

Technology Addiction among UiTM Puncak Alam and UNNES Semarang Students

Zaimy Johana Johan^{1*}, Nor Intan Adha Hafit², Tusyanah Tusyanah³

¹Faculty of Business and Management, Universiti Teknologi MARA,
UiTM Puncak Alam Campus, 42300 Puncak Alam, Selangor, Malaysia
zaimy@uitm.edu.my*
intan520@uitm.edu.my

³Faculty of Economics, Universitas Negeri Semarang, Semarang, Indonesia
tusyanah@mail.unnes.ac.id

*Corresponding Author

<https://doi.org/10.24191/ajue.v17i4.16188>

Received: 20 April 2021

Accepted: 29 May 2021

Date Published Online: 31 October 2021

Published: 31 October 2021

Abstract: Technology addiction has become an alarming disorder that has increasingly caught the attention of researchers, mental health counsellors and doctors. Unfortunately, those who are having the disorder do not realize that they are going through the phase of pleasurable, addictive experience of appealing themselves by long hours of social networking, gaming, and internet browsing; and affecting their psychological well-being. The symptoms of depression, anxiety, loneliness, avoidance of work and procrastination may be overlooked and hence be left untreated. The purpose of this study is to identify the factors contributing to technology addiction among UiTM Puncak Alam and UNNES, Semarang students applying SPSS v. 23. Data were collected from 656 undergraduate students of the two universities who participated in the survey: 317 and 339 questionnaires were collected from UiTM Puncak Alam, Selangor, Malaysia and UNNES, Semarang, Indonesia students respectively. The results show technology usage influenced technology addiction but psychological well-being did not affect technology addiction. Additionally, UiTM Puncak Alam students are more technology addicted compared to UNNES Semarang students. This distressing condition could become worse during the current Covid-19 pandemic period and prolonged movement control order (MCO) for students, regardless whether they stay at home or on campus. Implications of the findings are further discussed.

Keywords: Covid-19, Psychological Well-being, Technology Addiction, Technology Usage, University Students

1. Introduction

In today's increasingly globalised and connected world, technology plays a pivotal role in the daily life of many people. It was estimated that about 40% of the world's population or more than 3 billion people were technology users in 2016. Of these, 48.4% were from the Asian region. Undoubtedly, the number of technology users could be more today. In Malaysia, based on a survey conducted by Malaysian Communications and Multimedia Commission, 66.6% of Malaysia's population in 2014 were technology users (Malaysian Communication and Multimedia Commission, 2018). The survey also showed an ever-increasing trend in technology upgrades, which were interconnected with the improvement of smartphone technology which formed 73.0% of the technology user base. In Malaysia, the percentage of technology users had increased by 10.5% from 76.9% in 2016 to 87.4% in 2017. Alarmingly, the younger generation in their 20's spent an average of 8 hours daily to

go online (Malaysian Communications and Multimedia Commission, 2018). While in Indonesia, the number of technology users grew by 8% from 132.7 million in 2016 to 143.26 million in 2017; with those between 19 to 34 years old were the greatest contributors, comprising 49.52% of technology users (Yuniarni, 2018). This truly is a scenario that is common here in Malaysia, Indonesia and many other countries.

Previous research on technology addiction focusing on online games among undergraduate students only had 84 respondents among 14 local universities postulated that the more time students spend on online game, the lesser time they spent on their assignments, studies and had the tendency to miss deadlines (Latif, Aziz, Taufik, & Jalil, 2017). In a focus group study involving 8 student participants, students confessed that they were aware of internet addiction issue and had the state of mind of missing classes and procrastinated tasks due to their uncontrolled behavioural usage of the technology (Yeap, Thursamy, Kurnia, Abdul Halim, & Ahmad, 2015). Latest study on university students setting with 201 usable questionnaires, utilizing theory of planned behaviour (TPB), interaction, and continuance intention of playing online games addiction behaviour revealed that players spent more time browsing game feeds, chat rooms and applications which lead to various types of addiction (Rabaya, Saparya, Mahmud, Ramayah, & Rawshon, 2017). In this regard, university students have been classified as one of the most vulnerable groups to develop technology addiction among the technology users. This addiction has contributed to class absenteeism, inability to focus and pay attention in class, and low-grade achievement (Elise, 2018; Kapahi, Ling, Ramadass, & Abdullah, 2013). Apparently, with the current Covid-19 pandemic and prolonged movement control order (MCO), university students are expected to stay at home or on campus to continue studying via distance online learning (DOL). However, the implication of technology addiction could be severe when the students have free internet access, and are online most of the time. Are we expecting DOL to be effective? Would there be an increase in technology addiction?

The research objectives of the study are; 1. to examine the relationship between technology usage and technology addiction, 2. to examine the relationship between psychological well-being and technology addiction, and 3. to identify which university's students are more technology addicted. This paper is organized as follows: the introduction literature review, research methodology, results and discussions, conclusion and recommendation.

