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Examining Undergraduates' Smartphone Addiction Studying in the Turkish Republic of Northern Cyprus*

Kuzey Kıbrıs Türk Cumhuriyeti'nde Öğrenim Gören Lisans Öğrencilerinin Akıllı Telefon Bağımlılıklarının İncelenmesi

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Abstract: Within the help of the global market, smartphones are followed and owned by a considerable population since they started to take part in our lives in the 1990s. The technology era now that we are in, the positive and negative effects of products that simplify mankind's lives are well known and widely examined. This research purpose is to measure smartphone addiction levels of the undergraduates, as they are considered one of the major groups that are affected by these devices. The research was conducted at the Girne American University located in the Turkish Republic of Northern Cyprus, by using the Smartphone Addiction Scale developed by Şar et al. (2015), which has four sub-dimensions, with 30 items, and a 5 point Likert scale. The highest addiction level was measured in the Relieving Onself sub-dimension and the lowest addiction level was measured in the Unrestrainable Use sub-dimension. According to findings; no significant difference was found between smartphone addiction and participants' gender, GSM operator preference, internet pack, department and monthly expenses. On the contrary, a significant difference was found between smartphone addiction and participants' age, academic grade level, monthly phone bill, frequency of renewing the device and the reason to renew the device, the brand of the device and the preference to chose that device, the purpose to use the device and the preferences of the social networking sites that are engaged. The findings clarified that, the smartphone addiction level decreases when the age increases, Sophomores were more addicted, the frequency of renewing the device and high phone bills were directly related to smartphone addiction, the reason to renew the device and the brand of the device with its preference were regarded as the signs of addiction, the purpose of the usage and the preference of social networking sites were directly connected to smartphone addiction. A positive and mid-level of correlation was measured within all sub-dimensions of the scale. A possible increase in the participants' smartphone usage is likely to increase their physical barriers, interaction with their surroundings and their unstrainable use. The smartphone addiction

* Ethics Committee approval was taken on 18/12/2018, with the 5/18-28 file number and participants consent was taken during data collection process.

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was found to be at a mid-level, and the participants were classified as ‘habitual smartphone users’ after the scale applied to the sample of 435 undergraduates.

Structured Abstract: Technological developments made life easier by saving the time and the energy of the individuals helping them ‘focus on other issues’. Smartphones are one of the leading inventions of mankind involving a combination of operations that you can e-mail, fax, send and receive short messages, engage in social networking sites and get benefit from fancy applications created by the technology firms. Serving a basis for a ‘pass time activity’ many people spend time on social media, now became the major ‘issue to focus’ creating a dependency on individuals mostly regarded as ‘addiction’ in the related literature.

Smartphone addiction is determined as a behavioral addiction which does not involve the use of a chemical substance, but many research stated that there are similarities between the cardinal features of substance use disorders and behavioral addiction disorders (Alosaimi et al., 2016), which is the loss of control over a compulsive time and resource consuming behavior (Merlo et al. 2013). This constant crave to deal with the smartphones, for engagement in social media and other online activities, creates many psychological problems for individuals like “Nomophobia”, which is a fear of being unable to use the phone (Yıldırım & Correia, 2015) and the “Phantom Syndrome”, in which individuals have a false feeling that their phone is ringing or vibrating. (Sauer et al., 2015). The excessive smartphone use also causes physiological problems for individuals due to the radio frequency radiation (Al-Khlaiwi & Meo, 2004) loss of concentration, burning skin, impairment of memory, brain tumors and high blood pressure may happen (Prasad et al., 2017), neck pain, limb pains, lack of sleep or sleep quality (Igou et al., 2010), being disposed, eye strain (Acharya, et al., 2013; Shanab & Haddad, 2015; Parasuraman, 2017; Kuyucu, 2017; Yalçın et al., 2020) and many more like headaches, fatigue, impaired concentration, insomnia and hearing loss could occur.

Undergraduates became a source of interest for many researches, some of which clarified that 48% of the undergraduates were addicted (Ghosh, 2020). There are a variety of visions that the overuse of smartphones effects undergraduates’ academic performances in a negative way (Shah et al., 2019; Lepp et al., 2015; Mukhdoomi, 2020) as well as some research findings state that smartphones affect the academic performance positively (Junco et al., 2011; Kates et al., 2018; Ahmed et al., 2020; Yalçın et al., 2020; Nasser et al., 2020).

This research aimed to find out smartphone addiction level of the undergraduates who are studying at Girne American University, located in the Turkish Republic of Northern Cyprus in 2018-2016 academic year, consisted of a rich blend of students, by using the Smartphone Addiction Scale developed by Şar et al. (2015) with four sub-dimensions designed as a 5 point Likert scale with 30 items. The sample consisted of 229 women and 206 men, randomly selected total 435 undergraduates from the registered 18000 students. The reliability of the sub-dimensions was measured as; ‘Relieving Oneself’ with 17 items .917, ‘Physical Impairment and Negligence of Daily Activities’ with five items .788, ‘Obstruction Face-to-Face Communication’ four items .637, and ‘Unrestrainable Use’ four items .0811. The Scale total reliability was measured as .933 for total 30 items. Normality test results found to be significant, but Skewness and Kurtosis results were measured to be between -2/+2 and parametric tests were applied (George & Mallery, 2010).

Findings asserted a significant difference between smartphone addiction and participants’ age, academic grade level, monthly phone bill, frequency of renewing the device and the reason to renew the device, the brand of the device and the preference to choose that device, the purpose to use the device and the preferences of the social networking sites that are engaged. Participants in the age group of 18-22 years and 23-27 years found to be more addicted in all sub-dimensions of the scale and in the scale total rather than the older ones. Sophomores found to be more addicted than other academic grades in the Relieving Oneself dimension and in the scale total. Participants with 1500-2000 Turkish Lira (TL) monthly expenses found to be more addicted amongst the lowest and highest monthly expense groups in the Relieving Oneself sub-dimension and in the scale total. Participants who pay more than 103 TL, as the highest phone bill range, to monthly phone bills found to be more addicted rather than the other groups. Renewing the device in 1-2 years found to be the sign of addiction in all sub-dimensions of the scale and in the scale total with the reason to renew the device to get the new model rather than other reasons of renewing the device, which are being stolen/lost or broken down. iPhone was found to be the leading brand preference of the participants rather than Sony, Huawei or other brands in all sub-dimensions of the scale and in the Scale total except Unrestrainable Use sub-dimension, in which no significant difference was detected. The semblance of the

smartphone was found to be the major reason for brand choice, as measured in all sub-dimensions except the Obstruction Face-to-Face Communication dimension in which no significant difference was detected. Social media engagement was found to be the leading reason to use smartphones in the Relieving Oneself sub-dimension and in the Scale total, followed by all sorts of usage as gaming and information seeking through the net. Gaming was reported to be a reason for physical impairment and negligence of daily activities followed by all sorts of usage as reported by the participants. Instagram was found to be the most engaged social networking site in all sub-dimensions and in the scale total, except Obstruction Face-to-Face Communication and Unrestrainable Use sub-dimensions, in which no significant difference was detected.

The Pearson correlation test results conducted to find out the possible correlation between the sub-dimensions revealed that there was a positive and mid-level correlation between all dimensions. When the time spent dealing with the smartphone to relief oneself increases, Physical Impairment and Negligence of Daily Activities will likely increase, which will also increase the Obstruction Face-to-Face Communication and Unrestrainable Use of the device that will end up with a high level of addiction. The overall findings of the research revealed that the participants who formed the sample were found to be addicted at a mid-level that could be classified as 'habitual smartphone users' according to Şar et.al's (2015) defined range.

A rich blend of demographic variables was used in this research in order to find out the leading factors that possibly create an addiction to smartphones which is also the limitation in terms of the methodology used to gather data and the sample that was focused. It was possible to see that youngsters prioritize the semblance of the devices rather than its functionality and prefer to renew it in less than a year just for the new model and mostly use them to engage social networking sites possibly being unaware of the negative effects. Many research findings state that overuse of these devices causes psychological and physiological problems end up with poor quality of life and obstructed social interactions. In order to inform youngsters about these undesired effects of technological devices parents must first stand as an example and actions must be taken by schools to flourish the controlled use of these devices by creating technology free spaces at school and this application could also be applied by governmental authorities in order to decrease the addiction level without limiting the freedom of an individual.

Keywords: Social sciences, communication, higher education, smartphone addiction, Turkish Republic of Northern Cyprus

Öz: Akıllı telefonların hayatımıza dahil olduğu 1990'lı yıllardan bugüne küresel marketin de aracılığıyla tüm dünyada dikkate alınacak oranda takip edilmekte ve sahiplenilmektedir. İçinde bulunduğumuz teknoloji çağında insan hayatını kolaylaştıran ürünlerin olumlu ve olumsuz etkileri bilinmekte ve geniş çaplı olarak araştırılmaktadır. Bu araştırmanın amacı, akıllı telefonlardan en çok etkilenen gruplardan biri olan lisans öğrencilerinin akıllı telefon bağımlılık düzeylerini ölçmektir. Araştırma; Şar ve diğerleri (2015) tarafından geliştirilen, dört faktörlü, 30 maddeli ve 5'li Likert tip olan Akıllı Telefon Bağımlılığı Ölçeği kullanılarak, yerleşkesi Kuzey Kıbrıs Türk Cumhuriyeti'nde bulunan Girne Amerikan Üniversitesi'nde yürütülmüştür. Ölçeğe ait faktörlerden en yüksek bağımlılık değerleri Kendini Rahatlatma faktöründe, en düşük bağımlılık değerleri ise Kullanımı Engelleyememe faktöründe ölçülmüştür. Araştırma sonuçlarına göre katılımcıların; cinsiyet, GSM operatör tercihi, internet paketi, öğrenim görülen fakülte ve aylık kişisel harcama değişkenleri ve akıllı telefon bağımlılık düzeylerinde anlamlı fark tespit edilmemiştir. Diğer taraftan; yaş, eğitim görülen sınıf düzeyi, aylık telefon faturası için ödenen tutar, telefon değiştirme sıklığı, telefon değiştirme nedeni, kullanılan telefonun markası, telefon markasının tercih edilme nedeni, telefonu kullanma amacı ve tercih edilen sosyal medya sitelerine ve akıllı telefon bağımlılık düzeyi ile anlamlı fark tespit edilmiştir. Yaş arttıkça bağımlılığın azaldığı, ikinci sınıf öğrencilerinde bağımlılığın yüksek düzeyde olduğu, telefon değiştirme sıklığı ve aylık yüksek telefon faturasının bağımlılıkla doğru orantılı olduğu, telefon değiştirme nedeni ile tercih edilen telefon markası ve marka tercih nedenin bağımlılığın göstergeleri olduğu, telefon kullanım amacı ile en çok tercih edilen sosyal medya sitelerinin de bağımlılıkla doğrudan ilişkisi olduğu tespit edilmiştir. Ölçeğin tüm faktörleri arasında olumlu yönde ve orta düzeyde bir ilişki tespit edilmiştir. Katılımcıların kendini rahatlatmak için akıllı telefon kullanımında muhtemel bir artışın, fiziksel engelleri, çevreyle etkileşimi ve kullanımını engelleyememe durumlarını da arttıracakı tespit edilmiştir. Örneklemi oluşturan 435 lisans öğrencisine uygulanan ölçek sonucunda, araştırma örnekleminin akıllı telefon bağımlılığı orta düzeyde bulunmuştur.

