

**The Impact of Perceived Information Privacy On  
Technology Acceptance: Whatsapp Case**

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**Final International University  
July 2022  
Kyrenia, TRNC**

# **The Impact of Perceived Information Privacy On Technology Acceptance: WhatsApp Case**

by

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A thesis submitted to the Institute of Graduate  
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**FINAL INTERNATIONAL UNIVERSITY  
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**APPROVAL**

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WhatsApp Case

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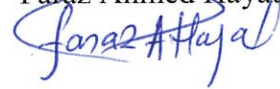
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*To my mother and father for their love and support.*

## ETHICAL DECLARATION

I, Faraz Ahmed Hayat, hereby, declare that I am the sole author of this thesis and it is my original work. I declare that I have followed ethical standards in collecting and analyzing the data and accurately reported the findings in this thesis. I have also properly credited and cited all the sources included in this work.

Faraz Ahmed Hayat



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## ABSTRACT

After the introduction of smartphones, Online Instant Messaging (OIM) applications have become an essential part of our everyday communication. One of the most well-known OIM applications is WhatsApp. Although these applications have provided plenty of benefits, it has also increased the probability of privacy mishaps. Such privacy concerns influence formation of negative attitudes and use intention regarding OIM apps. In this thesis, an expanded version of Rauniar's Technology Acceptance Model (TAM) with perceived information privacy (PIP), Subjective Norm (SN) and Convenience (C) is to explain the use of WhatsApp by university students in the Turkish Republic of Northern Cyprus (TRNC).

The study takes a quantitative approach and data is collected from 385 participants via online and printed questionnaire. According to the results, perceived ease of use and perceived usefulness significantly impact attitudes towards WhatsApp which in turn influence use intention. It was also found that while perceived information privacy is found to have no influence on perceived usefulness and attitude, it did affect intention to use WhatsApp. On the other hand, perceived playfulness and convenience of using an OIM app lead to a perception of WhatsApp being useful. Moreover, subjective norm and critical mass were found to significantly affect attitudes towards WhatsApp. The model contributes to the theory and practice of OIM app providers and manager with its aforementioned findings.

**Keywords:** information privacy, technology acceptance, instant messaging



## ÖZ

Akıllı telefonların kullanıma sunulmasından sonra Çevrimiçi Anında Mesajlaşma (OIM) uygulamaları günlük iletişimimizin önemli bir parçası haline gelmiştir. En bilinen OIM uygulamalarından biri WhatsApp'tır. Bu uygulamalar pek çok fayda sağlasa da, gizlilik ihlali sorunlarını da artırdı. Bu gizlilik endişeleri, OIM uygulamalarıyla ilgili olumsuz tutumlar oluşmasını ve kullanım niyetini etkileyebilmektedir. Bu tezde, Kuzey Kıbrıs Türk Cumhuriyeti'ndeki (KKTC) üniversite öğrencilerinin WhatsApp kullanımını açıklamak için Rauniar'ın Teknoloji Kabul Modeli'nin (TAM) algılanan bilgi gizliliği (PIP), Subjektif Norm (SN) ve Kolaylık (C) değişkenleri ile genişletilmiş şekli kullanılmaktadır.

Araştırma nicel bir yaklaşım benimsemektedir ve veriler 385 katılımcıdan çevrimiçi ve basılı anket yoluyla toplanmıştır. Sonuçlara göre, algılanan kullanım kolaylığı ve algılanan kullanılabilirlik, WhatsApp'a yönelik tutumları önemli ölçüde etkilemekte ve bu da kullanım niyetini etkilemektedir. Ayrıca, algılanan bilgi gizliliğinin algılanan kullanılabilirlik ve tutum üzerinde hiçbir etkisi bulunmazken, WhatsApp'a ilişkin kullanım niyetini etkilediği bulunmuştur. Öte yandan, bir OIM uygulaması kullanmanın algılanan eğlenceliği ve kolaylığı, WhatsApp'ın yararlı olduğu algısını yarattığı görülmüştür. Yine subjektif norm ve kritik kütlenin WhatsApp'a yönelik tutumları önemli ölçüde etkilediği bulunmuştur. Model, yukarıda belirtilen bulguları ile literature ve OIM uygulama sağlayıcıları ve yöneticilerinin karar süreçlerine katkıda bulunmaktadır.

**Anahtar Kelimeler:** bilgi gizliliği, teknoloji, kabul, anlık mesajlaşma

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## LIST OF ABBREVIATIONS

AT	Attitude
C	Convenience
CM	Critical Mass
EOU	Perceived Ease of Use
OIM	Online Instant Messaging
PIP	Perceived Information Privacy
PP	Perceived Playfulness
SN	Subjective Norm
TAM	Technology Acceptance Model
TR	Trust
TRNC	Turkish Republic of Northern Cyprus
U	Perceived Usefulness
UB	User Behavior
UI	User Intention

# CHAPTER 1

## INTRODUCTION

Face to face communication is the most effective medium of communication; however, after the introduction of internet and modern messaging technologies, online based communication has become an important medium to maintain interpersonal relationships (Chung & Nam, 2007). Following the emergence of smartphones, innovative mobile applications (apps) were able to capture high market shares. In addition, Online Instant Messaging (OIM) applications have gained importance as a synchronous tool enabling users to interact in real time (Lenhart et al., 2001). Also, formation of mobile technologies such as 3G and 4G internet services have drastically increased the use of OIM apps on mobile phones (Yoon et al., 2015).

When compared to traditional communication mechanisms, OIM can be considered advantageous as it offers features such as chats, calls, video calls, sharing of pictures, videos, and location, and integration with desktop (Anderson, 2016). Although OIM provides plenty of benefits, it can be exposed to “viruses, security breaches, spam messages, and abuse by other users” (Chung & Nam, 2007, p. 213). The major privacy issue regarding collection, sharing and storing of data arises from who owns and controls the information, and who will be held accountable (Limba & Sidlauskas, 2020).

Notably, mobile phones can compromise a user’s privacy more than any other device as it has become a necessary part of our everyday lives. One of the ways that individual privacy can be compromised is by downloading and using different apps (Wottrich et al., 2019). After downloading an app, data collected can be used to create personalized profiles with a purpose to sell it to marketing companies without the



user's consent (Ashworth & Free 2006; Buck et al., 2014; Wottrich et al., 2019). In addition, in order to use an app, the users have to agree to terms and conditions provided by a developer. The consumers do have few options to limit the disclosure of their data, yet to protect themselves completely, they are only left with one option; uninstalling the app (Wottrich et al., 2019). Therefore, it is necessary for researchers as well as online companies to understand the changes in consumer behavior related to such privacy issues.

In order to understand the acceptance of OIM apps by consumers, this study adapts and modifies the TAM model by Rauniar et al. (2014). Along with the existing variables in the model, it will include perceived information privacy, critical mass, and convenience. The purpose of an OIM app is to facilitate social and personal communication among people, hence, making privacy an important variable that might influence the acceptance of an OIM app. Lastly, as an OIM app can be used irrespective of time and place, convenience might impact the acceptance of an OIM app.

This thesis has been divided into 5 chapters. Chapter 1 includes introduction of the thesis, problem statement, significance of the study, research question and hypotheses, assumptions, limitations, and definition of key terminologies. Chapter 2 contains a detailed literature review regarding all of the variables. Next, Chapter 3 explains the methods and instruments used for collecting data. In chapter 4, data analysis and statistical techniques are used, and results are given, and in Chapter 5, the findings are discussed and conclusions are given along with recommendations.

## **1.1 Problem Statement**

As mentioned above, the ease of communication has also increased the possibilities of privacy misfortunes. Who can access our personal information online

has become a major question. Furthermore, the Cambridge Analytica Scandal (The New York Times, 2018), and WhatsApp scandal (Bloomberg, 2021) have made users distrustful regarding their online privacy. Online privacy concerns can arise due to location tracking, collection and mishandling of information, and selling that information to different parties. According to Alexandra (2019), many online companies use different on-site trackers to develop personalized profile of its user. Although these companies claim to use those profiles to show targeted ads, the information can be sold to different companies without user's consent or can be accessed by cybercriminals. Like websites and social media, online instant messaging (OIM) requires users to share their personal information such as name and phone number online. Furthermore, OIM applications also consist of user messages and multimedia sent to one another.

The foundation of this research is based on the Technology Acceptance Model (TAM) (Rauniar et al., 2014). TAM is one of the most imperative theories for explaining the adaptation of information and computing technologies. The main goal of TAM is to explain the relationship between attitude and intention, and how it impacts behavioral use of any computing technology (Yoon et al., 2015). Several researchers have adopted TAM in their studies (Davis et al., 1989, Venkatesh & Davis, 2000; Venkatesh et al., 2003; Rauniar et al., 2014; Yoon et al., 2015), and particularly regarding OIM (Ilie, et al., 2005; Lin et al., 2006; Chung & Nam, 2007; Strader et al., 2007; Van Slyke et al., 2007; Premkumar et al., 2008; Glass & Li, 2010; Yoon et al., 2015; Makki et al., 2017). However, literature lacks studies on examination of Perceived Information Privacy (PIP), convenience (C), and critical mass (CM) while measuring the acceptance of OIM by university students. According to Pew Research Center (2022), in 2017 around 59% of Gen Z (18-22 years old) were enrolled in

universities. Further, Jenkins (2021) claims that leading mobile phone activity for Gen Z was text messaging (81%) followed by downloading apps (59%), and so on. Thus, it is important to understand the influence of information privacy on the digital youth generation; university students. For this purpose, a sample of university students from the Turkish Republic of Northern Cyprus (TRNC) is chosen.

## **1.2 Purpose of the Study**

There have been plenty of studies applying TAM in several contexts to measure acceptance of different technologies. However, the current literature lacks a framework for measuring the impact of information privacy on OIM technologies. The main goal of this research is to explain the effects of PIP, SN, and C, along with the already existing variables in the adapted model, on the acceptance of WhatsApp. Compared to existing literature, this research aims to provide a more comprehensive picture of OIM acceptance by university students. That is why this research has focused on combining TAM, information privacy, perceived playfulness, subjective norm and critical mass, and convenience in order to measure the acceptance of WhatsApp.

## **1.3 Significance of the Study**

Although there have been some studies regarding acceptance of OIM technologies (Ilie, et al., 2005; Lin et al., 2006; Chung & Nam, 2007; Strader et al., 2007; Van Slyke et al., 2007; Premkumar et al., 2008; Glass & Li, 2010; Yoon et al., 2015; Makki et al., 2017), and TAM in other regards (Davis et al., 1989, Venkatesh & Davis, 2000; Venkatesh et al., 2003; Rauniar et al., 2014; Yoon et al., 2015), there is a lack of research in regards to PIP, SN, and C effects on the acceptance of OIM by university students. One of the strongest aspects of this study is that it provides a framework combining TAM with information privacy, subjective norm and critical

mass, convenience, and perceived playfulness in order to measure the acceptance of OIM technologies. As it is a first study including PIP effects on acceptance of WhatsApp by university students, it will elucidate how much importance students give to PIP while using an OIM app. Further, it will also act as a guide for future studies with similar themes. In the context of managerial implication, this research will provide an opportunity for OIM businesses to further understand adoption of their technologies and changes in consumer behavior if a technology is perceived to be unsecured.

#### **1.4 Research Questions and Hypotheses**

This thesis adopts an extension of Rauniar et al.'s (2014) TAM model to answer the following research question in a cohesive manner:

1. What are some of the factors that impact the acceptance of OIM apps by university students in TRNC?
  - 1.1a. How does perceived usefulness impact the acceptance of OIM apps by university students in TRNC?
  - 1.2a. How does perceived ease of use impact the acceptance of OIM apps by university students in TRNC?
  - 1.3a. How does attitude impact the acceptance of OIM apps by university students in TRNC?
  - 1.4a. How does use intention impact the acceptance of OIM apps by university students in TRNC?
- 1b. How does perceived playfulness impact the acceptance of OIM apps by university students in TRNC?
- 1c. How does critical mass impact the acceptance of OIM apps by university students in TRNC?