2. Literature Review

a) Technology Addiction

Technology addiction can be defined as an inability to control one's technology usage because of emotional, psychological, social, environmental, and biological factors. Technology addiction is an impulsive control disorder involving the obsession in usage of mobile devices, technology or video games (Riva *et al.*, 2016; Shek, Yu, & Sun, 2016). In general, addictive technology is understood as a non-chemical billing of technology usage. Among international studies on the phenomenon of addictive technology, workplaces are by Young (2004), Greenfield (2009), Neverkovich, Bubnova, Kosarenko, Sakhieva, Sizova, Zakharova, & and Sergeeva (2018). Their work largely defines current conditions and prospects of reviewing problems, developing diagnostic criteria and recommendations for addiction treatment technologies. Grohol (2009) states that technology addiction is not a disease but a behavioral disorder. In the work of Neverkovich *et al.* (2018), this is the cognitive component of technology addiction development. Technology provides a seemingly unlimited source of information, connectivity, and entertainment; but its excessive use can have such unfavourable effects as addiction (Dong & Potenza, 2014). Behavioural or technology addiction has also been evaluated as mobile/gadget addiction and/or internet addiction (World Health Organization, 2015).

Some researchers have identified four kinds of technology addiction that have been most frequently studied, namely Internet addiction, Internet gaming disorder, smartphone addiction, and Facebook addiction. These kinds of information technology addiction share some common symptoms, but they each also have some unique characteristics. Internet addiction is one of the earliest examined kinds of information technology addiction. Young (1998) proposed a set of eight symptoms for this disorder. Examples of the symptoms are preoccupation with the Internet and tolerance. This kind of information technology addiction is frequently found to be associated with psychosocial problems such

as depression, loneliness, and social anxiety (Burnay *et al.*, 2015, Weinstein *et al.*, 2015, Özdemir *et al.*, 2014). There is longitudinal evidence revealing that excessive Internet use can lead to impairment in academic performance, work, and social relations (Tokunaga, 2014). Internet gaming disorder, originally proposed as a subtype of Internet disorder (Young, 2004). It is a disorder characterized by symptoms such as withdrawal and tolerance. People having this disorder may spend a substantial amount of time playing video games online or offline. According to the review by Kuss and Griffiths (2012), the estimates of prevalence of Internet gaming disorder range from 30 to 50 percent based on gender, age, and types of games played. Similar to Internet addiction, Internet gaming disorder is associated with depression, loneliness, and social anxiety (Sarda *et al.*, 2016, Sigerson *et al.*, 2017). Internet gaming disorder, however, is conceptually distinct from Internet addiction in that only the former is associated with aggression—possibly due to exposure to violent video games (Lemmens, Valkenburg, & Peter, 2011).

The new features of smartphones are not only addictive to adults but also to adolescents. Those with a smartphone addiction show addictive symptoms such as functional impairment and withdrawal (Lin *et al.*, 2014). Smartphone addiction is a relatively new research topic, and thus not many studies have investigated its prevalence rate. Similar to other kinds of information technology addiction, smartphone addiction is associated with depression, loneliness, and anxiety (Bian and Leung, 2015, Demirci *et al.*, 2015, Mok *et al.*, 2014). In addition, smartphone addiction is associated with fear of ostracism (Igarashi, Motoyoshi, Takai, & Yoshida, 2005), and such an association is unique to this kind of information technology addiction.

Facebook addiction is a phenomenon that has emerged over the past decade while the percentage of adults using social networking sites has soared from 7 to 65 percent (Perrin, 2015). There is still no consensus to date on how social networking should be defined; hence, most studies have focused on the use of and addiction to individual social networking sites since the development and validation of the Bergen Facebook Addiction Scale (BFAS). This measure assesses symptoms of Facebook addiction such as salience and withdrawal (Andreassen, Torsheim, Brunborg, & Pallesen, 2012). Recent studies have revealed that Facebook addiction is similar to other kinds of information technology addiction in its association with depression, loneliness, and anxiety (Ryan, Chester, Reece, & Xenos, 2014).

Nowadays, this rising trend is embracing a new form of technology addiction - an addiction to social networks where everyone can be interesting, important, and searchable, especially if there is a business attached to it. Getting feedback from social networks, young people form their own "me" images, and often images are inaccurate, because responses are biased, the information provided is considered as unrealistic (Mendelevich, 2013). Communicating on social networks while hiding under some "pseudonyms", young people try to meet their communication needs, recognize them, accept and strive to raise their self-esteem and affirm (Pan, 2014). A researcher further recommends that individuals who have grown up in the past have certain characteristics that increase their susceptibility to technology addiction. There is some unintended evidence that those who are dealing with Internet technologies have a tendency to be less self-controlled, a trait that has a positive association with technology addiction (Leung, 2004).

b) Psychological well-being

Psychological well-being is a mental state of happiness, satisfaction, self acceptance and maintaining positive relationships with others. Health and well-being, and life style of an individual are closely related, where well-being aims to determine factors strengthening health and change individuals' life styles in the right direction. The lifestyles of individuals are not their fate (Cardak, 2013). Psychological well-being is related to the interaction between the meaning an individual gives to life and the route to realization of this meaning as a whole (Ryan & Deci, 2001).