Anahtar Kelimeler: Sosyal bilimler, iletişim, yükseköğretim, akıllı telefon bağımlılığı, Kuzey Kıbrıs Türk Cumhuriyeti

Introduction

In 1992, IBM revealed Simon Personal Communicator, with a small monochrome LCD screen and a one-hour battery life, being popular in 1994 and considered to be the most fitting device for human purposes (Pothitos, 2016) sold 50.000 units in six months. This device, having a touch screen with fancy human interface (Li et al., 2010), email, fax, notes and calendar, applications which provided practical operations created an appetite for more. In 1996, Nokia introduced the Nokia 9000 Communicator considered as one of the first smartphones in the market (Pothitos, 2016), which then followed by Blackberry targeting the business people and Apple's iPhone over throned the former device. Apple sold 1.4 million iPhones its first year on the market, and the device exploded to 11, 6 million sold in 2008 (Andrew, 2018). Ever since the evolution of the first 'smart' device, the latest versions have more memory, faster and powerful, enables to use multiple applications at the same time, amusement facilities like video, music and gaming are streamed easily with batteries last long and HD camera(s), attracted a considerable number of consumers all around the World (Ning et al., 2018; Boumosleh & Jaalouk, 2018; Anjana et al., 2020). At the present time, smartphones are used by 3,8 billion people in the world, meaning that 48,33% of the world's population owns a smartphone and in total, the number of people that own a smart and feature phone is 4,88 billion, making up 62.7% of the world's population (Turner, 2021). These unique tools were presented to the customers with two operating systems as Google's Android, with more than 42% of the market share being larger than even Microsoft Windows on desktop and laptop personal computers, and Apple which take more attention of the customers to buy updated versions and spend more time on these devices by boosting consumption with affordable prices (Diaz-Aznar, 2019). These fast evolutions had also some effects on business, creating the 'right now' culture which the consumers could reach whatever they want by means of an enriched advertisement vision. Mobile devices also served a basis for a 'pass time activity' so many people spend time on social media in which the firms spent considerable effort to attract the consumers. Kemp (2020) stated that more than 4.5 billion people have internet, while social media users have passed the 3.8 billion people use social media meaning that nearly 60 % of the world's population is already online. Since the beginning of this 'smart' run, these devices were purchased and widely owned by different levels of the society for various purposes, creating a desire to own the most updated version with brand new features that boosts up the appetite which will be named as a dependency or most accepted term as an "addiction".

Smartphone addiction is spending the most of personal time online dealing with popular applications or social media portals (Li et al., 2015) by means of these devices. Vogels (2017) states that people spend 19% time on Facebook, with one billion users (Ryan, 2015), 17 % on online entertainment, 15% in gaming, 10% in browsing and 8% in utility, 2% in news, 4% in productivity and 10% on other applications (Khan et al., 2019). Once it was not defined as an addictive behavior to spend most of the time on the internet (Young, 1998), but due to the time spent to online gambling, online games that reflects addictive behaviors (Yılmaz et al. 2017), and social media, it is referred as a behavioral addiction now (Holden, 2011; Kawabe et al., 2016; Kwon, 2013, as cited in Yalçın et al., 2020), which could be determined as a continuous crave for the action or withdrawal symptoms when engagement in the behavior is reduced (Long et al., 2016). Ghosh (2020) stated that, significant functional impairment or distress as a direct consequence of the behavior and persistence of the behavior over time is regarded as a behavioral addiction by Kardefelt-Winther et al. (2017). This behavioral addiction has psychological effects on youngsters' emotions, personality and the cognitivity level, in which few research is conducted

(Hilty & Chan, 2018), caused by excessive usage of the highly technological device (Al-Barashdi, 2015; Alavi, 2012; Anjana, 2020).

Problematic smartphone use is over dependence and uncontrolled use of these devices despite the negative effects (Kim et al., 2017; Alosaimi, 2016; Nasser et al., 2020), which can also be named as “Nomophobia” meaning; “the fear of being unable to use one’s mobile phone or being unreachable through one’s mobile phone” (Yıldırım & Correia, 2015: 1323). Nomophobia is suggested to be listed as a “situational phobia” under “specific phobia” identified in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), 5th Edition (American Psychiatric Association, 2013; Bragazzi & Del Puente, 2014, as cited in Arpacı, 2017). The DSM-5 named gambling, which is closely related to the criteria for problematic smartphone use, as “Substance-Related and Addictive Disorders” consisted of four sub-dimensions with “compulsive behavior, functional impairment, withdrawal, and tolerance” (Nahas et al., 2018), and identifies online gaming as a condition that requires clinical further research (Billieux et al., 2015; Alosaimi et al., 2016; Kim et al., 2019), so that addicted individuals persist with their behavior, ignoring adverse consequences and increase in the behavior, decrease symptoms when they attempt to reduce the addictive behavior (Nasser et al., 2020).

Within an increased concern on this behavioral addiction, WHO in 2015 released a report titled as; “Public Health Implications of Excessive Use of the Internet, Computers, Smartphones and Similar Electronic Devices”, summarizing that excessive smartphone usage causes mental health issues like anxiety, stress, loneliness, improved level of stress, reduced life satisfaction, low physical activity and decreased academic performance (Ithnain et al., 2018). The flow of news, active communication, the amount of texting and reading is believed to cause anxiety and tiredness which will result in loss of appetite. Also the “Phantom Syndrome”, which is also referred as “vibrant anxiety, ringxiety, fauxcellarm, and audio illusion” (Sauer et al., 2015) in which individuals have a false feeling that their phone is ringing or vibrating, but it does not, depending on the habits of smartphones use causing psychological stress, anxiety, hallucinations, depression, attention deficit, over-vigilance, and emotional disturbance (Goyal & Saini, 2019). Likewise; long hours of connection, even night-time social media use is associated with higher levels of depression, low self-esteem (Takao, 2009; Demirci et al., 2015; van Deursen et al., 2015; Jeong et al., 2016; Ghosh, 2020) and deficient self-regulation as a combination of compulsive behavior and cognitive preoccupation (Pontes et al., 2016). Also, other health effects can occur so that smartphones transmit radio frequency radiation (Al-Khlaiwi & Meo, 2004) causing thermal and non-thermal heating effect (Balakrishnan et al., 2012) resulting lack of concentration, burning skin, impairment of memory, brain tumors and high blood pressure (Maie et al., 2000, as cited in Prasad et al., 2017), neck pain, limb pains, lack of sleep or sleep quality (Igou et al., 2010), being disposed, eye strain (Acharya, et al., 2013; Shanab & Haddad, 2015; Parasuraman, 2017; Kuyucu, 2017; Yalçın et al., 2020). Furthermore, due to excessive use of smartphones; headaches, fatigue, impaired concentration, insomnia and hearing problems (Bianchi & Phillips, 2005; Yalçın et al., 2020) are likely to occur, mental health possibly gets effected due to mood and temper (Sinsomsack & Kulachai, 2018), and problems may happen in interpersonal relationships (Choi et al., 2012; Gökçearsılan, 2016) due to its addictive behavior. Moreover, many research findings state that smartphones have indirect effects on humans as it is believed that smartphone usage in traffic directly or indirectly effects people, 421,000 injuries and 3,300 deaths in traffic caused by smartphone usage were reported in the US in 2012 (Gliklich et al., 2016, as cited in Nahas et al., 2018).

Smartphones lately became fundamental part of daily life (Kim et al., 2019), especially youngsters’ (Bianchi & Phillips, 2005; Beranuy et al., 2009; Haug et al., 2015; Adamczyk et al., 2018; Khan et al., 2019; Şimşek et al., 2019; Ostic et al., 2021), by supplying various benefits such as fast and easy access to information, social network, banking and shopping applications, being suitable in size and enabling the user to supply needs easier and faster (Alosaimi et al., 2016).

Scholars state that addictive behaviors and substance abuse begins during adolescence and young adulthood (Alosaimi et al., 2016), which makes university students a good representative population whom are the most frequently reported addicts of smartphone and communication technology (Shah et al., 2019). According to field research, the range of smartphone addiction is between 1% and 35%, but one research findings state that 48% of the undergraduates were addicted (Ghosh, 2020). The number of adolescent smartphone users (15-24 years) in the US, Canada, Britain, Germany and Italy reached 103 million and the percentage of school and university adolescents possessing smartphones reached 87% (International Telecommunication Union, 2004, as cited in Aljooma, 2016: 156). According to Nahas et al. (2018), a few research exist in the literature dealing with adults aged 18-65 and in order to fill this gap they conducted research and their findings state that problematic smartphone use is 20% among adults of 18–65 years of age and 12.5% among those aged 34 to 65 (p. 351), which can be considered that smartphones attracted and affected nearly all age groups.

Being used worldwide for diverse purposes, replacing the computer (Lam et al., 2009; Davey & Davey, 2014), it is believed to be the sign of economic and social status in the society (Choi et al., 2015, as cited in Shah et al., 2019) and took the attention of the researchers depending on the fact that overuse of smartphones has resulted in negligence of study and assigned academic tasks (Shah et al., 2019), ending up with poor academic performance of college students who spend much time on smartphones (Lepp et al., 2015; Mukhdoomi, 2020). Interestingly, there are also counter ideas backed up with research findings stating that there is no relationship between success and social network usage (Mouri & Ali, 2016). Besides, applications like Twitter is believed to develop better social engagement while effecting the academic success positively (Junco et al., 2011; Ahmed et al., 2020). Yalçın et al. (2020) mentioned that, according to a study conducted by Kates et al. (2018) three out of 36 studies done as a meta-analysis, a positive relationship between smartphone addiction and academic achievement was found. Also, Nasser et al.'s (2020), half of the participants mentioned that smartphone usage has no effect on academic performance, 30% mentioned that it backs up the academic performance.

Research findings state that female participants' were more addicted to smartphones (Billeux et al., 2008; Carbonell et al., 2012; Ryan, 2015; Haug et al., 2015; Adamczyk et al., 2018; Kim et al., 2019; Şimsek et al., 2019; Nasser et al., 2020), but there are also research findings that state no gender difference exists in smartphone usage (Prezza, 2004; Kuyucu, 2017; Lopez-Fernandez et al., 2017) or some with stating males have higher scores (Kılınç & Doğan, 2014; Aljomaa, 2016; Sözbilir & Dursun, 2018).