- 1d. How does trust impact the acceptance of OIM apps by university students in TRNC?
2. What would be additional variables on Rauniar's TAM model to better explain OIM acceptance?
  - 2a. How does subjective norm impact the acceptance of OIM apps by university students in TRNC?
  - 2b. How does convenience impact the acceptance of OIM apps by university students in TRNC?
3. How does perceived information privacy impact the acceptance of WhatsApp by university students in TRNC?

Accordingly, with these research questions, the following hypotheses are developed based on an extension of Rauniar et al.'s (2014) TAM to find and explain the relationships between different factors affecting the use of WhatsApp, an OIM app, by students in TRNC:

- H1:** Increase in Perceived Ease of Use results in higher Perceived Usefulness of WhatsApp.
- H2:** Increase in Perceived Usefulness results in a more favorable Attitude towards using WhatsApp.
- H3:** Increase in favorableness of Attitude towards using WhatsApp results in higher Use Intention of WhatsApp.
- H4:** Increase in Perceived Information Privacy results in higher Perceived Usefulness of WhatsApp.
- H5:** Increase in Perceived Information Privacy results in a more favorable Attitude towards using WhatsApp.

**H6:** Increase in Perceived Information Privacy results in higher Use Intention of WhatsApp.

**H7:** Increase in Perceived Information Privacy results in higher Trust on WhatsApp.

**H8:** Increase in Trust on WhatsApp results in a more favorable Attitude towards using WhatsApp.

**H9:** Increase in Trust results in higher Use Intention of WhatsApp.

**H10:** Increase in Convenience results in higher Perceived Usefulness of WhatsApp.

**H11:** Increase in Perceived Playfulness results in higher Perceived Usefulness of WhatsApp.

**H12:** Increase in the influence of Subjective Norm results in higher Perceived Usefulness of WhatsApp.

**H13:** Increase in the influence of Subjective Norm results in a more favorable Attitude towards using WhatsApp.

**H14:** Increase in the influence of Subjective Norm results in higher Use Intention of WhatsApp.

**H15:** Increase in Critical Mass results in higher Perceived Usefulness of WhatsApp.

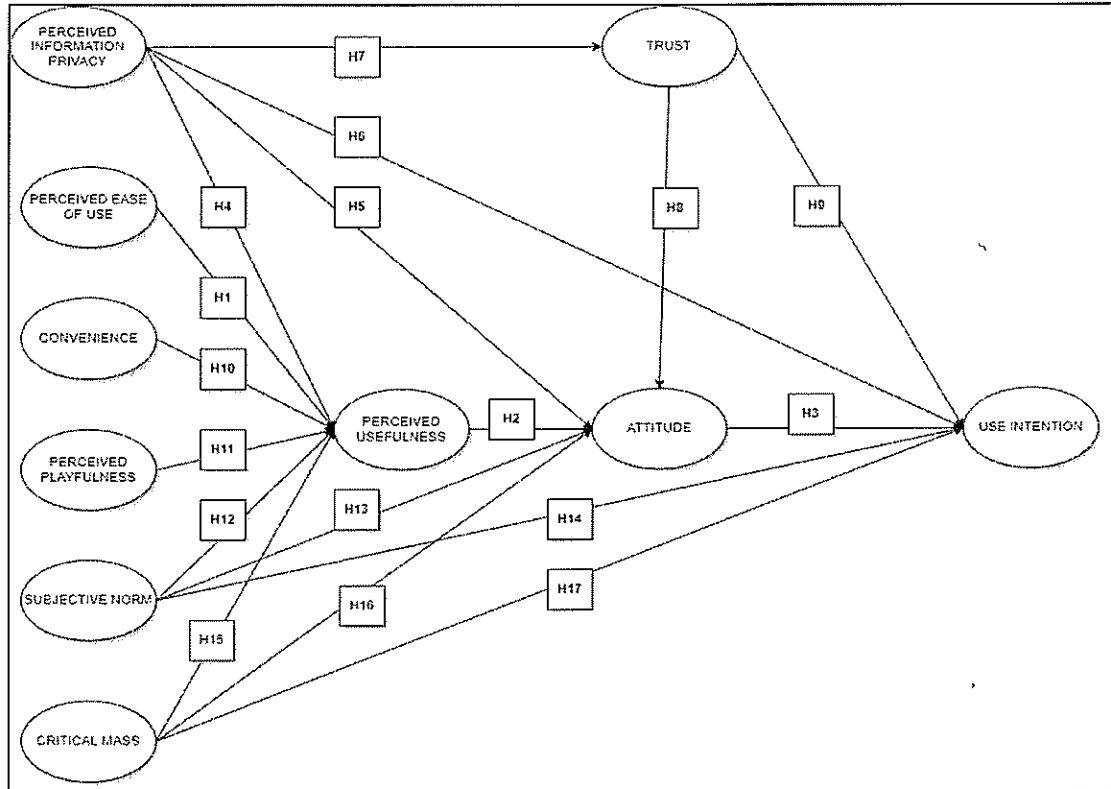
**H16:** Increase in Critical Mass results in a more favorable Attitude towards using WhatsApp.

**H17:** Increase in Critical Mass results in higher Use Intention of WhatsApp.

Based on the developed hypotheses, the following model is adapted from Rauniar et al. (2014):

**Figure 1**

*Thesis Model*



Source: adapted from Rauniar et al. (2014)

## 1.5 Assumptions

In this study, the following conclusions are drawn:

1. Rauniar et al. (2014) found ease of use, critical mass, and perceived playfulness to positively influence perceived usefulness for social media use. Further, the authors found trust to positively impact use intention. In addition, Chung and Nam (2007) found attitude to positively influence intention to use and vice versa. Moreover, according to Theory of Reasoned Action, subjective norm is considered as one of the most important factors to determine intention to use a technology (Yuen & Ma, 2008). The previously mentioned findings were considered as assumptions to develop the research hypotheses.

2. The research will provide a plausible picture of the effects of perceived information privacy and convenience on the acceptance of WhatsApp by university students. Smith et al. (1996) show that users worry about collection, storing, and use of their personal online information without their consent. Based on Smith and colleagues' (1996) finding, this study assumed that perceived information privacy to influence the acceptance of OIM technologies.
3. According to Deng et al. (2010), OIM gives users an ability to continuously communicate regardless of time and place, making it to be perceived as useful.
4. The relationships used to develop hypotheses are assumed to be generalized in the context of OIM apps.
5. Data analyzed will provide a clear understanding of the factors that shape individuals' attitudes and intention towards WhatsApp.
6. The respondents will be fully informed about the aims and objectives of the research. The questions will be fully understood by the participants.
7. The participants of this study will fully understand the questions they are asked.
8. Genuine and honest responses will be expected from the participants.

## **1.6 Limitations**

Along with the contributions of this study, there are few limitations. First of all, the data was collected from only one university while there are a total of 18 different universities in TRNC. A broader picture of acceptance of WhatsApp by university students and more precise results could have been provided if the sample was spread throughout different universities. Therefore, this difference might cause a limitation when generalizing findings for all the university students in the TRNC. Secondly, the majority of participants comprising the sample are studying in the



faculty of economics and administrative sciences, and could have different perceptions regarding OIM apps compared to students studying in different departments. In addition, most of the students belonged to African ethnicity, followed by Asian and least belonged to European countries. Based on this categorization, it is not possible to generalize results for all the university students studying in different regions of the world. Furthermore, as the majority of the respondents are between the ages of 22 to 24, the results cannot be generalized for all age groups using OIM applications. Lastly, as the existing findings are scattered around the literature and conducted in different contexts, no study on its own can be a direct benchmark for this research.

### **1.1 Definition of Key Terminology**

A researcher must refer to existing literature and theory to create conceptualization or a common understanding of a term under consideration DeCarlo (2018) defined conceptualization as writing out clear and succinct definitions of key concepts. In essence, a researcher must understand the already established concepts to decide if they can be used in the context of another research. For the purposes of this research, 10 variables are conceptualized in the following way:

Perceived Ease of Use: how much a user considers the use of a technology to be effortless (Venkatesh & Davis, 2000).

Perceived Usefulness: the degree to which a technology fulfills the needs of a user (Venkatesh & Davis, 2000).

Attitude: encouraging or discouraging thoughts regarding a particular technology (Chung & Nam, 2007).

User Intention: a decision a person has established to perform a certain behavior (Rauniar et al., 2014).

Trust: a general belief that an OIM app can be trusted (Gefen et al., 2003a).

Perceived Information Privacy: the perception of control over personal information that others can access about an individual online (Gadekar & Pant, 2015).

Convenience: use of technology irrespective of place and time of use (Yoon et al., 2015).

Critical Mass: the perception of a significant number of users available on a technology with whom individuals can associate and connect (Glass & Li, 2010).

Subjective Norm: the influence of people who we consider important on our certain behaviors (Chung & Nam, 2007).

Perceived Playfulness: the degree to which interaction via OIM apps are perceived to be fun and enjoyable (Rauniar et al., 2014).

## CHAPTER 2

### LITERATURE REVIEW

Communication is important for human beings to socialize. Face to face communication is considered as the most effective way of communication (Chung & Nam, 2007). In addition, as a result of advancement in technology, many efficient modes of communication such as OIM apps are innovated. Along with several benefits, these OIM apps bring a risk of privacy misfortunes (Lenhart et al., 2001). This section will discuss studies and existing findings regarding technology acceptance model, perceived information privacy, trust, subjective norm, critical mass, perceived playfulness, convenience, and WhatsApp app.

#### **2.1 Technology Acceptance Model (TAM)**

There have been years of research using the Technological Acceptance Model (TAM) by Davis (1986) to understand the adaptation of information and communication technologies. The popularity of TAM is an outcome of its characteristics such as “parsimony”, “verifiability”, and “generalizability” in its use to understand the acceptance of a new technology (Rauniar et al., 2014). Ahmed et al. (2009) argues that TAM is an already proven model, which is simple and can be used to measure the acceptance of technology in many sectors due to its generalizability. TAM is developed based on another theory known as the Theory of Reasoned Action (TRA) by Fishbein and Ajzen (1975). While TRA focused on general human intentions and behaviors, TAM was constructed around understanding and explaining user behavior regarding computer technologies (Davis et al., 1989; Rauniar et al., 2014). At the time when TAM was first proposed, it focused on information technologies acceptance in an organizational setting (Rauniar et al., 2014). Davis

(1989) suggested that a UI to use a technology and behavioral outcome is significantly affected by attitude towards that technology. In addition, these attitudes are affected by Perceived Ease of Use (EOU) and Perceived Usefulness (U) of a technology which in turn affect an individual's intention to use a technology.

U refers to the degree to which a technology fulfills the needs of a user and EOU can be defined as how much a user considers the use of a technology to be effortless (Venkatesh & Davis, 2000; Rauniar et al., 2014). According to Davis (1989), EOU and U are the main factors of predicting users' attitudes towards a technology. The more useful or free of effort users perceive a technology to be, the more positive attitude they develop towards that technology. Davis (1989) argued that in addition to effect technology acceptance, PU and EOU also affect each other. The author supported his claim by reasoning that the easier it is to use a technology; the more users perceive it as useful. Interestingly, it is found that studies have removed EOU as a variable to measure behavioral intention (Lou et al., 2005). The reason for this exclusion is argued to be EOU having no or little effect on UI once a technology is adapted for a period of time (Yoon et al., 2015).

Attitudes (AT) can be generalized as the encouraging or discouraging feelings for a particular technology. In other words, if an individual forms a positive attitude towards a certain technology, in turn, the use intention for that technology will be positive and vice versa (Chung & Nam, 2007). Davis (1989) proposed that attitudes are affected by the U of a technology, in this case information technologies. One of the assumptions of TAM includes that U towards AT of a technology impacts the UI. In addition, it was projected that while everything else being constant, people represent UI for a technology when they have a positive attitude towards that technology. Interestingly, Davis et al. (1989) claimed that even when users do not have a positive

AT towards using a technology, they may use it based on U or EOU of that specific technology. Further, the author proposed to remove the attitude construct completely from that TAM model and found a stronger model predicting user behavior based on only U, EOU and UI.