According to Caplan (2002), technology offers users anonymity that often acts as a security feature when interacting on a platform consisting of strangers or individuals with whom they are uncomfortable interacting face-to-face. It is particularly interesting for individuals who find communication demands to be stressful or their own competent use necessary because they choose it as a viable alternative to social communication and interaction. Preceding study has shown that internet usage influences the amount of interpersonal communication they engage in, the partners they

interconnect with, and the quality of episode communication in which they participate (Cummings, 2002).

One study found that Internet usage may have an impact on psychological well-being. According to Caplan and Turner (2007), the anonymity and absence of non-verbal and demographic cues provide Internet users relief from emotional distress. As a result, people feel more comfortable to communicate using technology. A scholar reports that increased usage of the Internet for purposes other than communication is associated with increased psychological well-being (Jackson, 2008). Other scholars have shown that excessive use of the internet can lead to Internet addiction (Nalwa and Anand, 2003; Greenfield, 2000; Baggio *et al.*, 2018). Therefore, the study postulates that psychological well-being will have a positive effect on technology addiction.

c) Technology Usage

Existing literature is inevitably accessible, some are using older technology and the extreme involvement in communicating functions can be used to add to the technology. Therefore, a close examination of student technology (which may include their experience with technology, the amount of time they spend online, and how often they go online) is relevant to this study. Recent studies (Haghighi, Othman, & Hashim, 2011; Jamaluddin, Ahmad, & Zainal, 2011; Anuar, Mujayid, Idris, & Noh, 2013) found that university students in West Malaysia spend a lot of time online and they also say that technology itself is not only addictive but some applications in particular.

Applications with interactive functionality cannot be ignored (Chou, Condron, & Belland, 2005) and same scholar found that technology collectors are very interested in interactive functions such as chat rooms, games, newsgroups as opposed to addicts that tend to use information gathering functions such as the World Wide Web (WWW). Technological inventions have revolutionized our societies. The Internet and social media are one of the inventions which have dramatically influenced our way of living (Ludlow, 2009). Social media has been rapidly becoming the focus of the attention of the new generation. Facebook, Skype, twitter, mobile SMS and WhatsApp are the important “communication portals” for social networking, which has greatly changed the way of people for communication and technologies have become the crucial part of life (Afzal & Fardous, 2016).

The use of technology has been conceptualized in many ways in the domain of information systems (Cheng, 2011; Nur Nabihah *et al.*, 2019). The expansion of technology is based on the development of the world in all aspects. As a result, the usage of Information Communication Technology (ICT) in teaching/ learning is predictable (Idrus & Salleh, 2017). Admittedly, technology has intensely changed economic and social life. Internet users can access information at any time and communicate with others at any location, with little or no cost. Some of the literature used on the Internet is used for educational purposes.

In recent decades, research evidence has shown that the advances in information technology and the development of computers have affected student approaches to research and learning in the contemporary higher educational settings (Apuke, 2018). Therefore, the study postulates that technology usage will have a positive effect on technology addiction.

3. Research Methodology

For the purpose of this study, data were collected from UiTM Selangor, Puncak Alam Campus and UNNES, Semarang, Indonesia. A total of 317 and 339 questionnaires were collected from UiTM Puncak Alam and UNNES, Semarang students respectively from the month of October, 2019 until January, 2020. The survey questionnaire is divided into 3 parts. Part A is demographic information including gender, age, semester, time spent on listed devices, such as smartphone, computer/laptop, social networking, and gaming, as well purpose of using the devices. Part B is information on technology addiction, technology usage and psychological well-being. The items used to measure three variables (technology addiction, technology usage and psychology well-being) were adapted from Muduli (2014), Tarafdar *et al.* (2007) and Ryff & Keyes (1995). Respondents were asked to indicate their agreement or disagreement with several statements on a five-point Likert scale ranging from 1=strongly disagree to 5=strongly agree.