Panek et al. (2018), conducted a research with participants from South Korea (N=241) and the U.S. (N=222) and found that problematic smartphone use is not culturally specific, and that self-regulatory and social components both contribute to its development. Similar to this research, Lopez-Fernandez et al. (2017) with a sample of 2,775 young adults (aged 18–29 years) were recruited in different European Universities who participated in an online survey from 10 European countries found that young adults from the Northern and Southern regions were more addicted to smartphone, whereas perceived dependence was less prevalent in the Eastern region and the proportion of highly dependent mobile phone users were from Belgium, UK, and France.

Nasser et al. (2020), mentioned a negative effect with minor depression (17-20 %) in Malasia. In the same country Ithnain et al. (2018) found that 70% of the participants are online more than 4 hours, 57% in social media, 47% high addiction, 54,2% mild and 80,5 % stated mild depression underlining that a significant correlation exists in smartphone addiction, anxiety and depression. Moreover, Kim et al. (2019) found that attention deficit hyperactivity disorder, and smoking has statistically significant effects on smartphone addiction.

Igou et al. (2010) examined the relationship between mobile phone usage and sleep quality and length and found out that mobile phone use was related to sleep quality, but not sleep length,

but Alosaimi (2016) found that due to the excessive use of smartphone sleep hours decreased, gained weight due to fast food, and academic success decreased. Whereas Ahmed et al. (2011), found that participants do not suffer a decline in their productivity due to mobile phone usage; do not suffer sleep loss due to mobile phone usage and do not feel nervous or depressed being away. On the contrary, Goyal and Saini (2019) stated that 90 % of the undergraduates had felt the Phantom Syndrome with false vibrations causing disturbance due to smartphone usage habits.

Ryan (2015) states that young adults use Facebook for four reasons; (1) online social enhancement, (2) social monitoring, (3) procrastination, and (4) entertainment, which are all related to social media dependency that results in smartphone overuse. Likewise, Frison and Eggermont (2015) examined adolescents' (N=910) social support seeking through Facebook and found that daily stress increases the desire to seek social support and when it is perceived, depressed mood decreases, but if the situation is reversed, then the depressed mood increases.

Andreassen (2013) focused on university students' (N=218) seven different behavioral addictions as Facebook, video gaming, internet, smartphone, studying, exercise and compulsive buying addictions within the five-sub-dimension model of personality. As our research focuses on smartphone addiction, only related results are reflected here as; 'Neuroticism' is related to internet addiction, 'Extroversion' was related to Facebook and smartphone addictions, 'Openness' to experience was negatively with Facebook addiction and mobile phone addiction, 'Agreeableness' was negatively correlated with Internet addiction, mobile phone addiction, and lastly 'Conscientiousness' was negatively correlated with Facebook addiction, video game addiction and internet addiction.

Research Purpose and Hypotheses

In Turkey, where the majority of the undergraduates of the hosting institution in this research come from, the most used smartphone is Android 83,9%, then Apple iOS so that these devices are considered to be more expensive even with .2 % and .8 % increase. Applications like WhatsApp, Telegram, Signal are at the top which is followed by social media applications as 96,3 %. Online streaming of music, games, shopping and banking have a considerable percentage (www.webolizma.com, 2021). Pretty much the same, Turkish Republic of Northern Cyprus (TRNC), where the hosting institution is located, also faced a rapid change and increase in the usage of smartphones from 11,5000 to 337,000 in 2013 with a 193 % growth, 85 % of them are private and 15 % are corporate subscription. The primary firm that holds the mobile communications market share with 63 % is Turkcell, followed by Telsim as 37 %. According to Information Technologies and Communications Authority, average usage of mobiles is 278 hours in TRNC, which is 575 hours in Turkey and 232 hours in Europe (www.kibrisgazetesi.com, 2021). This research focuses on Turkish undergraduates' smartphone addiction statuses who are studying in the Turkish Republic of Northern Cyprus. In this context, the fundamental research questions were addressed as; "What is the level of the undergraduates' smartphone addiction?" which is followed by the below mentioned research hypotheses:

1. There's a significant difference between the gender of the participants and smartphone (SMP) addiction
2. There's a significant difference between internet pack of the participants and SMP addiction
3. There's a significant difference between the GSM preference of the participants and SMP addiction
4. There's a significant difference between the departments of the participants and SMP addiction.
5. There's a significant difference between the age of the participants and SMP addiction.

6. There's a significant difference between the academic grade of the participants and SMP addiction.
7. There's a significant difference between the monthly expense of the participants and SMP addiction.
8. There's a significant difference between the monthly phone bills of the participants and SMP addiction.
9. There's a significant difference between the participants' frequency of renewing the device and SMP addiction.
10. There's a significant difference between the participants' reason of renewing the device and SMP addiction.
11. There's a significant difference between the participants' brand preference and SMP addiction.
12. There's a significant difference between the participants' reason of the brand preference and SMP addiction.
13. There's a significant relationship between the participants' reason to use smartphones and SMP addiction.
14. There's a significant difference between the participants' social networking site preference and SMP addiction.
15. There is a correlation within Relieving Onself sub-dimension, Physical Impairment and Negligence of Daily Activities sub-dimension, Obstruction Face-to-Face Communication sub-dimension and Unrestrainable Use sub-dimension.

Method

This research was designed as quantitative survey, including randomly selected 435 undergraduates from various departments studying at the Girne American University during 2018-2019 Academic Year. Ethics Committee approval was taken on 18/12/2018, with the 5/18-28 file number and participants consent was taken during data collection process.

Population and Sample

The targeted population in the research was 18,000 university students in TRNC/Girne American University. The sample was composed of 435 undergraduates considered as adequate to represent the population with 95% confidence interval reliability, being 0.4 % of the population out of 100,000 (Neuman, 2010) reflected in Table 1.

Table 1: Demographic Information of the Sample

Variables		f	%	Variables		f	%
Gender	Female	229	52.6	Brand	IPhone	238	54.7
	Male	206	47.4		Samsung	141	32.4
Age	18-22	288	66.2		G. Mobile	7	1.6
	23-27	131	30.1		Sony	13	3.0
	28+	16	3.7		Huawei	14	3.2
Department	Health	66	15.2		Brand Choice Reason	Fancy Look	73
	Humanities	67	15.4	Functionality		325	74.7
	Engineering	35	8.0	Status reflection		37	8.5
	Communication	16	3.7	GSM	Telsim	218	50.1
	Education	99	22.8		Turkcell	217	49.9
	Law	73	16.8	The frequency of renewing the device	Less than 1 year	29	6.7
	Others	61	14.0		1-2 years	105	24.1
Academic Grade	Freshman	106	24.4		2-3 years	144	33.1
	Sophomore	75	17.2	3+	157	36.1	
	Junior	89	20.5	Inter. Pack	Yes	366	84.1
	Senior	165	37.9		No	69	15.9
Monthly Expense	Less than 1000	130	29.9	Reason to use SMP	Gaming	29	6.7
	1001-1500TL	130	29.9		Information	55	12.6
	1501-2000 TL	91	20.9		Social media	161	37.0
	2001 TL +	84	19.3		All	190	43.7
Phone Bill	25-50 TL	53	12.2	Mostly Used Social Network Site	Facebook	20	4.6
	51-76 TL	57	13.1		Instagram	326	74.9
	77-102 TL	246	56.6		Twitter	32	7.4
	103+TL	79	18.2		All	57	13.1

The rich blend of demographic variables is believed to help us to find out the leading factors that possibly create an addiction to smartphones and examine participants' intentions to use these devices.

Data Collection Tool

The data were collected by using the "Smart Phone Addiction Scale" developed by Şar et al. (2015) which is a 5-point Likert-type graded as "Strongly Agree (5) > Strongly Disagree (1)" with 30 items consisted of four sub-dimensions measuring smartphone addiction (see Table 2).

Table 2: Smartphone Addiction Scale

	Items	Factor Loading Values	The Eigenvalue	Explained Variance	Cronbach's Alpha
Relieving Oneself	6-22, (17)	0.557/0.813	14.40	47.98%	.960
Physical Impairment and Negligence of Daily Activities	1-5, (5)	0.561/0.765	2.02	6.72%	.818
Obstruction Face-to-Face Communication	27-20, (4)	0.620/0.774	1.39	4.64%	.837
Unrestrainable Use	23-26, (4)	0.444/0.768	1.12	3.72%	.744
Scale Total	30	0.444/0.813	18.93	63.06%	.962

Data Analysis

A pilot study was conducted with 210 undergraduates prior to the research in order to test the reliability of the scale in TRNC. The Cronbach's Alpha levels of the pilot study were as follows; 'Relieving Oneself' sub-dimension. 879, 'Physical Impairment and Negligence of Daily Activities' .708, 'Obstruction face-to-face communication' .574, and Unrestrainable Use'.659. The Cronbach's Alpha was measured as .903 for the Scale Total. Likewise Şar et al.'s (2015) Cronbach's Alpha results, Obstruction face-to-face communication sub-dimension's reliability level is the lowest in the pilot study and in the major data set of 435 undergraduates. The normality and reliability test results for our sample including the four sub-dimensions and the Scale Total is presented in Table 3.

Table 3: Normality and Reliability Test Results

Scale Sub-dimensions	Kolmogorov-Smirnov ^a			Skewness	Kurtosis	Cronbach's Alpha
	Z	df	p			
Relieving Oneself (items 6-22)	.057	435	.002	0.388	-0.503	0.917
Physical Impairment and Negligence of Daily Activities (items 1-5)	.082	435	.000	0.366	-0.355	0.788
Obstruction Face-to-Face Communication (items 27-20)	.100	435	.000	0.362	-0.43	0.637
Unrestrainable Use (items 23-26)	.195	435	.000	1.401	1.696	0.811
Total items (30)	0.057	435	0.002	0.438	-0.124	0.933

Even if Kolmogorov-Smirnov results were significant ($p=.000<0.05$), so that Skewness and Kurtosis results were between $-2/+2$, parametric tests (t-test, ANOVA and Pearson Correlation) were applied to the sample (Cramer, 1998; George & Mallery, 2010; Doane & Seward, 2011).

Noticing that the sample size of groups in some variables; "age, frequency of renewing the devices, the reason of renewing device and the brand preference" were unequal, Bonferroni test was utilized so that it fits the unequal sample sizes that have equal variance (Shingala, 2015) and Games-Howell test was utilized for unequal variances in the sample groups (Games, 1971; Montgomery, 2005) in order to identify the group differences detected by applying Anova test.

Findings and Interpretation

A 5point Likert scale was applied to the sample of this research with four sub-dimensions assessing the undergraduates' smartphone addiction status stated in Table 4.