In a study by Weng et al. (2018), which measured the attitudes towards e-learning by students, the authors found a significant relationship between U, EOU and AT towards using e-learning technologies. It was further concluded that EOU and U had nearly the same amount of effect on AT. In addition, the authors found a significant relationship between AT and UI. Moreover, AT was also considered as the most important element of UI for mobile learning. In a similar study measuring the acceptance of e-learning technologies, Shroff et al. (2011) found a significant relationship between EOU and Attitudes, whereas they found an insignificant relation between U and AT. On the other hand, Wen et al. (2017) found a strong favorable attitude towards using LINE; an OIM app, by elderly people, followed by U and EOU. Consistent with other TAM studies, EOU had a significant relationship with U, and both EOU and U were found to have a strong relationship with AT towards using OIM. In other words, the more users perceive OIM to be easy to use, the more it seems useful, and as a result they create favorable attitudes towards OIM (Chung & Nam, 2007). Lastly, use intention (UI) is a decision a person has established to perform a certain behavior (Rauniar et al., 2014). Azjen and Fishbein (1980) argues that a person's intention to engage in a behavior is a clear determinant of if he/she will perform that certain action as people usually behave according to their intentions. Correspondingly, people will form an intention to use a technology if they have a positive perception about that technology (Chung & Nam, 2007). However, along with several different factors, online privacy concerns might influence the attitude and use

intention regarding a technology (White, 2004).

## **2.2 Perceived Information Privacy (PIP)**

Some evolutionary theories argue that humans have an intrinsic desire to be sociable; however, it is also innate to have a private life (Yao & Zhang, 2008). Privacy can be considered as a multivariate concept and it can be categorized as physical privacy, information privacy, psychological privacy and social privacy (Limpf & Voorveld, 2015). What individuals consider as their right to privacy may differ from person to person (Yao & Zhang, 2008). Researchers all over the world have a difference of opinion on what defines “privacy” (Norberg & Horne, 2007). One of the key reasons for these differences can be the fact that common people, researchers and legal experts define it differently depending on a situation. For instance, Stephen (1993) defined privacy as peculiar and private affairs whereas Fried (1970) specified it as a power over information about oneself. In addition, based on legality concerns it can generally be defined as “the right to be let alone” (Warren & Brandeis 1890, p. 193; Limpf & Voorveld, 2015). In the context of this research, Perceived Information Privacy (PIP) can be defined as the perception of control over personal information that others can access about an individual online (Gadekar & Pant, 2015).

Compared to offline privacy, online privacy is a more complicated phenomenon. It includes an individual’s right concerning “the storing, reusing, provision of personal information to third parties, and displaying of information pertaining to oneself on the internet” (Anic et al., 2019, p801). From an organizational point of view, collecting and storing data have plenty of benefits such as effective communication and personalized offerings (Franzak et al., 2001; Norberg & Horne, 2007). Similarly, from the consumers’ perspective, there are also several positive points such as convenience to find products and services that specifically counter their

needs, and better customer service. Conversely, these benefits are sometimes outweighed by the negative perception of privacy (Norberg & Horne, 2007).

Additionally, Norberg and Horne (2007) concluded that individuals perceive privacy in two ways; some consumers put a lot of focus on their privacy and prefer to limit collection of their data to have a sense of control. According to the opinion polls from 1998 to 2001 conducted by Metzger and Docter (2003), it was concluded that generally most of the participants were “very” or “somewhat” worried about their privacy online. Correspondingly, White (2004) found that people get worried about their online privacy because they do not want their information to be used without their consent. On the other hand, some of the consumers, even if they value privacy, are willing to trade their personal information for potential benefits. In other words, individuals who may form negative attitudes towards privacy problems online can be the same individuals who reveal personal information for a benefit. Nevertheless, it is found that supposed benefits play an important role in disclosure of information over the internet as well as for the adaptation of new technologies (Anic et al., 2019).

Furthermore, based on a study conducted by Smith and colleagues (1996) it was found that consumers worry about collection of their personal information and storing it on servers, use of the information for unspecified purposes and access of data by unauthorized individuals (Yang, 2013). In addition, Schwaig et al. (2013) found that low self-image, angst about computers and lack of control regarding information sharing contributed negatively towards information privacy attitudes. In terms of UI, while understanding the adaptation of snapchat, Lemay et al. (2017) did not find privacy to predict UI. The authors argued that as the younger generation got used to OIM apps as an important mode of communication, their choice does not necessarily focus on privacy reasons. On the other hand, when consumers form a conscience

regarding risks connected with online privacy (Anic et al., 2018), they can have several behavioral outcomes like deciding not to use an application, or using privacy strengthening tools (Anic et al., 2019; Lwin et al., 2007). According to Anic et al. (2018) trust plays an important part in online privacy as it reduces individual's concerns regarding uncertainty and risks associated with sharing personal information online. A study based on young Chinese internet users conducted by Yang (2013) revealed that individuals who experienced negativity regarding online privacy worried more about their privacy, increased privacy protective behaviors and decreased their trust in online companies.

### **2.3 Trust (TR)**

In terms of OIM, this study conceptualized TR as a general belief that an OIM app can be trusted (Gefen et al., 2003a). According to Makki et al. (2017) trust has not been able to grab the attention of researchers regarding technology acceptance, hence, making it an important variable to be considered. Further, Lee and Wan (2010) claimed that it is important to consider TR when measuring technology use because technologies are not foolproof. When a user trusts a technology, it reduces the uncertainties associated with it, making it easy to be adaptable (Raaij & Schepers, 2008). TR can affect the adaption of certain technologies as individuals want to maintain the feeling of trust while assuming that other, online companies in this context, follow the rules and regulations during the sharing of information (Makki et al., 2017). When measuring the adaptation of e-ticketing, TR was found to have a significant positive relation with U. In addition, authors also found a positive relationship between EOU and TR. In reference to social networking sites, researchers such as Sledgianowski and Kulviwat (2009) and Rauniar et al. (2014) have found a significant relationship between TR and UI.



## 2.4 Subjective Norm (SN)

According to TRA, a person's intention is affected by two main elements: AT and subjective norm (SN). According to Yuen and Ma (2008), based on TRA, AT and SN were found to be the most important indicators of UI of a technology. SN can be explained as the influence of people who we consider important on our certain behaviors. For instance, when individuals who are important to us perceive us to be positive when performing a certain behavior, we want to meet the expectations formed by those important individuals (Chung & Nam, 2007). One of the imperative differences in TAM and TRA is that TAM does not take SN into consideration while measuring the intention to use technology. While SN or social environment can have an effect over behavioral intention, Davis and colleagues (1989) considered it to be a weak construct due to its uncertain theoretical and psychological status. However, they did admit the need for further research of social factors affecting technological usage behavior. Venkatesh and Davis (2000) revised the already existing TAM model to also measure the impact of social factors on technology acceptance (Ahmed et al., 2019; Beldad & Hegner, 2017). The authors argued that even when people are not in favor of performing an action, and someone important to them thinks that they should perform a certain action, it can result in enough motivation to perform that action. Based on Venkatesh and Davis' (2000) study, it can be argued that SN plays an important and significant role in impacting the acceptance and adaptation of a technology.

Lu et al. (2009) concluded that SN considerably impacts individuals' UI to accept and use different technologies such as OIM. Beldad and Hegner (2017) also argued that the increased popularity of online modes of communication and massive acceptance by people can increase the tendency to use such technologies. Additionally,

Venkatesh and Davis (2000) found SN to significantly predict UI towards a technology. SN was also found to significantly impact U (Yuen & Ma, 2008; Teo, 2010). Likewise, in terms of e-learning, Park et al. (2011), found a significant relation between SN and AT. Moreover, in their research Chung and Nam (2007) assumes that for an individual, SN positively influences their AT towards OIM. This assumption was based on the finding from Chung et al. (2003), which stated that acceptance of a technology by a young user is strongly based on the approval of his/her friends. During the results, authors concluded that SN had an influence on UI; however, it did not impact the AT towards using an OIM app. On the other hand, Glass and Li concluded that SN had a stronger relation with acceptance of OIM when compared to U and EOU. Conversely, Abbas (2016) found SN to have no significant impact on EOU and UI for smartphones. On the other hand, SN was found to positively influence the U. In terms of health fitness apps, Beldad and Hegner (2017) found no significant relationship between SN, TR and UI. The authors further claim that even though there is no significant relation between SN and UI, it does impact their perception of app U. In addition to SN, many of the researchers have been critical of TAM for not considering Critical Mass (CM) when measuring the acceptance of technologies (Glass & Li, 2010).

## **2.5 Critical Mass (CM)**

Another important variable added in already existing TAM is critical mass (CM). It implies that the social behavior regarding the acceptance and usage of a technology, affects the individual's intention to use that technology (Glass & Li, 2010; Makki et al., 2017). In terms of OIM, CM can be explained as the perception of a significant number of users available on a technology with whom individuals can associate and connect. In other words, if the frequency of acceptance of a technology

increases, new and existing users perceive it to be more beneficial (Glass & Li, 2010). In addition, Van Slyke et al. (2007) claimed that when a technology is unable to attract the significant number of users, it eventually falls into disuse. The authors further claimed CM to have a direct as well as indirect influence on UI with respect to OIM. Yoon et al. (2014) claimed that CM has been highly used while measuring the adaptation of communication technologies while arguing that an individual may use a communication technology based on number of users.

Further, Premkumar et al. (2008) established CM to significantly impact the UI to use an OIM. Ilie, et al. (2005) also claimed CM to have higher influence on UI to use OIM as compared to EOU and U. Similarly, Studies such as (Van Slyke et al. 2007; Yoon et al., 2014) has found CM to significantly impact UI to use OIM. In addition, studies such as (Lou et al., 2000; Lou et al., 2005; Li et al., 2010) has also found CM to positively impact U. In a study by Glass & Li (2010), CM and SN loaded on the same factor during factor analysis. The authors also claimed that while adapting a new communication technology, the difference between CM and SN might not be prominent. In addition, in terms of snapchat, Makki et al. (2017) found significant correlation between CM and SN. Interestingly Lou et al. (2005) and Li et al. (2010) have found a positive relationship between playfulness and CM. Conversely, Yoon et al. (2014) did not find any significant relation between U and CM, and playfulness and CM.

## **2.6 Perceived Playfulness (PP)**

In connection with OIM, perceived playfulness (PP) can be defined as the degree to which interaction via OIM apps are perceived to be fun and enjoyable (Rauniar et al., 2014). Based on a research conducted by Yongqing et al. (2011), it was concluded that Perceived Entertainment (Perceived Playfulness) has a significant

relationship with UI to use OIM. According to Wang et al. (2012), the entertainment factors of OIM can be also derived from different kinds of emoji or avatars an individual can use while communicating with others. In other words, individuals seek entertainment in the way they interact with others through WhatsApp. In addition, Chopra and Bedi (2019) claimed that it is usual for youngsters to use WhatsApp for entertainment purposes such as sharing funny videos or pranks with their friends. Additionally, Yoon et al. (2015) found a significant direct relationship between PP and U for OIM. Lastly, Lin et al. (2021) found that WhatsApp was considered to increase users' enjoyment of communication with friends and family through the ability to share media, and express their emotions and thoughts more precisely anytime and anywhere.

## **2.7 Convenience (C)**

Yoon et al. (2015) proposed Convenience (C) as an additional TAM variable in order to measure the adaptation of OIM. C can be defined as the use of technology irrespective of place and time of use. Deng et al. (2010) claimed that as OIM helps users to continuously communicate with other individuals, it is considered highly convenient and a medium to share useful information. In terms of OIM, Yoon et al. (2015) found C to have the strongest correlation with perceived playfulness followed by U. In addition, Yoon and Kim (2006) claimed that in terms of technology use, it is not easy to distinguish between C and EOU. There has not been specifically any study measuring C in term of OIM; however, with regards to e-banking, Liao and Wong (2008) found C to positively impact U. Furthermore, in respect of e-commerce, C was found to have a significant impact on adaption of e-businesses (Bere & Rambe, 2013). Finally, with reference to mobile learning, Sotillo (2006) and Ally (2008) claimed that students may be more inclined towards using mobile technology for learning based on

convenience to engage at their own pace.

