bağımlılık oldu.
    (I am addicted to using mobile online class notes.)
18. Ders notlarına mobil bir cihazdan çevrimiçi ulaşmak zorundayımdır.

(I must use mobile online class notes.)

19. Ders notlarına mobil bir cihazdan çevrimiçi ulaşmak benim için çok doğal bir şeydir.
    (Using mobile online class notes has become natural to me.)
20. Ders notlarına mobil bir cihazdan çevrimiçi ulaştığım sistemi kullanma konusunda endişe duyuyorum.
    (I feel apprehensive about using the mobile online class notes system.)
21. Ders notlarına mobil bir cihazdan çevrimiçi ulaştığım sistemde yanlış bir butona basarsam bilgilerin kaybolabileceğini bilmek beni korkutuyor.
    (It scares me to think that I could lose a lot of information using the mobile online class notes system by hitting the wrong key.)
22. Ders notlarına mobil bir cihazdan ulaştığım sistemi kullanırken düzeltemeyeceğim hatalar yapmaktan korktuğum için sistemi kullanmaya çekiniyorum.
    (I hesitate to use the mobile online class notes system for fear of making mistakes that I cannot correct.)
23. Ders notlarına mobil bir cihazdan çevrimiçi ulaştığım sistem biraz gözümü korkutuyor.
    (The mobile online class notes system is somewhat intimidating to me.)
24. Ders notlarına mobil bir cihazdan çevrimiçi ulaştığım sistemi tekrar kullanmak niyetindeyim.
    (I intend to continue using mobile online class notes in the future.)
25. Ders notlarına mobil bir cihazdan çevrimiçi ulaştığım sistemi günlük hayatımda sürekli olarak kullanmak isterim.
    (I will always try to use mobile online class notes in my daily life.)
26. Ders notlarına mobil bir cihazdan çevrimiçi olarak ulaşmaya devam etmeyi planlıyorum.
    (I plan to continue to use mobile online class notes frequently.)
27. Ders notlarına mobil bir cihazdan çevrimiçi olarak ulaştığım sistemi sıklıkla kullanırım.
    (I frequently use mobile online class notes.)
28. Genellikle mobil çevrimiçi ders notlarını okurken çok zaman geçiririm.
    (I spend a long time on mobile online class notes on average.)
29. Çevrimiçi ortamda ders notlarına ulaşmak beni genellikle memnun eder.

(Generally speaking, the effect of using mobile online class notes makes me feel satisfied.)

30. Ders notlarına mobil bir cihazdan çevrimiçi ulaşıp farklı aktivitelerde bulunmak genellikle beni tatmin eder.
    (Generally speaking, using mobile online class notes to engage in various kinds of activities makes me feel satisfied)
31. Ders notlarına mobil bir cihazdan çevrimiçi ulaşmak ile ilgili eski tecrübelerim genellikle olumluydu.
    (Generally speaking, the experience that I used mobile online class notes in the past is happy.)
32. Yaşınız *(Age)*
33. Cinsiyetiniz *(Gender)*
34. Sınıf Seviyeniz *(Grade Level)*
35. Okuduğunuz Lisenin Tipi *(High School Type)*
36. E-postanız *(Email)*

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