Table 4: Smartphone Addiction Scale Descriptive Statistics

Scale Sub-dimensions	N	\bar{X}	SD
Relieving Oneself (items 6-22)	435	2.60	.885
Physical Impairment and Negligence of Daily Activities (items 1-5)	435	2.39	.882
Obstruction Face-to-Face Communication (items 27-20)	435	2.50	.932
Unrestrainable Use (items 23-26)	435	1.75	.853
Scale Total (30 items)	435	2.44	.750

Şar et al. (2015: 13) stated that; “The total score to be obtained from the scale was clustered as 30-55 for normal smartphone user, 56-78 for habitual smartphone user, 79-113 for obsessive smartphone user, 114 and above for addicted smart phone user. Table 4 reflects the descriptive statistics of the four sub-dimensions and the Scale total items. Except for the Unrestrainable Use (\bar{X} =1.75) sub-dimension, in which the participants reported the lowest score that could be regarded as ‘normal smartphone users’, the participants reported mid-level of addiction in the rest of the sub-dimensions that could be classified as ‘habitual smartphone users.’ Depending on the total scale score (\bar{X} =2.44) of the scale, undergraduates’ that formed the sample of our research were found to be ‘habitual smartphone users’ with a mid-level of smartphone addiction.

Table 5: Smartphone Addiction Frequencies

	Strongly Disagree							\bar{X}	SD	Strongly Agree							\bar{X}	SD
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Strongly Disagree	Disagree			Neutral	Agree	Strongly Agree						
i22	17.0	20.0	20.7	17.2	25.1	3.13	1.429	i2	25.3	26.7	28.7	14.9	4.4	2.46	1.148			
i27	16.6	23.2	21.1	12.2	26.9	3.10	1.445	i14	32.2	29.7	17.2	13.3	7.6	2.34	1.263			
i20	23.0	20.7	15.9	19.5	20.9	2.95	1.470	i1	26.9	29.7	29.7	10.6	3.2	2.34	1.081			
i6	17.2	25.3	22.8	19.1	15.6	2.91	1.324	i3	34.3	24.1	25.3	10.1	6.2	2.30	1.214			
i17	27.8	20.2	14.5	14.5	23.0	2.85	1.537	i4	37.2	24.8	20.9	11.7	5.3	2.23	1.215			
i29	23.0	24.6	20.5	12.4	19.5	2.81	1.428	i19	35.4	30.3	18.9	10.1	5.3	2.20	1.178			
i18	23.9	24.1	21.4	11.3	19.3	2.78	1.428	i12	38.4	28.3	16.8	9.4	7.1	2.19	1.241			
i21	20.9	24.8	23.0	18.2	13.1	2.78	1.321	i30	41.8	23.2	19.1	6.7	9.2	2.18	1.294			
i16	20.7	25.7	23.7	15.4	14.5	2.77	1.331	i13	39.5	27.4	16.1	9.7	7.4	2.18	1.255			
i7	23.2	26.4	19.8	14.9	15.6	2.73	1.379	i11	24.4	24.1	24.8	16.1	10.6	2.17	1.299			
i9	30.3	22.5	23.2	13.1	10.8	2.66	1.279	i28	53.1	20.2	14.5	6.0	6.2	1.92	1.213			
i5	24.4	26.9	20.7	16.1	12.0	2.64	1.327	i25	48.7	29.4	14.7	4.6	2.5	1.83	1.009			
i10	23.4	24.1	26.2	15.9	10.3	2.64	1.295	i23	57.5	20.0	12.4	5.5	4.6	1.80	1.138			
i15	28.0	26.7	17.7	14.0	13.6	2.58	1.379	i24	58.4	18.2	14.0	6.0	3.4	1.78	1.108			
i8	30.3	22.5	23.2	13.1	10.8	2.51	1.331	i26	66.9	15.9	10.1	4.4	2.8	1.60	1.018			

As it is reflected in Table 5, amongst the 30 items, undergraduates’ highest score was measured for item 22 which is; “I check social media, Twitter or Facebook as soon as I woke up” (\bar{X} =3.13) and the lowest score was measured for item 24 which is “I prefer using my smartphone instead of chatting my friends” (\bar{X} =1.78).

The first hypothesis of the research is; “There's a significant difference between the gender of the participants and smartphone (SMP) addiction” and the findings are presented in Table 6.

Table 6: Smartphone Addiction Results According to Gender

		<i>N</i>	\bar{X}	<i>sd</i>	<i>df</i>	<i>t</i>	<i>p</i>
Relieving Oneself	Female	229	2.70	.926	433	2.324	.023
	Male	206	2.50	.826			
Physical Impairment and Negligence of Daily Activities	Female	229	2.42	.893	433	.747	.704
	Male	206	2.36	.870			
Obstruction face-to-face communication	Female	229	2.52	.947	433	.654	.710
	Male	206	2.47	.917			
Unrestrainable use	Female	229	1.71	.830	433	-.916	.337
	Male	206	1.79	.879			
Scale total	Female	229	2.50	.769	433	1.664	.232
	Male	206	2.38	.726			

Table 6 reflects the t-test results of undergraduates' SMP addiction status according to gender and the only significant difference exists for Relieving Oneself sub-dimension [$t_{(433)} = 2.324$; $p=0.23<0.05$] in which females ($\bar{X}=2.70$) reported that they are more depended rather than males. The rest of the sub-dimensions; Physical Impairment and Negligence of Daily Activities [$t_{(433)} = .747$; $p=.704>0.05$], Obstruction Face-to-Face Communication [$t_{(433)} = .654$; $p=.710>0.05$], Unrestrainable Use [$t_{(433)} = -.916$; $p=.337>0.05$], and the Scale Total [$t_{(433)} = 1.664$; $p=.232>.05$] were measured to be insignificant.

The second hypothesis of the research is; "There's a significant difference between internet pack of the participants and SMP addiction" and the findings are presented in Table 7.

Table 7: Smartphone Addiction Results According to Internet Pack

		<i>N</i>	\bar{X}	<i>sd</i>	<i>df</i>	<i>t</i>	<i>p</i>
Relieving Oneself	Yes	366	2.63	0.881	433	1.259	0.209
	No	69	2.48	0.899			
Physical Impairment and Negligence of Daily Activities	Yes	366	2.38	0.869	433	-0.651	0.515
	No	69	2.45	0.949			
Obstruction face-to-face communication	Yes	366	2.50	0.932	433	0.333	0.739
	No	69	2.46	0.941			
Unrestrainable use	Yes	366	1.77	0.857	433	1.442	0.150
	No	69	1.61	0.826			
Scale total	Yes	366	2.46	0.742	433	0.986	0.348
	No	69	2.36	0.792			

Table 7 reflects the t-test results of undergraduates' smartphone addiction status according to their internet pack in their devices. No significant difference was found in all sub-dimensions; Relieving Oneself sub-dimension [$t_{(433)} = 1.259$; $p=0.209>0.05$], Physical Impairment and Negligence of Daily Activities [$t_{(433)} = -.065$; $p=0.515>0.05$], Obstruction Face-to-Face communication [$t_{(433)} = 0.333$; $p=0.739>0.05$], Unrestrainable Use [$t_{(433)} = 1.442$; $p=0.150>.05$], and the Scale Total [$t_{(433)} = 0.986$; $p=0.348>0.05$]. Depending on this finding H2 is rejected, having an internet pack has no effect on smartphone addiction.

The third hypothesis of the research is; "There's a significant difference between the GSM preference of the participants and SMP addiction" and the findings are presented in Table 8.

Table 8: Smartphone Addiction Results According to GSM Preference

		<i>N</i>	\bar{X}	<i>sd</i>	<i>df</i>	<i>t</i>	<i>p</i>
Relieving Oneself	Telsim	218	2.58	0.881	433	-0.571	0.568
	Turkcell	217	2.63	0.890			
Physical Impairment and Negligence of Daily Activities	Telsim	218	2.38	0.893	433	-0.239	0.812
	Turkcell	217	2.40	0.873			
Obstruction face-to-face communication	Telsim	218	2.45	0.928	433	-1.144	0.253
	Turkcell	217	2.55	0.935			
Unrestrainable use	Telsim	218	1.76	0.817	433	0.322	0.747
	Turkcell	217	1.73	0.890			
Scale total	Telsim	218	2.42	0.750	433	-0.569	0.570
	Turkcell	217	2.46	0.752			

Table 8 reflects the t-test results of undergraduates' smartphone addiction status according to their internet pack in their devices. No significant difference was found in all sub-dimensions; Relieving Oneself sub-dimension [$t_{(433)} = -0.571$; $p=0.568>0.05$], Physical Impairment and Negligence of Daily Activities [$t_{(433)} = -0.239$; $p=0.812>0.05$], Obstruction Face-to-Face Communication [$t_{(433)} = -1.144$; $p=0.253>0.05$], Unrestrainable Use [$t_{(433)} = 0.322$; $p=0.747>0.05$], and the Scale Total [$t_{(433)} = -0.569$; $p=0.570>0.05$]. Depending on this finding H3 is rejected, there is no significant difference between GSM preference and smartphone addiction.

The fourth hypothesis of the research is; "There's a significant difference between the departments of the participants and SMP addiction" and the findings are presented in Table 9.

Table 9: Smartphone Addiction Results According to Departments

	Group	N	\bar{X}	sd	F	p	Differences
Relieving Oneself	Business & Admin.	18	2.42	0.872	1.892	0.069	-
	Health	66	2.47	0.837			
	Social Sciences	67	2.55	0.800			
	Engineering	35	2.55	0.801			
	Communication	16	2.98	1.002			
	Education	99	2.83	1.018			
	Law	73	2.50	0.857			
	Other	61	2.56	0.791			
	Total	435	2.60	0.885			
Physical Impairment and Negligence of Daily Activities	Business & Admin.	18	2.34	0.819	1.096	0.364	-
	Health	66	2.38	0.914			
	Social Sciences	67	2.34	0.794			
	Engineering	35	2.69	0.915			
	Communication	16	2.57	0.722			
	Education	99	2.45	0.995			
	Law	73	2.30	0.817			
	Other	61	2.25	0.845			
	Total	435	2.39	0.882			
Obstruction Face-to-Face Communication	Business & Admin.	18	2.45	0.819	0.678	0.691	-
	Health	66	2.54	0.991			
	Social Sciences	67	2.31	0.845			
	Engineering	35	2.43	0.870			
	Communication	16	2.64	1.004			
	Education	99	2.56	1.053			
	Law	73	2.47	0.816			
	Other	61	2.61	0.940			
	Total	435	2.50	0.932			
Unrestrainable Use	Business & Admin.	18	1.50	0.581	1.505	0.164	-
	Health	66	1.84	1.053			
	Social Sciences	67	1.54	0.641			
	Engineering	35	1.92	0.846			
	Communication	16	1.71	0.875			
	Education	99	1.87	0.926			

	Law	73	1.67	0.731			
	Other	61	1.77	0.869			
	Total	435	1.75	0.853			
Scale Total	Business & Admin.	18	2.29	0.678	1.407	0.200	-
	Health	66	2.38	0.759			
	Social Sciences	67	2.35	0.656			
	Engineering	35	2.48	0.731			
	Communication	16	2.70	0.779			
	Education	99	2.60	0.857			
	Law	73	2.35	0.711			
	Other	61	2.41	0.700			
	Total	435	2.44	0.750			

As it is reflected in Table 9, no significant difference was found in four sub-dimensions and in the Scale Total. Relieving Oneself sub-dimension [$F_{(2-432)} = 1.892$; $p = 0.069 > 0.05$], Physical Impairment and Negligence of Daily Activities sub-dimension results [$F_{(2-432)} = 1.096$; $p = 0.364 > 0.05$], Obstruction Face-to-Face Communication sub-dimension [$F_{(2-432)} = 0.678$; $p = 0.691 > 0.05$], Unrestrainable Use sub-dimension [$F_{(2-432)} = 1.565$; $p = 0.164 > 0.05$], and The Scale total [$F_{(2-432)} = 1.407$; $p = 0.200 > 0.05$]. Depending on this finding H4 is rejected, there is no significant difference between participants' departments and smartphone addiction.