## **2.8 WhatsApp**

Throughout the world, there has been an increase in growth of downloads and use of OIM applications. Nysveen et al. (2005b) argued that although there has been a tremendous improvement in development of mobile applications in general, OIM applications can be considered as the most rewarding innovation in terms of communication. Based on a research conducted by TNS Global Research Company (2015), 76% of internet users throughout the world use OIM applications weekly, whereas 55% use IM apps daily (Chopra & Bedi, 2019). The increased use of instant messaging applications has increased researchers' curiosity to understand and explain why people use such applications in their daily lives (Martinez-Comeche & Ruthven, 2021).

There are many different OIM applications available; some for specific operating systems such as Apple's iMessage and some for most operating systems such as WhatsApp. WhatsApp was co-founded by Jan Koum and Brian Acton in 2009 and it was first launched on the Apple app store (Olson, 2016). In 2014, Facebook acquired WhatsApp for almost 16 billion USD. In addition, when Facebook decided to acquire WhatsApp, the agreement between two companies focused on keeping WhatsApp most operations independent of Facebook. Furthermore, to increase the sense of privacy for users, it also decided to introduce end-to-end encrypted communication in 2016 (Anderson, 2016).

WhatsApp includes features such as audio and video calls, real time chatting, file transfers, media transfers, notifications, etc. (Glass & Li, 2010). In addition, WhatsApp facilitates easy and fast communication, and gives users an ability to develop and strengthen social relationships. Apart from one-to-one communication

between individuals, it also provides the service of group formation where users are able to add their contacts and chat with all of the group members simultaneously (Anderson, 2016). The real time communication, ability to share media, and convenience has made it popular among its users (Chopra & Bedi, 2019).

WhatsApp is one of the most well-regarded instant messaging apps. According to Statista (2022), in terms of use, around 2 billion people use WhatsApp on a monthly basis. Based on an online survey conducted by Olson (2016), WhatsApp is considered as the OIM leader for android users in around 55.6 % of the total countries in the world. Furthermore, based on another survey consisting of 94 countries by Winik (2021), it is ranked as the leader of instant messaging in 58 out of 94 countries. Moreover, Church and Oliveria (2013) claimed that WhatsApp was highly embraced by users due to ease of use (EOU) and convenience (C). It was also considered as a better way to communicate with family and friends. when compared to Facebook messenger. as it is considered more secure (Chopra & Bedi, 2019). Martinez-Comeche and Ruthven (2021), found that the most common conversations on WhatsApp were related to work, followed by conversations between family and friends, and to maintain social relationships. The authors further found that most of the participants considered WhatsApp to be “very useful”, “very easy”, and “considerably fun”.

## CHAPTER 3

### METHODS

Based on the data collection method used in most of the studies presented in the literature review, and variables used in this research, it is a suitable choice to collect data by either online or paper-based questionnaire survey

#### **3.1 Research Design**

Based on the purposes of this study, the research philosophy for this research uses the principles of positivism; using existing theory to develop hypotheses. In addition, a deductive approach is used for development and testing of the hypotheses. Consequently, this study is a cross-sectional study which collected quantitative data using self-administered surveys between March - April 2022. All the items except demographic questions are measured using a 5-point Likert scale ranging from 1: Strongly Disagree to 5: Strongly Agree. As a consequence of Covid-19 pandemic, in order to reach the minimum sample size for representativeness, a combination online and face-to-face survey is preferred for data collection.

#### **3.2 Population and Sampling**

A probability sampling method was followed using a simple random sampling technique as it allows to reduce selection bias by calculating sampling error (Saunders et al., 2019). The sample of this study consists of Final International University students of age 18 and above in the Turkish Republic of Northern Cyprus (TRNC). Based on a survey conducted by TRNC Ministry of National Education and Culture (2022), there are a total of 103.110 students currently studying in TRNC. According to Saunders et al. (2019), in case of having a target population of 100000 or above, to

reduce the risk of non-response bias, with a confidence interval of 95% and 5% margin of error, an approximate minimum sample should be 383.

### **3.3 Instruments and Procedures of Data Collection**

Primary data collection method was used to collect data for this thesis. Questionnaires were designed for a total of 10 variables. For the first part of the questionnaire's design, different research papers were studied in order to find appropriate scales (Table 1). After careful consideration, 5-item scales were chosen for TR (Change & Lee, 2015), EOU (Rauniar et al., 2014), and U (Rauniar et al., 2014). 4-item scales were confirmed for CM (Rauniar et al., 2014), PP (Rauniar et al., 2014), SN (Abbas, 2016), and AT (Weng et al., 2018). Additionally, 3-item scales were adapted for C (Yoon et al., 2015), PIP (Change & Lee, 2015), and UI (Rauniar et al., 2014). Following the finalization of the questionnaire, a self-administered survey was created. The survey was divided into two parts; the first part included 5-point Likert scales ranging from 1: Strongly Disagree to 5: Strongly Agree, for all 10 variables, while the second part included demographic questions such as age, nationality, and faculty. The data was collected through online as well as printed surveys.



**Table 1***Scale Items*

<b>Item No.</b>	<b>Code</b>	<b>Scale Items</b>
<b>PERCEIVED EASE OF USE (adapted from Rauniar et al., 2014)</b>		
1	EOU1	WhatsApp is flexible to interact with.
2	EOU2	I find it easy to get WhatsApp to do what I want to do
3	EOU3	It is easy to become skillful at using WhatsApp
4	EOU4	I find WhatsApp easy to use
5	EOU5	Interaction with WhatsApp is clear and understandable
<b>PERCEIVED USEFULNESS (adapted from Rauniar et al., 2014)</b>		
5	U1	Using WhatsApp enables me to get re-connected with people that matter to me
6	U2	I find WhatsApp useful in my personal life
7	U3	Using WhatsApp enhances my effectiveness to stay in touch with others
8	U4	Using WhatsApp makes it easier to stay in touch
9	U5	Using WhatsApp makes it easier to stay informed with my friends and family
<b>CRITICAL MASS (adapted from Rauniar et al., 2014)</b>		
10	CM1	WhatsApp is popular among my friends
11	CM2	Most of my friends are on WhatsApp
12	CM3	People I know are on WhatsApp
13	CM4	People around me are on WhatsApp
<b>PERCEIVED PLAYFULNESS (adapted from Rauniar et al., 2014)</b>		
14	PP1	For an instant messaging application, WhatsApp features are delightful.
15	PP2	For an instant messaging application, WhatsApp features are exciting.
16	PP3	For an instant messaging application, WhatsApp features are thrilling.
17	PP4	For an instant messaging application, WhatsApp features are fun.
<b>CONVENIENCE (adapted from Yoon et al., 2015)</b>		
18	C1	Using WhatsApp enables me to interact with others at a time that is convenient for me.
19	C2	Using WhatsApp enables me to interact with others any place.
20	C3	I find WhatsApp convenient for interacting with others.
<b>SUBJECTIVE NORM (adapted from Abbas, 2016)</b>		
21	SN1	People who are important to me think that I should use WhatsApp.
22	SN2	People who influence my behavior think that I should use WhatsApp
23	SN3	People who are important to me will support me to use WhatsApp
<b>PERCEIVED INFORMATION PRIVACY (adapted from Chang &amp; Lee, 2015)</b>		
24	PIP1	I feel I have enough privacy when I use WhatsApp

25	PIP2	I am comfortable with the amount of privacy I have when using this WhatsApp
26	PIP3	I think my online privacy is preserved when I use WhatsApp
TRUST (adapted from Chang & Lee, 2015)		
27	TR1	WhatsApp's policy with respect to how they will share my personal information with third parties makes me feel the company is trustworthy.
28	TR2	WhatsApp's security policy makes me feel that the company is trustworthy.
29	TR3	WhatsApp's policy on how it would use any personal information about me makes me feel that the company is trustworthy.
30	TR4	WhatsApp's level of online encryption and other security measures makes me feel that the company is trustworthy.
31	TR5	WhatsApp's online privacy policy concerning the notice of personal information collection makes me feel this company is trustworthy.
ATTITUDE (adapted from Weng et al., 2018)		
32	AT1	I have a generally favorable attitude toward using WhatsApp.
33	AT2	Using WhatsApp for instant messaging is good.
34	AT3	I think it is valuable to use WhatsApp.
35	AT4	I think it is a trend to use WhatsApp.
USE INTENTION (adapted from Rauniar et al., 2014)		
36	UI1	I intend to continue to use WhatsApp in future
37	UI2	I expect that I would use WhatsApp in future
38	UI3	I plan to use WhatsApp in future

### 3.4 Data Analysis Procedures

Following the collection of data, the students from other universities were excluded based on the demographics question for university name. All of the participants of this study were students from Final International University. Afterwards, the data was checked for missing values and outliers. Following, the preliminary data analysis, reliability analysis, and correlation analysis was performed using IBM SPSS Statistics v20 software. In addition, validity was calculated using Stats tool package by Gaskin (2016). Later, Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM) path analysis were performed using IBM SPSS Amos v24 software. Lastly, hypotheses were tested based on regression estimates calculated through SEM.

## CHAPTER 4

### DATA ANALYSIS RESULTS

In the following sections, a detailed data analysis will be discussed along with corresponding tables. The analysis will include reliability analysis, correlation analysis, confirmatory factor analysis (CFA), structural equation modeling (SEM) path analysis. CFA and SEM are performed in IBM SPSS Amos v24, and the rest of the analysis are performed on IBM SPSS v20.

#### 4.1 Preliminary data analysis

When performing a quantitative study, there is a possibility of misinterpreting the findings. In order to have precise findings, the data must be screened before performing analysis (Tabachnick & Fidell, 2013). The data was screened through checking for accuracy of data and missing data, outliers, normality, linearity and homoscedasticity, and multicollinearity.

##### 4.1.1 Accuracy of data and missing data

The data collection used both online and printed surveys. The Online survey was performed using SurveyMonkey.com. Regarding the manual entry of data, a separate link on SurveyMonkey.com was created to enter the data from the printed questionnaire. In addition, all of the printout surveys were assigned with a specific number on the paper as well as online in order to keep record. After the completion of data entry, the file was downloaded in.sav data file required for IBM SPSS software. The cases with missing data were deleted from the SPSS file before conducting analysis. After removing the missing data, and respondents from other universities except Final International University, a total of 397 respondents remained for further analysis.

#### **4.1.2 Outliers**

In order to identify outliers, Mahalanobis Distance (MD) values were used. Out of total participants, 12 of the participants had MD values less than 0.001. These participants were removed from the data set. After the removal, a total of 385 participants were used for additional analysis.

#### **4.1.3 Normality, linearity, and homoscedasticity**

The assumption of normality claims that every variable and linear combinations of those variables are normally distributed. Normality of any data can be verified through graphical methods as well as through statistical analysis. Skewness and kurtosis are two main components to examine normality. In order for a distribution to be normal, the skewness and kurtosis are equal to be zero (Tabachnick & Fidell, 2013). If the values of skewness and kurtosis are not in the range of -1 and +1, the distribution is considered to be skewed (Hair et al, 2014). The values of skewness (max. -0.270 and min. -1.322) and kurtosis (max. 3.487 and min. -0.366) values for the study our data are shown in Table 1. Although, some of the values do not fall between -1 and +1, according to Tabachnick and Fidell (2013), “in a large sample, a variable with statistically significant skewness often does not deviate enough from normality to make a substantive difference in the analysis” (p.80). For a sample to be large, it must have 200 or more participants. Therefore, no normality concerns were found to harm the further analysis.