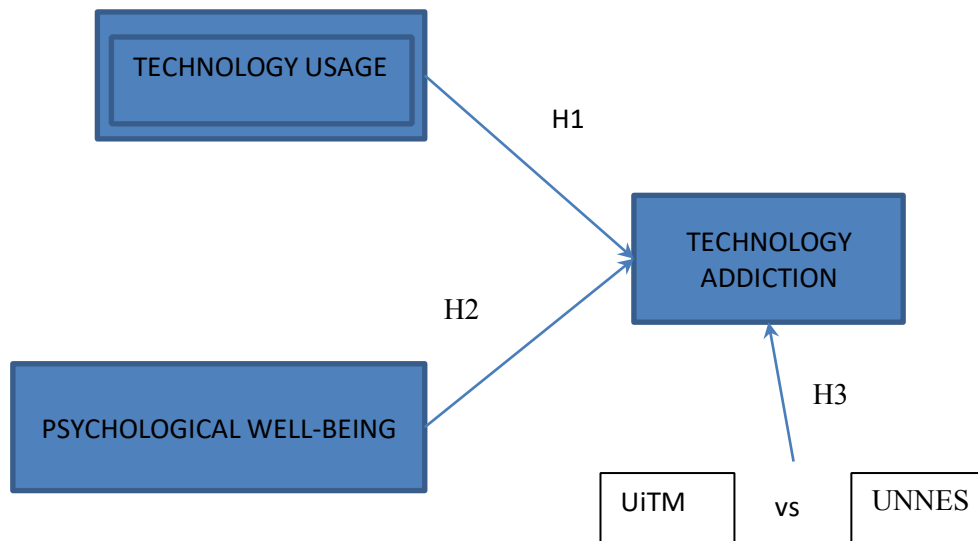


Fig.1 Research Framework

Research hypotheses:

Hypothesis 1: Technology usage will have positive effect on technology addiction

Hypothesis 2: Psychological well-being will have positive effect on technology addiction

Hypothesis 3: UiTM Puncak Alam students are more susceptible to technology addiction as compared to UNNES students

Table 1. Students' Demographic Data (REFIT)

UiTM		Frequency	Percentage (%)	UNNES		Frequency	Percentage (%)
Gender	Female	230	72.6	Gender	Female	257	75.8
	Male	87	27.4		Male	82	24.2
Age	18-20 years	56	17.7	Age	16-17 years	21	6.2
	21-23 years	245	77.3		18-20 years	302	89.1
	24-26 years	15	4.7		21-23 years	16	4.7
	26 years and above	1	0.3				
Semester	Part 1	57	18	Semester	Part 1	246	72.6
	Part 2	70	22.1		Part 2	3	0.9
	Part 3	83	26.2		Part 5	80	23.6
	Part 4	14	4.4		Part 6 above	10	3.0
	Part 5	74	23.3				
	Part 6 and above	19	6				
Smartphone	1-2 hours	9	2.8	Smartphone	1-2 hours	7	2.1
	2-4 hours	46	14.5		2-4 hours	52	15.3
	4-6 hours	96	30.3		4-6 hours	106	31.3
	6 hours and above	165	52.1		6 hours above	174	51.3
Computer or laptop	1-2 hours	93	29.3	Computer or laptop	1-2 hours	174	51.3
	2-4 hours	127	40.1		2-4 hours	113	33.3
	4-6 hours	66	20.8		4-6 hours	48	14.2
	6 hours and above	9	2.8		6 hours above	4	1.2
Tablet	1-2 hours	109	34.4	Tablet	1-2 hours	322	95
	2-4 hours	18	5.7		2-4 hours	13	3.8
	4-6 hours	7	2.2		4-6 hours	2	0.6
	6 hours and above	2	0.6		6 hours above	2	0.6
Earphone/Headset	1-2 hours	112	35.3	Earphone/Headset	1-2 hours	258	76.1
	2-4 hours	87	27.4		2-4 hours	47	13.9
	4-6 hours	62	19.6		4-6 hours	32	9.4
	6 hours and above	26	8.2		6 hours above	2	0.6
Calling	1-2 hours	182	57.4	Calling	1-2 hours	316	93.2
	2-4 hours	46	14.5		2-4 hours	20	5.9
	4-6 hours	16	5		4-6 hours	2	0.6
	6 hours and above	4	1.3		6 hours above	1	0.3

Messaging	1-2 hours	114	36	Messaging	1-2 hours	58	17.1
	2-4 hours	50	15.8		2-4 hours	83	24.5
	4-6 hours	38	12		4-6 hours	83	24.5
	6 hours and above	47	14.8		6 hours above	115	33.9
Internet	1-2 hours	15	4.7	Internet	1-2 hours	108	31.9
	2-4 hours	51	16.1		2-4 hours	136	40.1
	4-6 hours	78	24.6		4-6 hours	68	20.1
	6 hours and above	165	52.1		6 hours above	27	8
Social networking	1-2 hours	36	11.4	Social networking	1-2 hours	61	18
	2-4 hours	64	20.2		2-4 hours	115	33.9
	4-6 hours	96	30.3		4-6 hours	101	29.8
	6 hours and above	107	33.8		6 hours above	62	18.3
Gaming	1-2 hours	116	36.6	Gaming	1-2 hours	286	84.4
	2-4 hours	47	14.8		2-4 hours	38	11.2
	4-6 hours	36	11.4		4-6 hours	10	2.9
	6 hours and above	21	6.6		6 hours above	5	1.5
Music/Video	1-2 hours	84	26.5	Music/Video	1-2 hours	125	36.9
	2-4 hours	104	32.8		2-4 hours	130	38.3
	4-6 hours	68	21.5		4-6 hours	67	19.8
	6 hours and above	42	13.2		6 hours above	17	5
Study	2-4 hours	178	56.2	Study	2-4 hours	255	75.3
	4-6 hours	103	32.5		4-6 hours	67	19.8
	6 hours and above	30	9.5		6 hours above	17	5
	2-4 hours	127	40.1		Communication	2-4 hours	166
4-6 hours	85	26.8	4-6 hours	89		26.3	
6 hours and above	97	30.6	6 hours above	84		24.8	
Entertainment	2-4 hours	74	23.3	Entertainment		2-4 hours	196
	4-6 hours	124	39.1		4-6 hours	80	23.6
	6 hours and above	103	32.5		6 hours above	63	18.6