The fifth hypothesis of the research is; "There's a significant difference between the age of the participants and SMP addiction" and the findings are presented in Table 10.

Table 10: Smartphone Addiction Results According to Age

	Group	N	\bar{X}	sd	F	p	Differences
Relieving Oneself	1.18-22	288	2.64	0.84	7.187	0.001	3<1,3<2
	2.23-27	131	2.63	0.95			
	3.28 +	16	1.79	0.55			
	Total	435	2.60	0.88			
Physical Impairment and Negligence of Daily Activities	1.18-22	288	2.46	0.83	9.58	0.000	3<1,2<3
	2.23-27	131	2.35	0.94			
	3.28 +	16	1.5	0.64			
	Total	435	2.39	0.88			
Obstruction Face-to-Face Communication	1.18-22	288	2.49	0.90	3.226	0.041	3<1,3<2
	2.23-27	131	2.58	0.99			
	3.28 +	16	1.92	0.74			
	Total	435	2.50	0.93			
Unrestrainable Use	1.18-22	288	1.71	0.81	8.285	0.000	3<1.3<2
	2.23-27	131	1.87	0.95			
	3.28 +	16	1.37	0.43			
	Total	435	1.75	0.85			
Scale Total	1.18-22	288	2.46	.699	8.285	.000	3<1.3<2
	2.23-27	131	2.48	.839			
	3.28 +	16	1.70	.473			
	Total	435	2.44	.750			

The Levene's test was found to be insignificant for Relieving Oneself sub-dimension (2.875; $p = .057 > \alpha = 0.05$, and for Obstruction Face-to-Face Communication sub-dimension (1.736; $p = .177 > \alpha = 0.05$) so that the assumption of homogeneity of variance was met Bonferroni test was utilized. For Physical Impairment and Negligence of Daily Activities sub-dimension (3.458; $p = .032 < \alpha = 0.05$), Unrestrainable Use sub-dimension (5.389; $p = .005 < \alpha = 0.05$), and for the Scale Total (4.800 $p = .009 < \alpha = 0.05$). The assumption of homogeneity of variance was not met and Games-Howel Post-hoc tests were utilized. It was found that 18-22 years age group amongst the undergraduates use SMP for personal relief ($\bar{X} = 2.64$) more than the other age groups. According to Relieving Oneself sub-dimension results [$F_{(2,432)} = 7.187$; $p = 0.001 < 0.05$], and faces more problems in daily activities rather than the other groups as it was signified in Physical Impairment and Negligence of Daily Activities sub-dimension results [$F_{(2,432)} = 9.58$; $p = 0.000 < 0.05$]. On the contrary, 23-27 years age group reported ($\bar{X} = 2.58$) difficulties in Obstruction Face-to-Face Communication sub-dimension [$F_{(2,432)} = 3.677$; $p = 0.041 < 0.05$] rather than the other age groups, and their dependency is measured higher ($\bar{X} = 1.87$) than the other age groups in Unrestrainable Use sub-dimension [$F_{(2,432)} = 9.58$; $p = 0.000 < 0.05$]. The Scale total [$F_{(2,432)} = 8.225$; $p = 0.000 < 0.05$] clarified that participants in 23-27 years age group ($\bar{X} = 2.48$) reported higher scores than 23+ years age group ($\bar{X} = 1.70$), and youngest group with 18-22 age ($\bar{X} = 2.46$) reported higher grades than 23+ age group again. The findings revealed that there is a significant difference between the age of the participants and smartphone addiction, so H5 is approved.

The sixth hypothesis of the research is; "There's a significant difference between the academic grade of the participants and SMP addiction" and the findings are presented in Table 11.

Table 11: Smartphone Addiction Results According to Academic Grade

		N	\bar{X}	SD	F	p	Differences
Relieving Oneself	1.Freshman	106	2.46	0.823	3.370	.019	1<2
	2.Sophomore	75	2.83	0.936			
	3.Junior	89	2.70	0.850			
	4.Senior	165	2.54	0.899			
	Total	435	2.60	0.885			
Physical Impairment and Negligence of Daily Activities	1.Freshman	106	2.34	0.896	2.136	.095	-
	2.Sophomore	75	2.55	0.896			
	3.Junior	89	2.50	0.919			
	4.Senior	165	2.29	0.836			
	Total	435	2.39	0.882			
Obstruction Face-to-Face Communication	1.Freshman	106	2.43	0.970	1.545	.202	-
	2.Sophomore	75	2.71	1.063			
	3.Junior	89	2.48	0.840			
	4.Senior	165	2.45	0.885			
	Total	435	2.50	0.932			
Unrestrainable Use	1.Freshman	106	1.73	0.947	.967	.408	-
	2.Sophomore	75	1.90	0.916			
	3.Junior	89	1.70	0.741			
	4.Senior	165	1.72	0.817			
	Total	435	1.75	0.853			
Scale Total	1.Freshman	106	2.34	0.721	3.178	.024	1<2
	2.Sophomore	75	2.65	0.796			
	3.Junior	89	2.51	0.732			
	4.Senior	165	2.38	0.742			
	Total	435	2.44	0.750			

According to Bonferroni test results, conducted after noticing that the Levene's test was found to be insignificant for Relieving Oneself sub-dimension (.936; $p = .423 > \alpha = 0.05$), and significant difference within the grade level of the undergraduates was in the Sophomore group ($\bar{X} = 2.83$), which was higher than the Freshman ($\bar{X} = 2.46$) in the Relieving Oneself sub-dimension [$F_{(3-431)} = 3.370$; $p = .019 < 0.05$]. The Scale total was found insignificant (.875; $p = .454 > \alpha = 0.05$) in the Levene's test and Anova test results [$F_{(3-431)} = 3.178$; $p = .024 < 0.05$] with Bonferroni Post-Hoc test clarified a significant difference with the Sophomore group ($\bar{X} = 2.65$) which was higher than the Freshman ($\bar{X} = 2.34$) likewise the Relieving Oneself sub-dimension. According the findings, there is a significant difference between the participants' academic grade and smartphone addiction, so H_6 is approved.

The seventh hypothesis of the research is; "There's a significant difference between the monthly expense of the participants and SMP addiction" and the findings are presented in Table 12.

Table 12: Smartphone Addiction Results According to the Monthly Expense

		N	\bar{X}	sd	F	p	Differences
Relieving Oneself	1. Less than 1000	130	2.54	0.903	2.847	0.037	4<3
	2. 1001-1500	130	2.64	0.807			
	3. 1501-2000	91	2.81	0.880			
	4. 2001+	84	2.44	0.946			
	Total	435	2.60	0.885			
Physical Impairment and Negligence of Daily Activities	1. Less than 1000	130	2.31	0.844	1.418	0.237	-
	2. 1001-1500	130	2.41	0.883			
	3. 1501-2000	91	2.54	0.833			
	4. 2001+	84	2.32	0.978			
	Total	435	2.39	0.882			
Obstruction Face-to-Face Communication	1. Less than 1000	130	2.42	0.917	0.471	0.703	-
	2. 1001-1500	130	2.52	0.923			
	3. 1501-2000	91	2.52	0.909			
	4. 2001+	84	2.56	1.001			
	Total	435	2.50	0.932			
Unrestrainable Use	1. Less than 1000	130	1.65	0.787	1.024	0.382	-
	2. 1001-1500	130	1.75	0.882			
	3. 1501-2000	91	1.85	0.814			
	4. 2001+	84	1.78	0.944			
	Total	435	1.75	0.853			
Scale Total	1. Less than 1000	130	2.36	0.755	2.211	0.86	-
	2. 1001-1500	130	2.46	0.704			
	3. 1501-2000	91	2.60	0.724			
	4. 2001+	84	2.35	0.821			
	Total	435	2.44	0.750			

The Levene's test was found to be insignificant for Relieving Oneself sub-dimension (1.232; $p = .298 > \alpha = 0.05$), the homogeneity of variance was met and Anova test results for the undergraduates' monthly expenses in Turkish Lira (TL) conducted using the Bonferroni test signified that there was a significant difference between the undergraduates' monthly expenses with ($\bar{X} = 2.81$) 1501-200 TL, than the ones with 2001+ TL monthly expenses ($\bar{X} = 2.44$) in the

Relieving Oneself sub-dimension [$F_{(3-431)}=2.847$; $p=0.037 <0.05$]. But the Scale total was found to be insignificant (1.191 ; $p=.313 >\alpha=0.05$) in the Levene's test and Anova test results [$F_{(3-431)}=2.211$; $p=.086 >0.05$] revealed no significant difference between the groups. Even if the Relieving Oneself sub-dimension revealed a significant difference, the Scale Total signified that no meaningful difference between the monthly expense of the participants and smartphone addiction existed, so H7 is rejected.

The eighth hypothesis of the research is; "There's a significant difference between the monthly phone bills of the participants and SMP addiction" and the findings are presented in Table 13.