**Table 2***Descriptives summary*

	Sum	Mean	Std. Deviation	Skewness	Kurtosis				
N=385	Statistic	Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error	
<b>EOU</b>	1356.00	3.8632	0.04376	0.81978	-1.322	0.124	3.487	0.248	
<b>U</b>	1413.60	4.0274	0.04103	0.76863	-1.026	0.124	1.754	0.248	
<b>CM</b>	1460.75	4.1617	0.04453	0.83433	-1.151	0.124	1.460	0.248	
<b>PP</b>	1234.75	3.5178	0.04167	0.78071	-0.346	0.124	0.121	0.248	
<b>C</b>	1389.00	3.9573	0.04392	0.82293	-0.850	0.124	0.794	0.248	
<b>SN</b>	1240.67	3.5347	0.05054	0.94683	-0.496	0.124	0.150	0.248	
<b>PIP</b>	1197.33	3.4112	0.05614	1.05181	-0.470	0.124	-0.366	0.248	
<b>TR</b>	1175.60	3.3493	0.04843	0.90727	-0.270	0.124	-0.249	0.248	
<b>AT</b>	1315.00	3.7464	0.04000	0.74940	-0.748	0.124	1.111	0.248	
<b>UI</b>	1356.00	3.8632	0.04376	0.81978	-0.808	0.124	1.115	0.248	

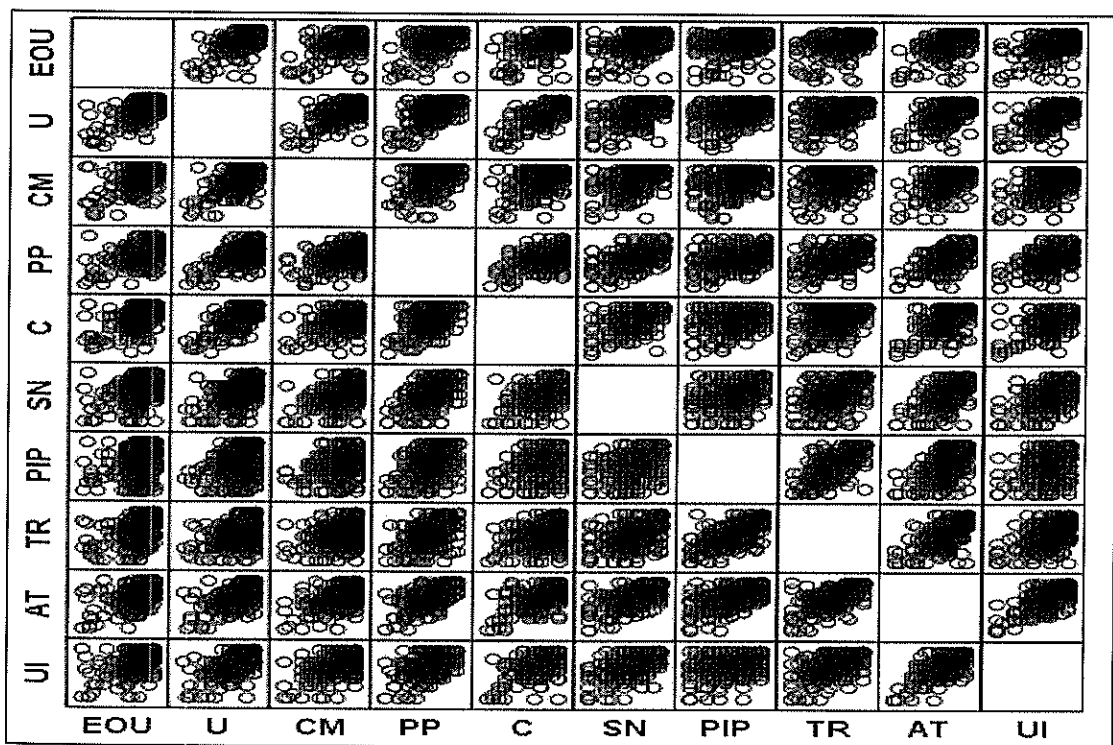
Linearity assumes that the relationship between two variables can be displayed as a straight line. As shown in Figure 1, most of the relationships between variables are seen to be linear except for the relationship between UI and PIP. Although the linearity between PIP and UI is weak ( $r = 0.375$ ), based on Figure 1, the relationships can be still considered as linear.

According to Hair et al. (2019), homoscedasticity can be defined as “the assumption that dependent variable(s) exhibit equal levels of variance across the range of predictor variable(s)” (p.97). The tests for homoscedasticity can be performed graphically as well as using statistical analysis. When a data is considered to be normally distributed, for ungrouped data, the relation between variables is considered as homoscedastic, and equivalent to “homogeneity of variance” for ungrouped data

(Tabachnick & Fidell 2013, p. 86). On the other hand, if data does not meet the assumption of homoscedasticity, it is known as heteroscedasticity. Tabachnick and Fidell (2013) claimed that “heteroscedasticity is not fatal to an analysis of ungrouped data” (p.85). Furthermore, it was concluded that if a data is accounted for heteroscedasticity, the analysis can be weakened but not invalidated.

**Figure 2**

*Scatter plot for linearity*



#### 4.1.4 Multicollinearity

Hair et al. (2019) defined multicollinearity as “the degree of correlation among the variables in the variate that may result in a confounding effect in the interpretation of the individual variables of the variate” (p.14). It can be examined through Variance Inflation Factor (VIF) and Tolerance values using linear regression. The cutoff point for VIF is less than 10.0 whereas it is greater than 0.10 for tolerance (Hair et al., 2019). The values for tolerance and VIF are presented in Table 2. As seen in the Table, it can be seen that all of the values for VIF and tolerance lies in the acceptable range.

**Table 3**

*Collinearity statistics*

<b>Variables</b>	<b>Tolerance</b>	<b>VIF</b>
EOU	0.544	1.839
U	0.349	2.863
CM	0.528	1.894
PP	0.486	2.059
C	0.433	2.309
SN	0.541	1.847
PIP	0.477	2.097
TR	0.420	2.380
AT	0.417	2.398

## 4.2 Sample Demographics

The survey links were clicked 286 times. Furthermore, a total of 245 printed surveys were distributed, and 230 completed surveys were collected back. After removing the missing data and outliers, a total of 385 participants remained for further analysis. Out of the total participants, (n= 254; 66%) were male and (n=131; 34%) were female. According to TRNC Ministry of Education (2022), there are a total of 107936 students in TRNC, out of which (n=40846; 37.8%) are female and (n=67090; 62.3%) are male. The sample of this study is almost consistent with the percentage of male and female students in TRNC, and therefore, the sample is representative of gender.

Majority of the participants (n=268; 69.6%) were between 18-22 years old, followed by (n=106; 27.5%) participants between 23-27 years, and only (n=10; 2.9%) respondents between 28-40 years old. Most of the respondents (n=189; 49%), were enrolled in business and management related departments, followed by the engineering department with (n=109;28.3%) participants, and the least number of participants were from the psychology department with only (n=3;0.8%). In addition, 247 (64.2%) participants are from Africa, 127 (33%) are from Asia, and 11 (2.8%) are from Europe. The demographics of respondents can be seen in Table 3.



**Table 4***Demographic Information*

	<b>Frequency</b>	<b>Percentage</b>
<b>Gender</b>		
Male	254	66.0
Female	131	34.0
<b>Age</b>		
18-22 years old	268	69.6
23-27 years old	106	27.5
28-40 years old	10	2.9
<b>Faculty</b>		
Architecture and Fine Arts	15	3.9
Arts and Sciences (Psychology)	3	0.8
Economics and Administrative Sciences (Banking, Finance and Accounting, Business Administration, Economics, International Finance, International Trade and Business, Management Information System, Political Science)	189	49
Engineering (Civil Engineering, Computer Engineering, Electrical Engineering, Software Engineering)	109	28.3
Education (Educational Sciences, English Language Teaching, Pre-school Teaching)	11	2.9
Health Sciences (Nutrition and Dietetics, Pharmacy, Physiotherapy)	5	1.4
Institute of Graduate Studies (MBA)	16	4.2
Law	4	1.0
Tourism (Gastronomy)	34	8.3
<b>Ethnicity</b>		
Africa (Algerian, Cameroonian, Congolese, Egyptian, Ethiopian, Ghanaian, Ivorian, Libyan, Malian, Mauritanian, Moroccan, Nigerian, Somali, Sudanese, Tanzanian)	247	64.2
Asia (Afghan, Azerbaijani, Bangladeshi, Indonesian, Iraqi, Iranian, Kazakh, Kyrgyz, Lebanon, Nepali, Palestinian, Pakistani, Russian, Saudi Arabian, Syrian, Turkish, Turkmen, Uzbek, Yemeni)	127	33
Europe (Albanian, Belarusian, Cypriot, English, Ukrainian)	11	3.3

### **4.3 Summary of results**

This section includes summarized findings regarding reliability and validity analysis, CFA, SEM, and hypothesis testing.

#### **4.3.1 Reliability and Validity**

Reliability can be defined “as the degree to which the observed variable measures the “true” value”. In simple terms, if the same questions are asked in different situations, items with high reliability will produce consistent results. According to Hair et al (2019), internal consistency is one of the most common measures of reliability. In order to measure internal consistency, a researcher must calculate item-total correlation and inter-item correlation. The value for item-total correlation must be greater than 0.50 and inter-item correlation should exceed 0.30. As declared in the Table 4, inter-item correlation and item-total correlation values for all variables fulfill internal consistency criteria. Secondly, internal consistency can also be determined through the reliability coefficient known as Cronbach’s alpha. In order for a variable to be internally consistent, the universally accepted Cronbach’s alpha value must be greater than 0.70 (Hair et al., 2019). All variables have Cronbach’s alpha value greater than 0.70. Hence, all of the study scales have internal consistency.

**Table 5***Reliability Analysis*

Variables	Items	No. of Items	Cronbach's Alpha	Inter-item Correlations (lowest-	Corrected Item-Total Correlations
Perceive Ease of Use	EOU1	5	0.844	0.377-0.568	0.322-0.545
	EOU2				
	EOU3				
	EOU4				
	EOU5				
Perceived Usefulness	U1	5	0.853	0.444-0.627	0.559-0.719
	U2				
	U3				
	U4				
	U5				
Critical Mass	CM1	4	0.881	0.560-0.734	0.707-0.775
	CM2				
	CM3				
	CM4				
Perceived Playfulness	PP1	4	0.844	0.455-0.652	0.602-0.746
	PP2				
	PP3				
	PP4				
Convenience	C1	3	0.844	0.622-0.671	0.689-0.727
	C2				
	C3				
Subjective Norm	SN1	4	0.865	0.649-0.704	0.726-0.768
	SN2				
	SN3				
Perceived Information Privacy	PIP2	3	0.899	0.725-0.773	0.782-0.819
	PIP3				
Trust	TR1	5	0.922	0.618-0.760	0.773-0.831
	TR2				
	TR3				
	TR4				
	TR5				
Attitude	AT1	4	0.792	0.390-0.589	0.509-0.699
	AT2				
	AT3				
	AT4				
Use Intention	UI1	3	0.908	0.731-0.803	0.790-0.846
	UI2				
	UI3				

On the other hand, validity can be described “as the degree to which a measure accurately represents what it is supposed to” (Hair et al., 2019, p.13). There are different types of validity; however, in this thesis, scales are tested only for the most common forms of validity; face validity, convergent validity, and discriminant validity. The criterion of face validity is fulfilled when scale items are drawn from the literature and examined by experts before being used in a research (Hair et al., 2019). Items in the questionnaire are chosen from the literature, and investigated by academicians and professional experts. Convergent validity claims that “the items that are indicators of a specific construct should converge or share a high proportion of variance in common” (Hair et al., 2019, p.675). Discriminant validity, on the other hand, is defined as “the extent to which a construct or variable is truly distinct from other constructs or variables” (p.676).

Convergent Validity is determined by examining Average Variance Extracted (AVE) values. Generally, AVE value is expected to be above 0.50 (Hair et al., 2019). As it can be seen in Table 5, all of the AVE values are above 0.5; hence, the data does not have any convergent validity problem.

Discriminant validity is examined using values of AVE, Maximum Shared Variance (MSV), Average Shared Variance (ASV), and  $AVE^2$ . To conclude a construct to be valid, both MSV and ASV values should be less than AVE, and  $AVE^2$  must be greater than inter-construct correlation (Hair et al. 2014). As stated in Table 5, all of the constructs except EOU, U and AT fulfill the criteria of discriminant validity. MSV of EOU is (0.545) which is higher than AVE value (0.532); however, both values are close enough for it to be acceptable as valid. On the other hand, the MSV value of AT (0.618) is higher than AVE (0.500), and MSV (0.637) is higher than AVE (0.553). In addition, there is high correlation between AT and UI, and U and C.

These findings can be expected because intention can be sometimes conceptualized as a component of attitude (Staats, 2004), on the other hand, the more a technology is convenient, the more useful it is perceived (Sotillo, 2006; Ally, 2008; Yoon et al., 2015). On that account, analysis of reliability and validity is considered to be acceptable.