a) Students' Demographic Profiling

There were 656 respondents with the breakdown as follows: 317 students of UiTM Puncak Alam; and 339 of UNNES Semarang campuses. Majority of survey participants from UiTM Puncak Alam were female (72.6%) and 27.4% were male students. Identically, most of the survey participants from UNNES Semarang were also female (75.8%) with the remaining 82 being male students. The largest number of the survey participants aged from 21-23 years (77.3%) from UiTM Puncak Alam while students in the range 18-20 years from were UNNES.

Among UiTM Puncak Alam survey participants, 18% indicated that they were in Part 1, 22.1% indicated that they were in Part 2, 26.2% indicated that they were in Part 3, 4.4% indicated that they were in Part 4, 23.3% indicated that they were in Part 5 with remaining 6% indicated that they were in Part 6 and above. In the meantime, the largest number of respondents from UNNES Semarang, 246 or 72.6% students indicated that they were from Part 1, 3 or 0.9% were from Part 2, 80 or 23.6% were from Part 5, and 10 (3%) from Part 6 and above.

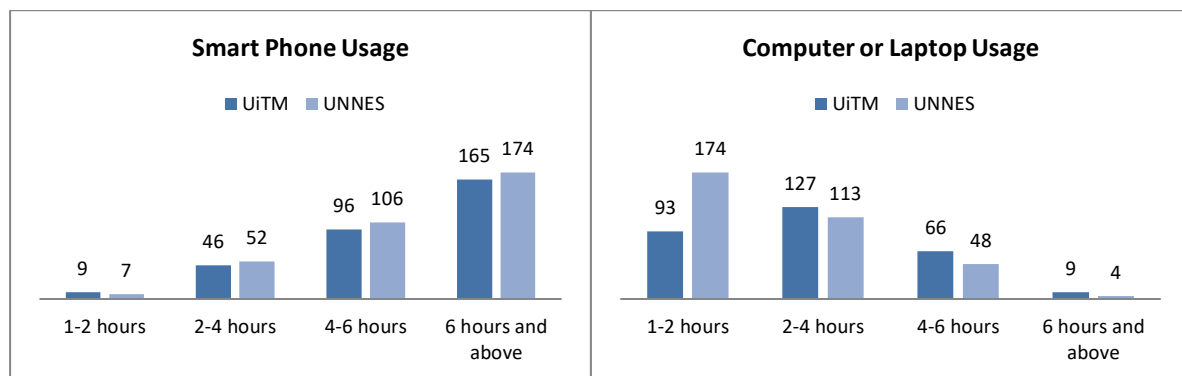


Fig. 2 Smartphone usage and Diagram 3: Computer and laptop usage

The smartphone usage by UiTM Puncak Alam students was as follows 1-2 hours, 2.8%; 2-4 hours, 14.5%; 4-6 hours, 30.3%; 6 hours and above, 52.1%. The computer or laptop usage was as follows: 1-2 hours, 29.3%; 2-4 hours, 40.1%; 4-6 hours, 20.8%; 6 hours and above, 2.8%. Meanwhile 51.3% of UNNES Semarang indicated that they had spent 6 hours and above using smartphones, 51.3% indicated that they had spent 1-2 hours using a computer or laptop. From the above diagram 2 on smartphone usage, 51.68% (165 from UiTM Puncak Alam and 174 of UNNES) of the students from both universities spend 6 hours and above while only 13 of them spend similar hours on computer or laptop. It is interesting to observe that 287 UNNES students spend 1-4 hours on computer or laptop as compared to 220 UiTM Puncak Alam Students. Likewise, 280 UNNES students spend 4-6 hours and above on smart phones as compared to 261 UiTM Puncak Alam students (apparently, not a huge gap). The observation on the above diagrams further explains students are spending more hours with their smartphones rather than doing physical activities such as jogging, cycling and workouts, and face to face social interactions assuming they have 4 to 6 hours of classes from Monday to Friday.

With the ongoing Covid-19 pandemic and movement control order (MCO) which started 18th March 2020, and now has been extended for another 2 weeks starting 15th April until 28th April, it is expected that with more university students are staying at home and the shift from physical, conventional classroom setting to online distance learning (ODL) platform for many courses, there will be a surge in technology users and usage both for smartphones, computer and laptops (Malaysian Communications and Multimedia Commission, 2020).