Table 13: Smartphone Addiction Results According to the Monthly Phone Bill

		N	\bar{X}	sd	F	p	Differences
Relieving Oneself	1. 25-50 TL	53	2.40	0.863	3.559	0.014	1<4,2<4
	2. 51-76 TL	57	2.44	0.715			
	3. 77-102TL	246	2.61	0.861			
	4. 103+	79	2.84	1.028			
	Total	435	2.60	0.885			
Physical Impairment and Negligence of Daily Activities	1. 25-50 TL	53	2.22	0.810	3.720	0.012	1<4
	2. 51-76 TL	57	2.34	0.849			
	3. 77-102TL	246	2.35	0.832			
	4. 103+	79	2.67	1.044			
	Total	435	2.39	0.882			
Obstruction Face-to-Face Communication	1. 25-50 TL	53	2.23	0.942	5.977	0.001	1<4,2<4,3<4
	2. 51-76 TL	57	2.29	0.875			
	3. 77-102TL	246	2.49	0.878			
	4. 103+	79	2.83	1.040			
	Total	435	2.50	0.932			
Unrestrainable Use	1. 25-50 TL	53	1.58	0.773	5.290	0.001	1<4,2<4,3<4
	2. 51-76 TL	57	1.64	0.786			
	3. 77-102TL	246	1.70	0.754			
	4. 103+	79	2.08	1.132			
	Total	435	1.75	0.853			
Scale Total	1. 25-50 TL	53	2.24	0.745	5.578	.001	1<4,2<4
	2. 51-76 TL	57	2.30	0.636			
	3. 77-102TL	246	2.43	0.697			
	4. 103+	79	2.71	0.910			
	Total	435	2.44	0.750			

The test results, conducted according to the monthly phone bills of the undergraduates revealed that there was a significant difference amongst the groups in all sub-dimensions of the scale. When the Levene's test was utilized, the assumption of homogeneity of variance was met only for Obstruction Face-to-Face Communication (1.927 ; $p=.125 >\alpha=0.05$) and Bonferroni test was utilized. For Relieving Oneself (4.304 ; $p=.005 <\alpha=0.05$), Physical Impairment and Negligence of Daily Activities (2.986 ; $p=.031 <\alpha=0.05$), Unrestrainable Use (9.528 ; $p=.000 <\alpha=0.05$) sub-dimensions, and for the Scale total (5.819 ; $p=.001 <\alpha=0.05$), Game-Howel test was conducted. The results signified that participants with 103 TL and higher monthly phone bill ($\bar{X}=2.84$) benefited the SMP as an equipment of personal relief rather than the ones with 25-50 TL monthly bill ($\bar{X}=2.40$), and the ones with 51-76 TL phone bill ($\bar{X}=2.44$), which were measured in Relieving Oneself sub-dimension [$F_{(3-431)}=3.559$; $p=0.014 <0.05$]. The same group with high phone bill payment also reported ($\bar{X}=2.67$) that they face Physical Impairment and Negligence of Daily

Activities [$F_{(3-431)} = 3.720$; $p = 0.012 < 0.05$] due to overuse of SMP rather than the ones with 25-50 TL phone bill ($\bar{X} = 2.22$). Since the high phone bill (103+) group's Unrestrainable Use sub-dimension scores [$F_{(3-431)} = 5.290$; $p = 0.001 < 0.05$] were higher ($\bar{X} = 2.08$) than the ones with 25-50 TL bills ($\bar{X} = 1.58$), the ones with 51-76 TL bills ($\bar{X} = 1.64$), and 72-102 TL ($\bar{X} = 1.70$) bills. The results signified that their SMP usage also caused communication problems so that 103+ TL bill owners' scores ($\bar{X} = 2.83$) were higher than the ones with 25-50 TL ($\bar{X} = 2.23$), the ones with 51-76 TL ($\bar{X} = 2.29$), and 77-102 TL ($\bar{X} = 2.49$) bill owners, as reported in the Obstruction Face-to-Face Communication sub-dimension [$F_{(3-431)} = 5.977$; $p = 0.001 < 0.05$]. The Scale total results [$F_{(3-431)} = 5.578$; $p = 0.001 < 0.05$] clarified a significant difference between the participants with 103+ TL phone bills ($\bar{X} = 2.71$), the ones with 77-102 TL phone bills ($\bar{X} = 2.30$), and 25-50 TL phone bills ($\bar{X} = 2.24$). Findings for all sub-dimensions and the Scale Total revealed that there is a significant difference between the monthly phone bill of the participants and smartphone addiction and H8 is approved.

The ninth hypothesis of the research is; "There's a significant difference between the participants' frequency of renewing the device and SMP addiction" and the findings are presented in Table 14.

Table 14: Smartphone Addiction Results According to the Frequency of Renewing the Devices

		N	\bar{X}	sd	F	p	Differences
Relieving Oneself	1.Less than 1 year	29	2.58	0.719	4.590	0.004	3<2,4<2
	2.1-2 years	105	2.87	0.950			
	3.2-3 years	144	2.55	0.816			
	4.3+	157	2.48	0.897			
	Total	435	2.60	0.885			
Physical Impairment and Negligence of Daily Activities	1.Less than 1 year	29	2.59	0.864	5.205	0.002	4<2
	2.1-2 years	105	2.63	0.919			
	3.2-3 years	144	2.35	0.809			
	4.3+	157	2.23	0.889			
	Total	435	2.39	0.882			
Obstruction Face-to-Face Communication	1.Less than 1 year	29	2.66	0.884	5.229	0.001	4<2,4<3
	2.1-2 years	105	2.70	1.052			
	3.2-3 years	144	2.55	0.848			
	4.3+	157	2.28	0.891			
	Total	435	2.50	0.932			
Unrestrainable Use	1.Less than 1 year	29	2.16	1.130	4.873	0.002	-
	2.1-2 years	105	1.91	0.930			
	3.2-3 years	144	1.64	0.760			
	4.3+	157	1.66	0.790			
	Total	435	1.75	0.853			
Scale Total	1.Less than 1 year	29	2.54	0.621	5.970	.001	3<2,4<2
	2.1-2 years	105	2.68	0.805			
	3.2-3 years	144	2.40	0.684			
	4.3+	157	2.30	0.757			
	Total	435	2.44	0.750			

Levene's test results revealed that, For Relieving Oneself sub-dimension (2.104; $p=.99 > \alpha=0.05$) and Physical Impairment and Negligence of Daily Activities sub-dimension (.651; $p=.583 > \alpha=0.05$) and the Scale Total (2.509; $p=.058 > \alpha=0.05$) were not significant and Bonferroni test was used due to the homogeneity of variance. The other sub-dimensions, Obstruction Face-to-Face Communication (2.752; $p=.042 < \alpha=0.05$) and Unrestrainable Use (5.383; $p=.001 < \alpha=0.05$) were measured as significant and Games-Howel test was utilized. According to the results, in the Relieving Oneself sub-dimension [$F_{(3-431)} = 4.590$; $p=0.004 < 0.05$] participants who renew their devices in 1-2 years recorded the highest scores ($\bar{X}=2.87$) rather than the ones who change in 2-3 years ($\bar{X}=2.55$) and more than 3+ years ($\bar{X}=2.48$). The same group who renews their devices in 1-2 years also reported ($\bar{X}=2.63$) that they face Physical Impairment and Negligence of Daily Activities [$F_{(3-431)} = 5.205$; $p=0.002 < 0.05$] more than the ones who renew their devices in 3+ years ($\bar{X}=2.23$). In the Obstruction Face-to-Face Communication sub-dimension [$F_{(3-431)} = 5.229$; $p=0.001 < 0.05$], it was measured that participants who renew their devices in 1-2 years have the highest scores ($\bar{X}=2.70$), stating that they have difficulties in face to face interaction rather than the ones who renew the devices in 2-3 years ($\bar{X}=2.55$), and 3+ years ($\bar{X}=2.28$) possibly meaning that desire to focus on renewing the device causes more dependency and addiction to smartphones. For the Unrestrainable Use sub-dimension, a significant difference is measured [$F_{(3-431)} = 5.970$; $p=.002 < 0.05$], but the Games-Howell Post-Hoc test detected no significant relationship within the groups. The mean score of the participants who renew the device less than a year ($\bar{X}=2.16$) have higher scores than the ones who renew the device in 2-3 years ($\bar{X}=1.64$). Findings for all sub-dimensions and the Scale Total revealed that there is a significant relationship between smartphone addiction and participants' frequency of renewing their devices, so H9 is approved.

The tenth hypothesis of the research is; "There's a significant difference between the participants' reason of renewing the device and SMP addiction" and the findings are presented in Table 15.

Table 15: Smartphone Addiction Results According to the Reason Of Renewing the Device

		N	\bar{X}	sd	F	p	Differences
Relieving Oneself	1.Broken down	277	2.52	0.852	7.607	0.000	1<2,3<2-3<4,4<2
	2.New model	91	2.97	0.900			
	3.Lost/stolen	11	2.14	0.787			
	4.Other	56	2.53	0.886			
	Total	435	2.60	0.885			
Physical Impairment and Negligence of Daily Activities	1.Broken down	277	2.32	0.880	4.585	0.004	1<2
	2.New model	91	2.68	0.790			
	3.Lost/stolen	11	2.07	0.891			
	4.Other	56	2.33	0.945			
	Total	435	2.39	0.882			
Obstruction Face-to-Face Communication	1.Broken down	277	2.45	0.925	4.609	0.003	1<2,3<2
	2.New model	91	2.76	0.916			
	3.Lost/stolen	11	1.86	0.931			
	4.Other	56	2.45	0.905			
	Total	435	2.50	0.932			
Unrestrainable Use	1.Broken down	277	1.63	0.763	7.203	0.000	1<2
	2.New model	91	2.10	1.029			
	3.Lost/stolen	11	1.93	0.750			
	4.Other	56	1.70	0.845			
	Total	435	1.75	0.853			
Scale Total	1.Broken down	277	2.36	0.725	8.837	.000	1<2,3<2,4<2
	2.New model	91	2.78	0.727			
	3.Lost/stolen	11	2.06	0.738			
	4.Other	56	2.37	0.762			
	Total	435	2.44	0.750			

Levene's test results of the three sub-dimensions; Relieving Oneself (.232 $p = .874 > \alpha = 0.05$), Physical Impairment and Negligence of Daily Activities (1.444; $p = .229 > \alpha = 0.05$), Obstruction Face-to-Face Communication (.132; $p = .941 > \alpha = 0.05$), and the Scale Total (.008; $p = .999 > \alpha = 0.05$) were not significant and Bonferroni test was utilized due to the homogeneity of variance. For the Unrestrainable Use sub-dimension (5.006; $p = .001 < \alpha = 0.05$) Games-Howel test was utilized. Test results showed that there are significant differences between all groups in the sub-dimensions of the scale. In the Relieving Oneself sub-dimension [$F_{(3-431)} = 7.607$; $p = 0.000 < 0.05$] participants who renew their devices due to the desire to have the new model reported higher scores ($\bar{X} = 2.97$) rather than the ones who reported that the device is renewed when it is broken down ($\bar{X} = 2.52$), stolen/lost ($\bar{X} = 2.14$) and other reasons ($\bar{X} = 2.53$). Participants who crave for a new device also reported high scores ($\bar{X} = 2.68$) in the Impairment and Negligence of Daily

Activities [$F_{(3-431)} = 4.585$; $p = 0.004 < 0.05$] more than the ones who reported that the device is broken down ($\bar{X} = 2.32$). New model seekers face more problems in face to face interaction ($\bar{X} = 2.53$) than the ones with broken devices as it was reported in the Obstruction Face-to-Face Communication sub-dimension [$F_{(3-431)} = 4.609$; $p = 0.003 < 0.05$] as well as the new model seekers ($\bar{X} = 2.10$) cannot control themselves for overuse of the smartphones compared to the ones with broken devices ($\bar{X} = .63$) as it was found out in Unrestrainable Use sub-dimension [$F_{(3-431)} = 7.203$; $p = .000 < 0.05$]. The Scale Total [$F_{(3-431)} = 8.837$; $p = .000 < 0.05$] results clarified that participants who renew the device to have the new model ($\bar{X} = 2.78$) have higher scores than the ones who renew the device when it is broken ($\bar{X} = 2.36$), lost/stolen ($\bar{X} = 2.06$), and the ‘other’ category ($\bar{X} = 2.37$). Findings for all sub-dimensions and the Scale Total revealed that there is a significant difference between the participants’ reason of renewing the device, which is to have the new model, and smartphone addiction, so H10 is approved.