**Table 6**

*Construct reliability and validity summary*

	CR	AVE	MSV	MaxR(H)	TR	PIP	EOU	C	PP	SN	CM	U	AT	UI
<b>TR</b>	0.920	0.698	0.594	0.924	0.835									
<b>PIP</b>	0.900	0.750	0.594	0.901	0.771	0.866								
<b>EOU</b>	0.848	0.532	0.545	0.864	0.397	0.301	0.729							
<b>C</b>	0.859	0.671	0.637	0.863	0.460	0.405	0.629	0.819						
<b>PP</b>	0.857	0.604	0.531	0.894	0.555	0.474	0.587	0.625	0.777					
<b>SN</b>	0.866	0.682	0.501	0.866	0.519	0.455	0.469	0.603	0.620	0.826				
<b>CM</b>	0.864	0.615	0.581	0.866	0.391	0.405	0.644	0.601	0.609	0.562	0.784			
<b>U</b>	0.860	0.553	0.637	0.869	0.465	0.412	0.738	0.798	0.675	0.583	0.762	0.744		
<b>AT</b>	0.798	0.500	0.618	0.816	0.682	0.618	0.613	0.681	0.729	0.708	0.666	0.698	0.707	
<b>UI</b>	0.910	0.771	0.618	0.914	0.539	0.414	0.530	0.574	0.599	0.611	0.582	0.657	0.786	0.878

#### 4.3.2 Correlation Analysis

Hair et al. (2014) define bivariate correlation as the “simple (two-variable) correlation between two sets of residuals (unexplained variances) that remain after the association of other independent variables are removed” (p.1). Simply, correlation tells us the power of one variable over another. If the correlation coefficient is between 0.10 and 0.29, it characterizes weak correlation, if between 0.30 and 0.49, it represents moderate correlation, and between 0.50 and 0.99 represent strong correlation. In

addition, a correlation of -1 and +1 represent perfect correlation (Cohen, 1998).

The correlation among variables is calculated through Pearson's product moment correlation coefficient (PMCC). As stated in Table 6, all of the variables have positive significant correlation at 0.01 level (2-tailed). Furthermore, among all of the variables, C and U have the highest correlation (0.709); the more convenient an OIM is, the more useful it is considered. Conversely, PIP and EOU have the lowest correlation, representing little or no change in ease of use based on perceived privacy and vice versa.

**Table 7**

*Inter-construct correlations*

	EOU	U	CM	PP	C	SN	PIP	TR	AT
<b>EOU</b>	1								
<b>U</b>	0.631**	1							
<b>CM</b>	0.523**	0.628**	1						
<b>PP</b>	0.486**	0.579**	0.494**	1					
<b>C</b>	0.537**	0.709**	0.512**	0.561**	1				
<b>SN</b>	0.413**	0.512**	0.480**	0.560**	0.527**	1			
<b>PIP</b>	0.250**	0.346**	0.344**	0.441**	0.361**	0.404**	1		
<b>TR</b>	0.344**	0.399**	0.331**	0.507**	0.408**	0.465**	0.701**	1	
<b>AT</b>	0.486**	0.563**	0.526**	0.605**	0.561**	0.593**	0.529**	0.592**	1

\*\*Correlation is significant at the 0.01 level (2-tailed). N=385

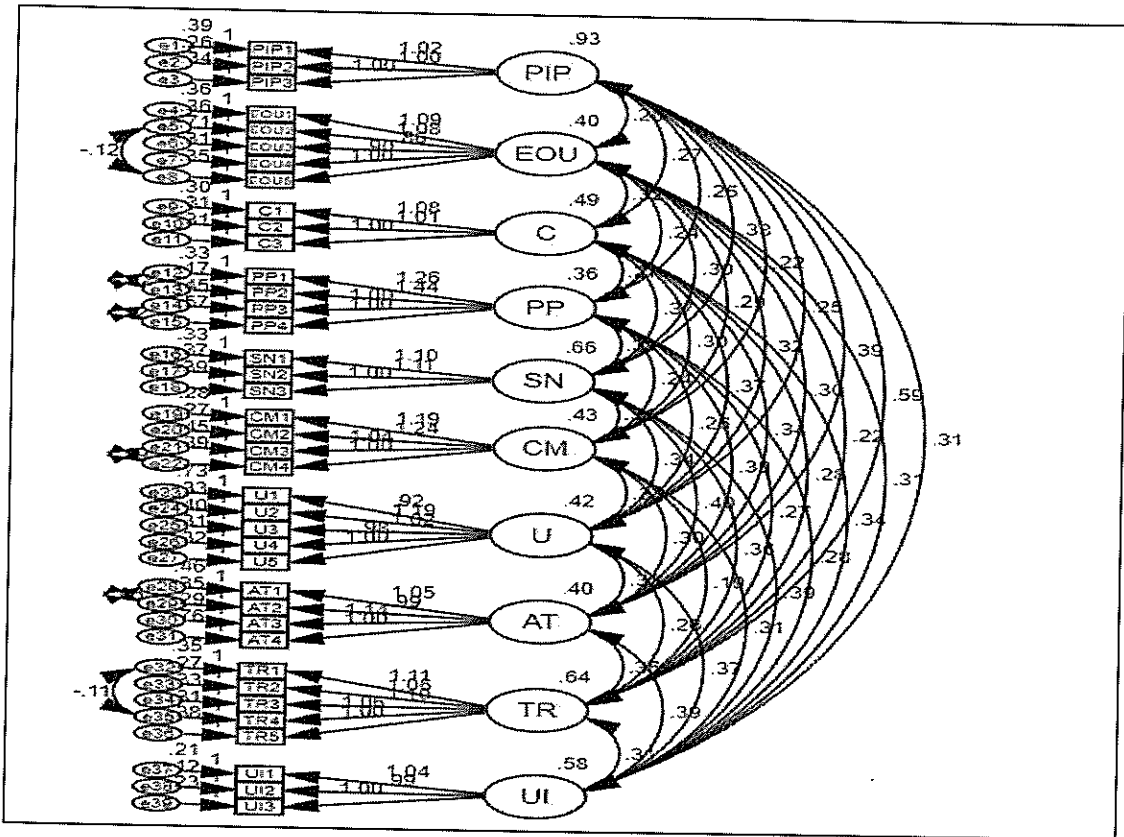
### 4.3.3 Confirmatory Factor Analysis (CFA)

TAM is simple and has been used to measure the acceptance of technology in many sectors due to its generalizability (Ahmed et al., 2009). As TAM is an already proven model, instead of an exploratory factor analysis (EFA), a confirmatory factor analysis (CFA) is performed. CFA helps a researcher to compute the appropriate contribution of each item and determine “how well the scale measures the concept” (Hair et al., 2014, p.16). Pooled CFA approach is used in this study to confirm the factor structure of the model by examining the relationships among all variables together. The pooled CFA analysis for the study model can be seen in Figure 2.

When conducting a pooled CFA, the model fit is determined through Goodness-of-Fit indices. GOF is a statistical model that describes how well it fits into a set of observations” (Maydeu-Olivares & Garcia-Forero 2010, p. 190). In order for a model to be fit, it must fulfill a certain cutoff criterion. According to Gaskin and Li (2016), for a model to be acceptable, it must have CMIN/DF greater than 3 and less than 5, CFI less than 0.95 but greater than 0.90, SRMR greater than 0.08 but less than 0.10, RMSEA greater than 0.06 and less than 0.08, and lastly, PClose less than 0.05 but greater than 0.01. In addition, for a model fit to be considered excellent  $CMIN/DF > 1$ ,  $CFI > 0.95$ ,  $SRMR < 0.08$ ,  $RMSEA < 0.06$ , and  $PClose > 0.05$ . As shown in Table 7, all of the indices fulfill the criteria for a good model fit. Based on the indices, it can be said that the model has reached excellent model fit.

**Figure 3**

*Pooled confirmatory factor analysis*



**Table 8**

*Goodness of fit indices*

Measure	Estimate	Threshold	Interpretation
CMIN	1041.044	--	--
DF	642	--	--
CMIN/DF	1.622	Between 1 and 3	Excellent
CFI	0.956	>0.95	Acceptable
SRMR	0.039	<0.08	Excellent
RMSEA	0.042	<0.06	Excellent
PClose	0.998	>0.05	Excellent

*Note.* From Gaskin & Lim (2016)



#### **4.3.4 Structural Equation Modelling (SEM) – Path Analysis**

According to Hair et al. (2019), structural equation modeling (SEM) can be defined “as a family of statistical models that seeks to explain the relationships among multiple variables” (p.607). SEM foundation is based on two well-known multivariate concepts; factor analysis and multiple regression analysis. In other words, similar to multiple regression, SEM uses a sequence of equations to compute the structure of interrelationships between dependent and independent variables. Basically, when conducting a SEM, a researcher must determine independent and dependent variables based on theory, preceding research, and existing research objectives (Hair et al., 2019).

Importantly, SEM is capable of integrating latent variables in analysis. Latent variables can be described as “constructs are measured indirectly by examining multiple measured variables, sometimes referred to as manifest variables, or indicators” (Hair et al., 2019, p.608). Furthermore, SEM uses exogenous and endogenous constructs as latent variables. Exogenous constructs can be categorized as independent variables whereas endogenous constructs can be categorized as dependent variables. As mentioned in Table 8 with regards to this study, Perceived Ease of Use (EOU), Convenience (C), Perceived Playfulness (PP), Perceived Information Privacy (PIP), Subjective Norm (SN), and Critical Mass (CM) are conceptualized as exogenous constructs whereas Trust (TR), Perceived Usefulness (U), Attitude (AT), and User Intention (UI) are conceptualized as endogenous constructs.

**Table 9**

*Exogenous and endogenous constructs*

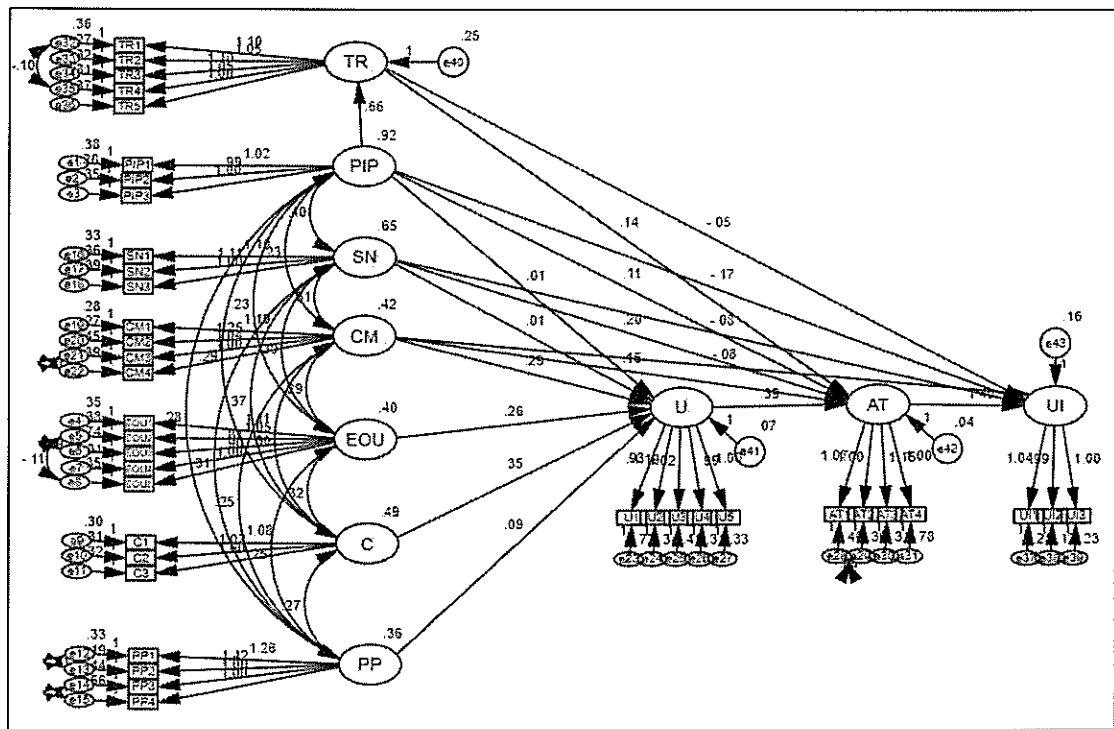
<b>Exogenous constructs</b>	<b>Endogenous Constructs</b>
Perceived Ease of Use	Trust
Convenience	Perceived Usefulness
Perceived Playfulness	Attitude
Perceived Information Privacy	User Intention
Subjective Norm	
Critical Mass	

Succeeding CFA, a covariance based path analysis is performed using maximum likelihood estimation to measure suggested model fit and to check hypotheses. The path analysis was performed via AMOS v24 software using Maximum Likelihood Estimation (MLE) method.