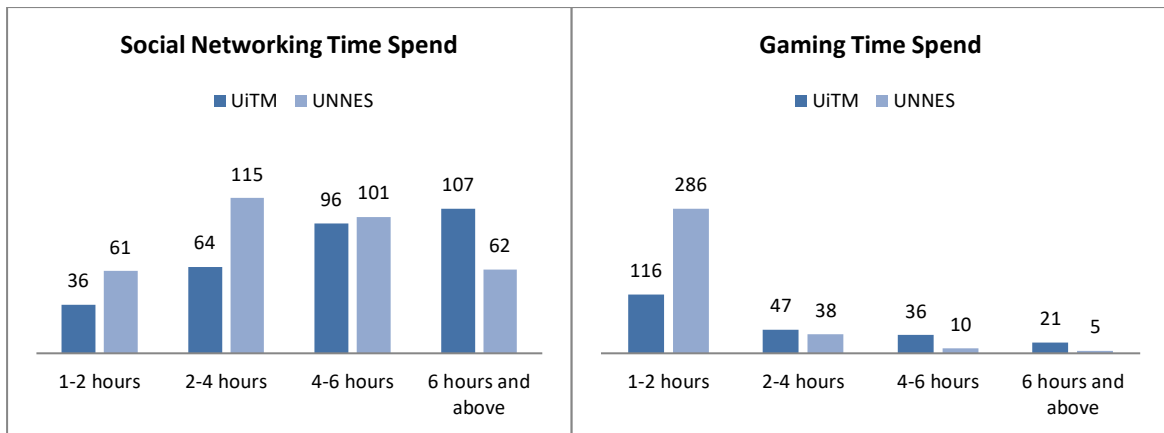


Fig. 3 Social Networking Time Spend and Diagram 5: Gaming Time Spend

From diagram 4 above, almost a similar number of students from both universities enjoy spending between 4 to 6 hours on social networking (96 from UiTM Puncak Alam and 101 from UNNES), which may include Facebook, Instagram, Twitter, WhatsApp and Telegram to name a few. Additionally, 177 UNNES students spend between 1-4 hours on social networking as compared to 100 UiTM students with the same duration. In retrospect, 107 UiTM Puncak Alam students spent 6 hours and above on social networking as compared to 62 UNNES students.

As for diagram 5 above, 84% of UNNES students are spending between 1 to 2 hours playing games while 37% of UiTM Puncak Alam students are spending the same time gaming. Observing further, 104 UiTM Puncak Alam students are spending between 2 to above 6 hours, whereas only 53 UNNES students are spending excessive time playing games. It can be suggested that 50% of UiTM Puncak Alam students are engaging their day to day activities with playing games on computers and other electronic devices such as smart phones and tablets. With the current conditions of Covid-19 pandemic and continuous MCO for almost a month now, it is expected that staying home means the students might be prone to spending more time on social networking and gaming rather than ODL.

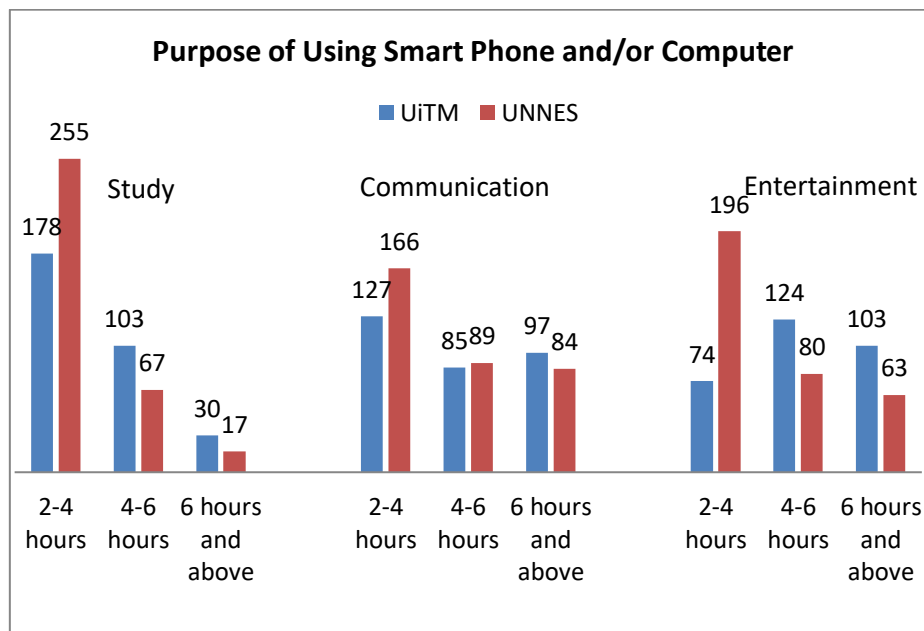


Fig. 4 Purpose of Using Smartphone and/or Computer

On the purpose of using devices either for study, communication and entertainment as per diagram 6, approximately 42% UiTM Puncak Alam students spending 4 to 6 hours and above studying (e-book, journals, learning content) as compared to 28% UNNES students; 75% of them spending between 2-4 hours studying daily which is considered reasonable amount of time. Looking at communication (chatting, calling, emailing), the majority of both university students utilizing between 2 to 4 hours on smartphone and/or computer.