The eleventh hypothesis of the research is; “There's a significant difference between the participants’ brand preference and SMP addiction” and the findings are presented in Table 16.

Table 16: Smartphone Addiction Results According to the Brand Preference

		N	\bar{X}	sd	F	p	Differences
Relieving Oneself	1.IPhone	238	2.71	0.897	3.627	0.003	6<1
	2.Samsung	141	2.60	0.847			
	3.G.Mobile	7	2.57	0.397			
	4.Sony	13	2.06	0.732			
	5.Huawei	14	2.16	0.819			
	6.Other	22	2.14	0.941			
	Total	435	2.60	0.885			
Physical Impairment and Negligence of Daily Activities	1.IPhone	238	2.44	0.896	2.795	0.017	4<1,5<1
	2.Samsung	141	2.46	0.840			
	3.G.Mobile	7	2.25	0.538			
	4.Sony	13	1.92	0.675			
	5.Huawei	14	1.81	0.746			
	6.Other	22	2.11	1.055			
	Total	435	2.39	0.882			
Obstruction Face-to-Face Communication	1.IPhone	238	2.59	0.958	2.114	0.063	-
	2.Samsung	141	2.46	0.882			
	3.G.Mobile	7	2.35	0.537			
	4.Sony	13	1.86	0.495			
	5.Huawei	14	2.41	0.885			
	6.Other	22	2.23	1.127			
	Total	435	2.50	0.932			
Unrestrainable Use	1.IPhone	238	1.75	0.871	1.231	0.293	-
	2.Samsung	141	1.79	0.839			
	3.G.Mobile	7	1.82	0.731			
	4.Sony	13	1.53	0.882			
	5.Huawei	14	1.92	0.947			
	6.Other	22	1.37	0.662			
	Total	435	1.75	0.853			
Scale Total	1.IPhone	238	2.52	0.760	3.565	0.004	4<1,5<1,6<1
	2.Samsung	141	2.45	0.715			
	3.G.Mobile	7	2.39	0.290			
	4.Sony	13	1.94	0.598			
	5.Huawei	14	2.10	0.609			
	6.Other	22	2.05	0.880			
	Total	435	2.44	0.750			

Levene's test results of Relieving Oneself (1.468 $p = .199 > \alpha = 0.05$), Physical Impairment and Negligence of Daily Activities (.913; $p = .472 > \alpha = 0.05$), and the Scale total (1.920; $p = .090 > \alpha = 0.05$) were insignificant so the Bonferroni test was utilized. Test results revealed that

iPhone users ($\bar{X}=2.74$) reported the highest score rather than ‘other’ brand users ($\bar{X}=2.14$), as measured in the Relieving Oneself sub-dimension [$F_{(3-431)}=7.607$; $p < 0.05$]. The same group also reported the highest scores in Impairment and Negligence of Daily Activities sub-dimension [$F_{(3-431)}=4.585$; $p < 0.05$], iPhone ($\bar{X}=2.44$), rather than Sony ($\bar{X}=1.92$) and Huawei ($\bar{X}=1.81$). No significant difference was found within the groups in Obstruction Face-to-Face Communication sub-dimension [$F_{(3-431)}=2.114$; $p=0.063 < 0.05$] and in Unrestrainable Use sub-dimension [$F_{(3-431)}=1.231$; $p=0.293 < 0.05$]. The Scale Total clarified that iPhone users reported higher scores ($\bar{X}=2.52$), than Huawei users ($\bar{X}=2.10$), and other device owners ($\bar{X}=2.05$). The Scale total revealed that there is a significant difference between participants’ brand preference which is an iPhone, and smartphone addiction, so H11 is approved.

The twelfth hypothesis of the research is; “There's a significant difference between the participants’ reason of the brand preference and SMP addiction” and the findings are presented in Table 17.

Table 17: Smartphone Addiction Results According To The Reason of the Brand Preference

		N	\bar{X}	sd	F	p	Differences
Relieving Oneself	1.Semblance	73	2.98	1.003	8.657	0.000	2<1
	2.Functionality	325	2.51	0.831			
	3.Status reflection	37	2.67	0.928			
	Total	435	2.60	0.885			
Physical Impairment and Negligence of Daily Activities	1.Semblance	73	2.53	0.843	1.638	0.196	-
	2.Functionality	325	2.35	0.887			
	3.Status reflection	37	2.50	0.895			
	Total	435	2.39	0.882			
Obstruction Face-to-Face Communication	1.Semblance	73	2.63	1.020	0.924	0.398	-
	2.Functionality	325	2.47	0.920			
	3.Status reflection	37	2.46	0.858			
	Total	435	2.50	0.932			
Unrestrainable Use	1.Semblance	73	2.02	1.005	5.051	0.007	2<1
	2.Functionality	325	1.68	0.784			
	3.Status reflection	37	1.84	1.010			
	Total	435	1.75	0.853			
Scale Total	1.Semblance	73	2.73	0.832	7.256	0.001	2<1
	2.Functionality	325	2.37	0.714			
	3.Status reflection	37	2.50	0.767			
	Total	435	2.44	0.750			

Levene’s test results for the Relieving Oneself (4.819 $p=.009 < \alpha=0.05$) and Unrestrainable Use (4.608; $p=.018 < \alpha=0.05$) sub-dimensions. Levene’s test was significant and Games-Howell test was utilized. For the Scale Total (2.358; $p=.096 > \alpha=0.05$) was found to be insignificant and Bonferroni test was utilized. Physical Impairment and Negligence of Daily Activities [$F_{(2-432)}=1.638$; $p=0.196 > 0.05$] and Obstruction Face-to-Face Communication sub-dimensions [$F_{(2-432)}=.0924$; $p=0.398 > 0.05$] indicated no significant difference within the groups. In the Relieving

Oneself sub-dimension [$F_{(2-432)} = 8.657$; $p = 0.000 < 0.05$], participants who think that semblance of their smartphones have priority ($\bar{X} = 2.98$), reported higher scores rather than the one who focused the functionality ($\bar{X} = 2.51$). The same group also reported the highest score ($\bar{X} = 2.02$) stating that the semblance of their smartphones effects their overuse more than its functionality ($\bar{X} = 1.68$) as it is measured in Unrestrainable Use sub-dimension [$F_{(2-432)} = 5.051$; $p = 0.007 < 0.05$]. According to the Scale Total results [$F_{(2-432)} = 7.256$; $p = 0.001 < 0.05$], likewise the four sub-dimensions, participants' focus on the semblance ($\bar{X} = 2.73$) of their smartphones measured higher than the functionality ($\bar{X} = 2.37$). Participants' brand choice, related to the semblance of the device presented a significant difference between the participants' reason of the brand preferences and smartphone addiction, and H12 is approved.

The thirteenth hypothesis of the research is; "There's a significant difference between the participants' reason to use smartphones and SMP addiction" and the findings are presented in Table 18.

Table 18: Smartphone Addiction Results According To The Reason To Use Smartphones

		N	\bar{X}	sd	F	p	Differences
Relieving Oneself	1.Gaming	29	2.54	0.860	5.810	0.001	2<3,4<3
	2.Information	55	2.21	0.914			
	3.SocialMedia	161	2.77	0.838			
	4.All	190	2.59	0.886			
	Total	435	2.60	0.885			
Physical Impairment and Negligence of Daily Activities	1.Gaming	29	2.65	0.947	3.824	0.010	2<1,2<4
	2.Information	55	2.08	0.874			
	3.Social Media	161	2.35	0.843			
	4.All	190	2.47	0.887			
	Total	435	2.39	0.882			
Obstruction Face-to-Face Communication	1.Gaming	29	2.61	1.127	2.236	0.083	-
	2.Information	55	2.27	0.980			
	3.Social Media	161	2.61	0.863			
	4.All	190	2.45	0.933			
	Total	435	2.50	0.932			
Unrestrainable Use	1.Gaming	29	2.12	1.164	2.926	0.034	-
	2.Information	55	1.67	0.806			
	3.Social Media	161	1.81	0.814			
	4.All	190	1.66	0.832			
	Total	435	1.75	0.853			
Scale Total	1.Gaming	29	2.51	0.836	4.673	0.003	2<3,4<3,2<4
	2.Information	55	2.12	0.831			
	3.Social Media	161	2.55	0.691			
	4.All	190	2.43	0.739			
	Total	435	2.44	0.750			

Levene's test results of Relieving Oneself (.475; $p = .700 > \alpha = 0.05$), Physical Impairment and Negligence of Daily Activities (.110; $p = .954 > \alpha = 0.05$), Obstruction Face-to-Face Communication (2.626; $p = .051 > \alpha = 0.05$), and the Scale total (.871; $p = .456 > \alpha = 0.05$) were not significant, so Benferroni test was utilized. For the Unrestrainable Use sub-dimension (5.006; $p = .001 < \alpha = 0.05$) Games-Howel test was utilized. The results signified that participants use smartphones, mostly for social media ($\bar{X} = 2.77$), rather than seeking information ($\bar{X} = 2.21$) or for all ($\bar{X} = 2.59$) of the purposes, measured in the Relieving Oneself sub-dimension [$F_{(3-431)} = 5.810$; $p = 0.001 < 0.05$]. In the Impairment and Negligence of Daily Activities sub-dimension [$F_{(3-431)} = 3.824$; $p = 0.010 < 0.05$] participants reported the highest score for gaming ($\bar{X} = 2.65$) rather than seeking information ($\bar{X} = 2.08$). Also participants' focus on all of these activities ($\bar{X} = 2.47$) have higher scored than seeking information. Obstruction Face-to-Face Communication sub-dimension is insignificant [$F_{(3-431)} = 2.230$; $p = 0.083 > 0.05$] with no difference amongst the groups. Even if Unrestrainable Use sub-dimension [$F_{(3-431)} = 2.926$; $p = 0.034 < 0.05$] measured to have a significant difference amongst the groups no relation was found in the Games-Howel test. If we check the means of the groups, gaming ($\bar{X} = 2.12$) has the highest score and intending to use the smartphone for all of the purposes stated has the lowest mean ($\bar{X} = 1.66$). The Scale total results clarified that participants highest reason to use smartphones was to engage social media ($\bar{X} = 2.55$), rather than seeking information ($\bar{X} = 2.12$), and all of the purposes ($\bar{X} = 2.43$). As the 'all' choice, included social media and gaming with a higher score ($\bar{X} = 2.43$) than seeking information ($\bar{X} = 2.12$), it is possible to state that participants' highest intention to use smartphones is social media engagement and gaming. The Scale total revealed that there is a significant difference between participants' reason to use smartphones, which is social media, and smartphone addiction, and H13 is approved.

The fourteenth hypothesis of the research is; "There's a significant difference between the participants' social networking site preference and SMP addiction" and the findings are presented in Table 19.