The measurement model can be seen in Figure 3. The independent variables are connected to each other through covariance curves, and to dependent variables through one-way arrows. In addition, error terms are added to construct items as well as dependent variables. Furthermore, as stated in Table 9, all of the values except CFI ( $0.948 < 0.95$ , Acceptable), fulfill the criteria of an excellent model fit. Therefore, it can be said that the model is found to have an excellent fit.

**Figure 4**

*Structural Equation Modeling-Path Analysis*



**Table 10**

*Model Fit Measures*

Measure	Estimate	Threshold	Interpretation
CMIN	1139.646	--	--
DF	663	--	--
CMIN/DF	1.719	Between 1 and 3	Excellent
CFI	0.948	>0.95	Acceptable
SRMR	0.055	<0.08	Excellent
RMSEA	0.045	<0.06	Excellent
PClose	0.959	>0.05	Excellent

*Note.* From Gaskin & Lim (2016).

#### 4.3.5 Hypothesis Testing

The results from SEM were utilized in order to test proposed hypotheses. Hypotheses are explained using standardized estimates (B), standard error (S.E), critical ration (C.R), and significance level (p). Out of 17 hypotheses, 11 are accepted and 6 are rejected. H1, H2, H3, H7, H10, H13 and H15 are accepted at  $p < 0.001$ , H8 is accepted at  $p < 0.01$ , and H5, H6 and H16 are accepted at  $p < 0.05$ . On the other hand, H4, H9, H11, H12, H14 and H17 are rejected. Hypothesis testing summary is presented in Table 10.

H1 stated that EOU has a positive impact on U, and was found statistically significant ( $B=0.249$ ,  $p < 0.001$ ). Further, H2 claimed that U has a positive impact on AT towards the use of WhatsApp, and was also found significant ( $B=0.288$ ,  $p < 0.001$ ). Thirdly, the relationship between AT and UI was also significant ( $B=1.029$ ,  $p < 0.001$ ).

H4, H5, H6, and H7 focused on measuring the influence of PIP on different variables in the proposed model. H4 proposed that PIP has a positive impact on U, and was rejected ( $B=0.004$ ,  $p=0.896$ ). H5 assumed that PIP has a positive impact on AT, and was also rejected ( $B=0.0897$ ,  $p=0.072$ ). Thirdly, H6 proposed a positive relation between PIP and UI, and was accepted ( $B=-0.182$ ,  $p < 0.01$ ). Lastly, H7 claimed that PIP has a positive impact on TR, and the relationship was found significant ( $B=0.667$ ,  $p < 0.001$ ).

H8 suggested a relationship between TR and AT, and H9 suggested a positive relationship between TR and UI. This study found a significant relationship between TR and AT ( $B=0.177$ ,  $p < 0.01$ ). However, H9 was rejected for it was found not to be significant ( $B=0.108$ ,  $p=0.198$ ). H10 was accepted because C was found to have a positive impact on U of WhatsApp ( $B=0.451$ ,  $p < 0.001$ ). Additionally, H11 proposed a positive relationship between PP and U of WhatsApp and was accepted ( $B=0.136$ ,

$p < 0.05$ ).

Furthermore, from H12 to H17, the hypotheses focused on social factors or influences regarding acceptance of WhatsApp. H12, H13, and H14 examined whether a positive relationship between SN and U, SN and AT, and SN and UI respectively exist. H12 ( $B = -0.030$ ,  $p = 0.546$ ) and H14 ( $B = 0.054$ ,  $p = 0.483$ ) were rejected while H13 was accepted ( $B = 0.208$ ,  $p < 0.001$ ). Likewise, H15, H16, and H17 measured the relationship between CM and U, CM and AT, and CM and UI respectively. H15 was accepted ( $B = 0.276$ ,  $p < 0.001$ ) whereas H16 ( $B = 0.117$ ,  $p = 0.064$ ) and H17 ( $B = 0.055$ ,  $p = 0.521$ ) were rejected.

**Table 11***Hypotheses Testing Summary*

<b>H.</b>	<b>Description</b>	<b>B</b>	<b>S.E.</b>	<b>C.R.</b>	<b>P</b>	<b>Outcome</b>
1	Increase in Perceived Ease of Use results in higher Perceived Usefulness of WhatsApp.	0.249	0.067	3.709	***	<b>Supported</b>
2	Increase in Perceived Usefulness results in a more favorable Attitude towards using WhatsApp.	0.288	0.065	4.433	***	<b>Supported</b>
3	Increase in favorableness of Attitude towards using WhatsApp results in higher Use Intention of WhatsApp.	1.029	0.194	5.293	***	<b>Supported</b>
4	Increase in Perceived Information Privacy results in higher Perceived Usefulness of WhatsApp.	0.004	0.032	0.131	0.896	<b>Not supported</b>
5	Increase in Perceived Information Privacy has a results in favorable Attitude towards using WhatsApp.	0.087	0.048	1.802	0.072	<b>Not supported</b>
6	Increase in Perceived Information Privacy results in higher Use Intention of WhatsApp.	-0.182	0.068	-2.674	0.007* *	<b>Supported</b>
7	Increase in Perceived Information Privacy results in higher Trust on WhatsApp.	0.667	0.047	14.250	***	<b>Supported</b>
8	Increase in Trust on WhatsApp results in a more favorable Attitude towards using WhatsApp.	0.177	0.057	3.114	0.002* *	<b>Supported</b>
9	Increase in Trust results in higher Use Intention of WhatsApp.	0.108	0.083	1.288	0.198	<b>Not supported</b>
10	Increase in Convenience results in higher Perceived Usefulness of WhatsApp.	0.451	0.067	6.745	***	<b>Supported</b>

11	Increase in Perceived Playfulness results in higher Perceived Usefulness of WhatsApp.	0.136	0.069	1.973	0.048*	<b>Supported</b>
12	Increase in the influence of Subjective Norm results in higher Perceived Usefulness of WhatsApp.	-0.030	0.049	-0.604	0.546	<b>Not supported</b>
13	Increase in the influence of Subjective Norm results in a more favorable Attitude towards using WhatsApp.	0.208	0.049	4.276	***	<b>Supported</b>
14	Increase in the influence of Subjective Norm results in higher Use Intention of WhatsApp.	0.054	0.076	0.702	0.483	<b>Not supported</b>
15	Increase in Critical Mass results in higher Perceived Usefulness of WhatsApp.	0.276	0.062	4.457	***	<b>Supported</b>
16	Increase in Critical Mass results in a more favorable Attitude towards using WhatsApp.	0.117	0.063	1.852	0.064	<b>Not supported</b>
17	Increase in Critical Mass results in higher Use Intention of WhatsApp.	0.055	0.085	0.642	0.521	<b>Not supported</b>

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\*\*\* $p < 0.001$ , \*\* $p < 0.01$ , \* $p < 0.05$

## CHAPTER 5

### CONCLUSIONS AND IMPLICATIONS

#### 5.1 Conclusions and Discussions

In this chapter, the results of the study will be discussed, and conclusions will be presented. Theoretical and practical implications will be shown in the following subsection.

Based on the results, ease of use of OIM apps, specifically WhatsApp, is found to positively influence perceived usefulness of WhatsApp. In addition, when students perceived WhatsApp to be useful, they tend to develop positive attitudes towards it. As a consequence, positive attitude results in intention to use WhatsApp. These findings are consistent with many studies in the existing literature (Davis, 1989; Davis et al., 1989; Venkatesh & Davis, 2000; Lou et al., 2005; Chung & Nam, 2007; Shroff et al. 2011; Rauniar et al., 2014; Yoon et al., 2015; Wen et al., 2017; Weng et al., 2018).

Additionally, information privacy is found to have no influence on the perception regarding WhatsApp's usefulness, and attitudes towards WhatsApp by university students. In contrast, information privacy does influence how much a user trusts WhatsApp. Similarly, it is also found to have a direct influence on intention to use an OIM app by students. However, the result was contrary to the findings of Lemay et al. (2017), who did not find privacy to predict use intention. The authors argued that as young generation got used to OIM apps as an important mode of communication, their choice does not necessarily focus on privacy reasons. The inconsistency in the findings might be because of the different OIM apps under consideration in both



studies. While this research focused on the use intention of WhatsApp, Lemay et al. (2017) measured the adaptation of Snapchat which is used mainly for entertainment purposes and to communicate with friends, and found privacy to have no significant influence on perceived usefulness, attitude, and use intention.

Moreover, according to the results, user's trust in WhatsApp results in a positive attitude towards WhatsApp. Similarly, Raaij and Schepers (2008) claimed that when a user trusts a technology, it reduces the uncertainties associated by it, making it easy to be adaptable. On the other hand, trust in an OIM app is not found as a strong predictor regarding use intention. This finding was in contrast with Sledgianowski and Kulviwat (2009) and Rauniar et al. (2014) who have found a significant relationship between trust and intention to use a technology. A reason for this contradiction may be because Sledgianowski and Kulviwat (2009) and Rauniar et al. (2014) measured the influence of trust on use intention in the context of social networking sites. The intention to use social networking sites could be influenced more by trust as compared to OIM apps because along with text messages, people tend to share more information such as date of birth, email addresses, location, pictures and videos, and the like with their followers or friends on social media.

Further, it is established that convenience plays an important role in creating a positive perception regarding usefulness of an OIM app. This finding was in line with the findings by Deng et al. (2010) who claimed that as OIM helps users to continuously communicate with other individuals, it is considered highly convenient and a medium to share useful information. Also, with regards to e-banking, Liao and Wong (2008) found convenience to positively impact perceived usefulness.

In terms of playfulness, this study has found a positive impact of perceived playfulness on the usefulness of WhatsApp. The finding is supported by Lin et al.

(2021) who found that WhatsApp was considered to increase users' enjoyment of communication with friends and family through ability to share media and express their emotions and thoughts more precisely. Furthermore, Yoon et al. (2015) found a significant direct relationship between perceived playfulness and perceived usefulness for OIM. Lastly, with regards to social networking sites, Rauniar et al. (2014) found perceived playfulness to positively influence usefulness.

From a social context, subjective norm positively influences attitudes towards using WhatsApp. This finding is consistent with the findings of Chung et al. (2003), Park et al. (2011) and Beldad and Hegner (2017). However, subjective norm was found not to influence perceived usefulness. This result was inconsistent with the findings of Abbas (2016) and Beldad and Hegner (2017). A reason for this inconsistency might be due to completely different contexts of the studies. Abbas (2016) measured the adaptation of mobile phones in general and Beldad and Hegner (2017) focused on measuring the adaptation of fitness app, whereas this study focuses on WhatsApp, an OIM app. In other words, users can't perceive an OIM app same as a fitness app and vice versa. In addition, subjective norm did not have any impact on intention the use WhatsApp. The previously mentioned result is inconsistent with the findings of Venkatesh and Davis (2000), Chung et al. (2003), Yuen and Ma (2006), and Lu et al. (2009), and consistent with the studies of Abbas (2016), and Beldad and Hegner (2017) who did not found a significant relationship between subjective norm and intention to use a technology. All of the inconsistent studies except Lu et al. (2009) were performed in a different context rather than measuring adaptation of OIM. Although Lu et al. (2009) measured the adaptation of OIM by students, the sample included 250 participants only from China, and most of the participants used a Chinese OIM app (QQ Messenger). On the other hand, this study included participants from many

different countries and measured the adaptation of internationally used OIM app (WhatsApp). It will be valuable to imitate the research model in terms of geography, demographics and cultural contexts to further examine the aforementioned relationships.