Conversely, entertainment (playing games, watching streamed content, listening to music, surfing the Web) shows 58% of UNNES students spend between 2 to 4 hours, compared to 23% of UiTM Puncak Alam students on similar activity. From the observation, the majority of UNNES students (75%, 49%, and 58%) are spending only between 2 to 4 hours on studying, communication, entertainment with their smartphones and/or computers. In the meantime, for UiTM Puncak Alam students (38%, 57%, and 77%) are spending between 4 to 6 hours and above studying, communication, and entertainment respectively. It is interesting to note while this observation was during normal business days, the situation could be increased in the beginning and extension of MCO (18th March until 12th April, 2020) where UiTM students were on long semester break. However, since there is no lockdown or MCO imposed in Indonesia with regards to Covid-19 pandemic, the scenario might remain the same for UNNES students.

4. RESULT AND DISCUSSION

a) Descriptive Percentage

Table 2. The Conditions of UiTM Puncak Alam and UNNES Students

UiTM	N	Mean	Std. Deviation
Technology Addiction	317	3.6864	0.85479
Technology Usage	317	3.1009	1.64506
Psychological well-being	317	3.3034	0.43177
UNNES	N	Mean	Std. Deviation
Technology Addiction	339	3.5693	0.48100
Technology Usage	339	2.9658	0.67342
Psychological well-being	339	3.7906	0.60642

It can be seen from Table 2 that the UiTM Puncak Alam and UNNES respondents are 317 and 339 students respectively. The results of the descriptive analysis of UiTM Puncak Alam students show that the mean value of technology addiction, technology usage, and psychological well-being are 3.68, 3.10 and 3.3. The standard deviation or data distribution values are 0.85, 1.64, and 0.43 respectively. The descriptive statistical results show that the mean value is greater than the standard deviation value, which means that there is a good representation for data distribution.

For UNNES students, the descriptive statistical analysis shows that the mean value of technology addiction variables, technology usage, and psychological well-being are 3.56, 2.96, and 3.7906, respectively, with a standard deviation or data distribution value are 0.48, 0.67, and 0.61, respectively. The descriptive statistical results show that the mean value is greater than the standard deviation value; it means that there is also a good representation for data distribution.

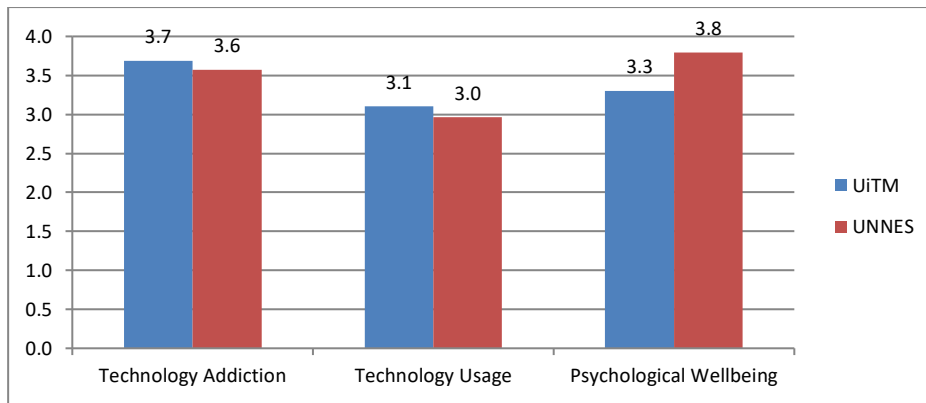


Fig. 7 The Mean Comparison of UiTM Puncak Alam and UNNES

Figure 7 demonstrates the conditions of technology addiction technology usage and psychological well-being of both universities. The questionnaires employ Likert Scale of 1– 5 showing that 1 strongly disagree and 5 strongly agree. It can be seen that in terms of technology addiction, UiTM Puncak Alam students are more addicted to technology than UNNES students. However; there is a slight difference of only 0.1. It can be concluded that both groups of students are similarly technology addicted. While for technology usage, UiTM Puncak Alam students are slightly active; difference of 0.1 as compared to UNNES students. On the other hand, UNNES students have better psychological well-being than UiTM Puncak Alam students. It could signify that UNNES students are feeling more self- acceptance, able to choose or create contexts suitable to personal needs and values, and satisfied with their lives as compared to UiTM Puncak Alam students. The Pancasila instils the cultural, traditions, religious, and moral values in all citizens of Indonesia may contribute to better well-being of UNNES students. Likewise, UiTM Puncak Alam students, in Malaysia context, they still have Rukun Negara as Malaysia’s National Philosophy, that should every Malaysian citizen be created be more well-being, however the finding shown UiTM Puncak Alam may have gone through feels unable to change or improve surrounding context, weaker self-acceptance, as well as weaker positive relations which has few close, and not trusting relationships with others, that stated in the item such as “the demands of everyday life often get me down”; “in many ways I feel disappointed about my achievements in life”; “maintaining close relationships has been difficult and frustrating for me”, whichever could have influenced their lifestyles as university students.