Table 19: Smartphone Addiction Results According to the Social Networking Site Preference

		N	\bar{X}	sd	F	p	Differences
Relieving Oneself	1.Facebook	20	2.42	0.899	7.869	0.000	4<3,4<2
	2.Twitter	326	2.70	0.869			
	3.Instagram	32	2.66	0.723			
	4.All	57	2.11	0.897			
	Total	435	2.60	0.885			
Physical Impairment and Negligence of Daily Activities	1.Facebook	20	2.35	0.928	3.769	0.011	4<3,4<2
	2.Twitter	326	2.43	0.861			
	3.Instagram	32	2.60	0.782			
	4.All	57	2.05	0.970			
	Total	435	2.39	0.882			
Obstruction Face-to-Face Communication	1.Facebook	20	2.42	0.960	2.028	0.109	-
	2.Twitter	326	2.54	0.921			
	3.Instagram	32	2.58	0.908			
	4.All	57	2.22	0.972			
	Total	435	2.50	0.932			
Unrestrainable Use	1.Facebook	20	1.76	0.901	1.466	0.223	-
	2.Twitter	326	1.73	0.849			
	3.Instagram	32	2.03	0.873			
	4.All	57	1.65	0.839			
	Total	435	1.75	0.853			
Scale Total	1.Facebook	20	2.32	0.799	6.515	0.000	4<3,4<2
	2.Twitter	326	2.50	0.730			
	3.Instagram	32	2.56	0.614			
	4.All	57	2.05	0.809			
	Total	435	2.44	0.750			

Levene's test results of Relieving Oneself (.961 $p = .411 > \alpha = 0.05$). Physical Impairment and Negligence of Daily Activities (.882; $p = .450 > \alpha = 0.05$) sub-dimensions and the Scale Total (.974; $p = .405 > \alpha = 0.05$) were not significant and Bonferroni test was utilized. A significant difference was found between the participants who use Twitter ($\bar{X} = 2.70$), rather than the one who use 'all' social networking sites ($\bar{X} = 2.11$), and Instagram users ($\bar{X} = 2.66$) with the 'all' group again was measured in Relieving Oneself sub-dimension [$F_{(3-431)} = 7.869$; $p = 0.0010 < 0.05$]. In the Impairment and Negligence of Daily Activities sub-dimension [$F_{(3-431)} = 3.769$; $p = 0.011 < 0.05$], Instagram users reported higher scores ($\bar{X} = 2.60$) rather than the Twitter ($\bar{X} = 2.43$) users and the ones who use 'all' ($\bar{X} = 2.05$) social networking sites. For the Obstruction Face-to-Face Communication sub-dimension [$F_{(3-431)} = 2.230$; $p = 0.083 > 0.05$] and Unrestrainable Use sub-dimension [$F_{(3-431)} = 2.926$; $p = 0.034 < 0.05$], no significant difference between the groups was found. But the Scale Total clarified that, participants who prefer Instagram ($\bar{X} = 2.56$) and Twitter ($\bar{X} = 2.50$) reported higher scores than the ones who use 'all' ($\bar{X} = 2.05$) of the social networking sites. The Scale total revealed that there is a significant difference between participants' social networking site preference and smartphone addiction, so H14 is approved.

In order to find out the possible correlation between the sub-dimensions of the scale, the Pearson Correlation test was applied and the findings are presented in Table 20.

Table 20: Smartphone Addiction Correlation Results within the Scale Sub-dimensions

		1	2	3	4	Scale Total
Relieving Oneself	Pearson Correlation	1				
	Sig. (2-tailed)	0.000				
	N	435				
Physical Impairment and Negligence of Daily Activities	Pearson Correlation	.587**	1			
	Sig. (2-tailed)	0.000				
	N	435	435			
Obstruction Face-to-Face Communication	Pearson Correlation	.567**	.552**	1		
	Sig. (2-tailed)	0.000	0.000			
	N	435	435	435		
Unrestrainable Use	Pearson Correlation	.499**	.423**	.469**	1	
	Sig. (2-tailed)	0.000	0.000	0.000		
	N	435	435	435	435	

** . $p < 0.01$; (2-tailed)

Table 19 reflects the Pearson Correlation results conducted within the sub-dimensions. Relieving Oneself sub-dimension has a positive correlation at the mid-level with Physical Impairment and Negligence of Daily Activities ($r = .587$, $p < 0.01$). Obstruction Face-to-Face Communication sub-dimension ($r = .567$, $p < 0.01$). Unrestrainable Use sub-dimension ($r = .499$, $p < 0.01$). Participants' possible increase in smartphone usage levels in order to relieve themselves is likely to increase their impairment and negligence behaviors in their daily life, as well their lack of face to face interactions with their surroundings due to the increase in the uncontrolled use of the smartphones.

Physical Impairment and Negligence of Daily Activities sub-dimension has positive and mid level correlation with Obstruction Face-to-Face Communication sub-dimension ($r = .567$, $p < 0.01$), and Unrestrainable Use sub-dimension ($r = .499$, $p < 0.01$). A possible increase in the participants' Physical Impairment and Negligence of Daily Activities is likely to affect their face to face interactions with others with the lack of ability to use the smartphone in a controlled way.

A positive and mid-level of correlation exists between Obstruction Face-to-Face Communication sub-dimension, Relieving Oneself sub-dimension ($r = .567$, $p < 0.01$), Physical Impairment and Negligence of Daily Activities ($r = .552$, $p < 0.01$), and Unrestrainable Use sub-dimension ($r = .567$, $p < 0.01$). An increase in the obstruction ace to face interaction is likely to increase participants' personal focus on smartphones also increasing Physical Impairment and Negligence of Daily Activities with an Unrestrainable Use manner that will boost up the smartphone addiction.

There was a positive and mid-level correlation with the Unrestrainable Use sub-dimension and Relieving Oneself ($r = .499$, $p < 0.01$), Physical Impairment and Negligence of Daily Activities ($r = .423$, $p < 0.01$), and Obstruction Face-to-Face Communication sub-dimensions ($r = .469$, $p < 0.01$). When participants' uncontrolled usage of smartphone increases, their Physical Impairment and Negligence of Daily Activities and Obstruction Face-to-Face Communication levels are likely

to increase, making them more depended to these devices and being parted from social interactions and focused on online version of it.

Conclusion, Discussion and Recommendations

The research findings asserted that, even if females reported a significant difference in Relieving Oneself Sub-dimension, the Scale Total score reflected no significant difference in smartphone usage and this result is consistent with the previous ones (Prezza, 2004; Kuyucu, 2017; Lopez-Fernandez et al., 2017), even if related research often reported that females are more addicted. Different from Kuyucu (2015), the participants in our sample reflected no significant difference between with monthly personal expense and smartphone addiction.

It was found that participants' age, academic grade level, monthly phone bill, the frequency of renewing the device, the reason to use the device, the brand of the device, the reason of the brand choice, the purpose to use the smartphone and the social networking site preference presented a significant difference on smartphone addiction.

Similar to the previous research, stating that youngsters generally use these devices for entertainment, the participants with younger ages were found to be more addictive to smartphones rather than the elder ones (Ryan, 2015; Frison & Eggermont, 2015; Andreassen, 2013). Sophomore participants were found to have more addicted than the freshman participants in the Relieving Oneself Sub-dimension. It was also found in this sub-dimension that participants with 1001-1500 TL monthly expenses have more addictive behavior than the ones with 2001 TL and more monthly expense.

Participants with 103 TL and more monthly phone bills reflected more addiction level than the other categories in all sub-dimensions; meaning that the increase in the bill payment could also be regarded as the level of addiction. The ones who renew their devices in three or more years have the least addiction level than the ones who renew in 1-2 years or less than a year. This could possibly mean that, the more the addiction is, the frequent the change of the device happens. Moreover, craving to have the new model, which was measured as the highest indicator of the addiction in all sub-dimensions, rather than replacing the broken or stolen device also affects the participants' physical activities negatively as well as the social interaction within the surroundings as clarified in the results of the Scale total.

The iPhone users were found to have higher levels of addiction rather than 'other' brands in the Relieving Oneself Sub-dimension and in the Scale Total. This iPhone desire was also found to have a negative effect on participants' daily activities and physical status as it was measured in the Physical Impairment and Negligence of Daily Activities sub-dimension. Could be regarded similar to this finding, the semblance of the device was measured to be the highest addictive brand preference reason of the participants rather than its functionality as it was measured in the Relieving Oneself Sub-dimension.

In the Relieving Oneself sub-dimension, it was found that participants who use smartphones to engage with the social media have a higher addiction level compared to information seekers and users for all purposes, which causes problems in daily activities as measured in the Physical Impairment and Negligence of Daily Activities sub-dimension. Twitter was found to be the most engaged social networking site in the Relieving Oneself sub-dimension followed by Instagram and others. And in the Physical Impairment and Negligence of Daily Activities sub-dimension and The Scale Total, Instagram was found to be the highest addiction of the participants followed by Twitter and others. We can say that the more the engagement of social networking sites happens, the more the addiction grows.

The highest score for smartphone addiction was measured in the Relieving Oneself sub-dimension, and the lowest was Unrestrainable Use, possibly interpreted as the participants in our

sample generally use the smartphone to entertain themselves within a controlled manner, but there is a risk of increase in the addiction level so that the correlation of the sub-dimensions clarified that a positive and mid-level correlation exists between the sub-dimensions. A possible increase in the usage of these devices is likely to increase the physical impairment in their daily lives, will face increased problems in social interaction within their surroundings and lose the control which they think that they are good at now.

This research was conducted at Girne American University during 2018-2019 academic year with 435 undergraduate participants from different departments, by utilizing a rich blend of demographic variable that could possibly help to examine the factors that create smartphone addiction, which could also be regarded as the limitations of the applied method and the findings related to it. Within the light of the information gathered, it is possible to state that, in order to decrease the undesired effects of smartphones, within an understanding that they will never disappear unless our civilization collapses, a wide range of precautions must be taken which will spread in time. So that research findings clarified, also in this research, youngsters face this kind of technological addiction more than the other age groups, parents must control their children's behaviors related to these habits. More personal and group activities must be planned and promoted, starting from early ages that are backed up with family gatherings. This process must be also applied in schools to prevent the lack of motivation to course contents, to initiate interaction between the students and students with teachers. Techno free areas must be created in schools that during the course and break time engagement with these device can be restricted, which will take the attention of students and also parents to the harmful effects of these technological devices. Even if the case for adults, whose behaviors are out of external control, seems a bit problematic and will depend on personal approaches, early planted attitudes towards the self-control to use technological devices will possibly have a positive effect. Information technologies and mass media could be a way to inform the society for the undesired effects of these devices when overused and how to use this kind of devices in a more convenient way. Moreover, further research seems to be required focusing on this sort of addiction and ways to prevent it in a qualitative manner, as many research aimed to find out the addiction status with different variables, trying to understand why youngsters prefer to be online rather than being out and active.

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