Additionally, it is found that critical mass, or frequency of users of an app, can create a perception of an OIM app being useful. This finding is consistent with the studies by Lou et al. (2000), Glass and Li (2010), Lou et al. (2005) and Li et al. (2010), and inconsistent with the study by Yoon et al. (2014). The research conducted by Yoon et al. (2014) was performed in the context of computing technologies instead of OIM., This study's results also show that critical mass does not change attitude towards an OIM app or use intention. The result was inconsistent with the findings of Illie et al. (2005), Van Slyke et al. (2007), Premkumar et al (2008), and Yoon et al. (2014). Even though 3 out 4 of previously mentioned studies were regarding communication technologies, there were several other factors that might have influenced the results. For instance, Illie et al. (2015) mainly focused on gender differences regarding communication technology, Van Slyke et al. (2007) results were influenced by innovation as a variable, and Premkumar et al. (2008) study consisted of corporate employees. Further research is suggested in order to clearly explain the influence of CM on acceptance of OIM by students.

To put it more clearly, when students perceive WhatsApp to be easy to use, it is considered to be highly useful. Usefulness positively influences attitude towards WhatsApp, resulting in positive intention to use WhatsApp.

Information privacy does not influence usefulness in any way. It can mean that even if WhatsApp is considered secure, it does not result in the perception of WhatsApp being useful by university students. Furthermore, strong privacy perception

does not influence attitude towards using WhatsApp. In other words, it can be said that university students' attitudes towards using OIM technology is not affected by a sense of privacy. On the other hand, perceived privacy does have a direct influence on the intention to use WhatsApp. For instance, even when students' attitudes are not affected by perceived privacy, they do intend to use WhatsApp based on the perception that it is secure. Also, perceived privacy has a positive relation with trust meaning that the more students trust an app (WhatsApp), the more they consider it to be secure. In addition, it is concluded that when a student trusts WhatsApp, he/she develops a positive attitude towards using WhatsApp.

Additionally, it is found that convenience and perceived usefulness of OIM technology go hand in hand; the more convenient it is to use an OIM app, the more useful it is considered. According to the findings, convenience is found to positively influence perceived usefulness of WhatsApp. Because WhatsApp can be used anywhere and anytime with a working internet connection, it is likely that it was perceived as highly useful by the students. Further, perceived playfulness also positively influences perceived usefulness of WhatsApp. In simple words, students also perceive WhatsApp to be useful based on its entertaining features while communicating with their friends and family.

Finally, subjective norm is found to have a significant relationship with attitude towards WhatsApp, and an insignificant relation with perceived usefulness, and intention to use WhatsApp. To be clearer, when individuals who are important to university students think that they should use WhatsApp, the students tend to create positive attitudes towards WhatsApp. However, those individuals' thoughts are not strong enough to make students perceive WhatsApp as useful or develop an intention to use WhatsApp. Lastly, if there are high number of people using an OIM app, it can

increase the perception of that app being useful but does not influence students' attitudes or use intention. These results were in accordance with studies by Chung et al. (2003), Park et al. (2011) and Beldad and Hegner (2017).

## **5.2 Implications and Recommendations**

In this section, theoretical and practical implications are presented. The main aim of this research is to measure the impact of perceived information privacy on the use intention of WhatsApp. In order to fulfill this purpose, the TAM model of Rauniar et al. (2014) was extended. In addition to variables in Rauniar et al. 's (2014) model, three more variables were added after a careful review of literature.

According to Statista (2022), WhatsApp was ranked as the most downloaded app with around 6 billion downloads worldwide. In the context of instant messaging, the model in this study is the first one to include perceived information privacy along with TAM constructs in the context of WhatsApp. It is important to measure the influence of information because consumers worry about collection of their personal information and storing it on servers, use of the information for unspecified purposes and access of data by unauthorized individuals (Yang, 2013).

This research provides a baseline for future studies implementing TAM and information privacy together to further explore the influences on students as well as adults regarding WhatsApp or other instant messaging technologies. For instance, according to the findings, information privacy did not influence perceived usefulness, and attitude towards WhatsApp, however, it has a significant relationship with use intention. This privacy-intention relationship provides a benchmark for future studies in the context of OIM apps. Moreover, the framework provided in this research can be implemented to conduct studies in the context of different types of OIM apps, different sample demographics such as age or culture, and different geographical locations. This

provides an opportunity to understand the influence of information privacy from several different perspectives such as location, age or profession in regards of OIM technologies.

Interestingly, subjective norm is found to influence attitude towards using WhatsApp but did not influence usefulness and use intention. Social influence only reaches regarding for someone to like an app, but even if it helps to like, it won't necessarily lead to use intention. Based on the results, researchers can forward their focus more on factors that lead to use intention or use it to create positive attitude so that indirectly it can increase the effect on intention. This provides an opportunity to further conduct mediation analysis to find the influence of subjective norm on use intention through attitude.

In respect to managerial implications, the findings of this study show managers that though information privacy does not change students' attitudes towards OIM apps, it does influence their intention to use specific OIM apps. As a result, based on the intention, a user may or may not decide to use the app. Online companies must focus on continuous improvement of their cyber security. These improvements can be achieved through strengthening end to end encryption, providing high level of authentication, limiting access to cached data, securing source code, regularly ensuring updates, and so forth (Wallace, 2022). In the meantime, managers must communicate their privacy policies and improvement in online security clearly through different channels in order to create a strong use intention related to their apps.

In addition, it can be concluded that trust in an OIM app does create positive attitude towards that specific app. Therefore, managers should create a perception of their OIM apps to be trustworthy and secure in order to attract more young students. This can be done by fulfilling the international standards for business set by United

Nations or other reputable international and domestic organizations. Most importantly, a company must have an effective communication channel to inform consumers regarding the ways they conduct its operations.

Furthermore, young students also create a perception of the OIM app to be useful if it consists of an entertaining touch to it. Managers and programming teams can work together to update the user interface from time to time in order to keep their app fresh and entertaining.

In conclusion, the research was able to explain the acceptance of OIM apps by university students. A combination of different variables was used to provide a deep insight on the acceptance of WhatsApp. According to the findings, the factors influencing acceptance of OIM apps were recognized. Moreover, addition of perceived information privacy, subjective norm, and convenience to Rauniar's model provided a better understanding in the acceptance of WhatsApp. Along with favorable attitude towards WhatsApp, the use intention of WhatsApp was significantly influence by perceived information privacy for university students. Furthermore, Social influences such as subjective norm and critical mass, perceived playfulness, and convenience played an important role in the acceptance of WhatsApp. In addition, the study answered all the proposed research questions. Finally, the proposed findings are used to identify possible theoretical and practical implications.

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## APPENDICES



## APPENDIX A

### Survey questionnaire

The impact of perceived information privacy on technology acceptance of WhatsApp in TRNC

\* 2. State your degree of agreement with the following statements regarding WhatsApp's ease of use.

	Strongly Disagree	Disagree	Neither agree nor	Agree	Strongly Agree
WhatsApp is flexible to interact with.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find it easy to get WhatsApp to do what I want to do	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
It is easy to become skillful at using WhatsApp	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find WhatsApp easy to use	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Interaction with WhatsApp is clear and understandable	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 3. State your degree of agreement with the following statements regarding WhatsApp's Usefulness

	Strongly Disagree	Disagree	Neither agree nor	Agree	Strongly Agree
Using WhatsApp enables me to get re-connected with people that matter to me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find WhatsApp useful in my personal life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using WhatsApp enhances my effectiveness to stay in touch with others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using WhatsApp makes it easier to stay in touch	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using WhatsApp makes it easier to stay informed with my friends and family	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 4. State your degree of agreement with the following statements regarding Critical Mass

	Strongly Disagree	Disagree	Neither agree nor	Agree	Strongly Agree
WhatsApp is popular among my friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Most of my friends are on WhatsApp	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People I know are on WhatsApp	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People around me are on WhatsApp	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 5. State your degree of agreement with the following statements regarding WhatsApp's **Playfulness**

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
For an instant messaging application, WhatsApp features are delightful.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For an instant messaging application, WhatsApp features are exciting.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For an instant messaging application, WhatsApp features are thrilling.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
For an instant messaging application, WhatsApp features are fun.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 6. State your degree of agreement with the following statements regarding WhatsApp's **Convenience**

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
Using WhatsApp enables me to interact with others at a time that is convenient for me.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using WhatsApp enables me to interact with others any place.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I find WhatsApp convenient for interacting with others.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 7. State your degree of agreement with the following statements regarding **Subjective Norm**

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
People who are important to me think that I should use WhatsApp.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People who influence my behavior think that I should use WhatsApp.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People who are important to me will support me to use WhatsApp.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 8. State your degree of agreement with the following statements regarding **Information Privacy**

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
I feel I have enough privacy when I use WhatsApp.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am comfortable with the amount of privacy I have when using this WhatsApp.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think my online privacy is preserved when I use WhatsApp.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 9. State your degree of agreement with the following statements regarding **Trust**

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
WhatsApp's policy with respect to how they will share my personal information with third parties makes me feel the company is trustworthy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
WhatsApp's security policy makes me feel that the company is trustworthy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
WhatsApp's policy on how it would use any personal information about me makes me feel that the company is trustworthy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
WhatsApp's level of online encryption and other security measures makes me feel that the company is trustworthy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
WhatsApp's online privacy policy concerning the notice of personal information collection makes me feel this company is trustworthy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 10. State your degree of agreement with the following statements regarding **Attitude**

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
I have a generally favorable attitude toward using WhatsApp.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using WhatsApp for instant messaging is good.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think it is valuable to use WhatsApp.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I think it is a trend to use WhatsApp.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 11. State your degree of agreement with the following statements regarding **User Intention**

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
I intend to continue to use WhatsApp in future	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I expect that I would use WhatsApp in future	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I plan to use WhatsApp in future	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 12. Do you use WhatsApp everyday?

- Yes  
 No

\* 13. How many hours do you use WhatsApp everyday?

Less than 2 hours	2-4 hours	4-6 hours	6-8 hours	more than 8 hours
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

\* 14. Gender

Female

Male

\* 15. Age

\* 16. Nationality

\* 17. Faculty/Program

18. University Name

## APPENDIX B

### Ethics committee approval document



İSTANBUL KÜLTÜR  
ÜNİVERSİTESİ

#### İÇ YAZIŞMA / İNTER OFFICE MEMORANDUM

Gönderilen / To: Faraz Ahmed Hayat

Tarih / Date: 21/01/2022

Gönderen / From: Prof. Dr. Orhan Gemikonaklı

Ref / Sayı: 140/100/003

Etik Kurulu Başkanı

**Konu / Subject:** Etik Kurulu'na başvurunuz

**Karar Sayısı 2022/02/03:** Faraz Ahmed Hayat'ın Assist. Prof. Dr. Kevser Taşel Jurković rehberliğinde yürütülmek amacıyla Etik Kurulu'na sunduğu, "The impact of perceived information privacy on technology acceptance: WhatsApp case" adlı başvurusu (Proje No, FIUP-2022/003) görüşülmüş, aşağıdaki düzeltmelerin yapıp yeniden sunulması halinde, Etik Kurulu tarafından yeniden değerlendirmeye alınması uygun görülmüştür.

#### *Proje Kontrol Listesi*

1. Evet yanıtı doğru yanıtısa, alınan önlemlerin onam formunda belirtilmesi gerek. Ancak, ankete katılmamanın olumsuz sonuçları olmayacaksa, "hayır" yanıtı kadar, başvuruda olduğu gibi, "evet" yanıtı verilmesi de yanlış (Soru 7).
2. Yukarıda belirtildiği gibi, derse ek not, ve/veya teşvikler yoksa, 8 ve 9. Sorular ilgili değil. Evet/Hayır yanıtı verilmemeli.
3. Soru 10'a "hayır" yanıtı verildikten sonra, soru 1 ile ilgisi yok (n/a) yanıtı verilmeli.
4. Katılımcılardan herhangi bir biçimde veri toplanacaksa, gizlilik ve verilerin güvenli saklanması esastır. 15 ve 16. Sorulara ilgili değil (n/a) yanıtı verilemez. Yanıtlar 5(i) ile çelişiyor.

**Başvuru formu:** 18. Soruya yanıt yetersiz. Katılımcılara nasıl ulaşılacağı belirtilmemiş. Düzeltilmesi.