b) Regression Analysis

Data from two (2) universities were tabulated and analysed with SPSS and here the mathematical equations from SPSS outputs:

$$Y = 3.154 + 0.016 X1 + 0.147 X2 + e \dots \text{(UiTM)}$$

$$Y = 2.503 + 0.285 X1 + 0.059 X2 + e \dots \text{(UNNES)}$$

Notes:

Y = Technology addiction

X1 = Technology Usage

X2 = Psychological Well-being

The equations above are the mathematical equations of the influence of technology usage and psychological well-being on technology addiction at UiTM Puncak Alam, Selangor, Malaysia and UNNES, Semarang, Indonesia.

At UiTM Puncak Alam, it can be seen that the coefficient of influence of technology usage is 0.016 with a significance of 0.595. It means that if the technology usage increases by 1 point while the psychological well-being variable remains constant, there will be an increase in technology addictions by 0.016 but it is an insignificant effect. Furthermore; if the psychological well-being coefficient rises by 1 point, and technology usage remains constant; it makes technology addictions go up to 0.147 but the increase is insignificant because the significance is > 0.05 .

The second mathematical equation is from the data of UNNES where the coefficient of influence of technology usage is 0.285 with the significance is 0.000, which means that if the technology usage rises by 1 point while the psychological well-being variable is 0 or constant, technology addiction increases for 0.285 and it is significant. Next, if psychological well-being rises by 1 point, the technology addiction rises by 0.059, but the increase is insignificant because significance value is > 0.05 .

From 656 respondents; combination of UiTM Puncak Alam and UNNES Semarang students, the only supported variable is technology usage while psychological well-being is not supported to technology addiction. The more time spent on technology for studying, communicating and entertaining, the more addicted they will be towards technology. In contrast, the issue with personality deficiency disorder might contribute to psychological well-being of the students without the students realizing it.

The difference between UiTM Puncak Alam and UNNES Semarang students in relation to the regression analysis; independent variables (technology usage and psychological well-being) are not supported for UiTM Puncak Alam on technology addiction. On the other hand, only technology usage is supported for UNNES on technology addiction. Technology addiction is a relatively new mental condition which affects personal life. Someone who uses technology with good psychological conditions; the risk of becoming addicted to technology is low or insignificant. With good psychological conditions, a person is able to manage his/her time to interact with technology (Hamissi, Babaie, Hosseini, & Babaie, 2013).

5. CONCLUSION

The objectives of the study are 1. To examine the relationship between technology usage and technology addiction, 2. To examine the relationship between psychological well-being and technology addiction, and 3. To identify which university's students are more technology addicted where the relationship between technology usage and technology addiction is supported, relationship between psychological well-being and technology addiction is not supported, and UiTM Puncak Alam students are more technology addicted as compared to UNNES students. UiTM Puncak Alam students are spending more time with their smartphones socializing and gaming whereas UNNES students seem better in managing themselves and time dealing with technology addiction.

The effect of excessive technology usage in actual fact does influence addiction to technology; however it compromises the psychological well-being of individuals. In this study, UiTM Puncak Alam students' thinking, feeling and behaving could have deviated from cultural and religious beliefs and eventually what is common today for them is no longer acceptable among the society. Shyness, feeling of inadequacy and sensitivity to criticism may also contribute to overall well-being. The rule of network socializing is to portray what others want you to be portrayed and if you cross the line, you will be facing cyberbullying. Therefore, while they are facing difficulties socializing in the real world, they are constantly building a new identity in the cyber world and gradually engaging the identity through technology addiction.

6. RECOMMENDATION

A better understanding of the factors lead to technology addiction among students will allow internet service providers, social media platforms and game creators and owners to mitigate the risk of technology addiction (Rabaya *et al.*, 2017). There are several proposed actions to be taken by Malaysian Communications and Multimedia Commission (MCMC); 1. blocking the social media websites or online game platforms after several hours of continuous consumptions; 2. having all online users getting license or permit in order to operate the social media or game services; 3. or for all types of smartphones/tablet/laptops to have stabilizers which are enabled to disable, this function is to stabilize the usage of smartphones not to exceed certain limits, when exceeding the limits, the devices will be automatically shut down or disabled. There might be other mechanisms to enforce technology usage in order to control and reduce technology addiction which could be further explored. We have to acknowledge that technology addiction has become a disorder and impact not just individuals but communities as well, and lead to terrible consequences (Wan Abdul Ghani, Ramlee, Ramli, Zamri, &

Ghazali, 2019). It could be alarming during this crisis moment of Covid-19 pandemic and further movement control order (MCO), where majority of university students are staying at home and having temporary free internet access; it may lead to further increase in technology addiction.

7. ACKNOWLEDGEMENT

We would like to thank Associate Professor Dr. Norol Hamiza Zamzuri for leading the research field work in Semarang, Indonesia in early November, 2019, and IRMI, UiTM for granting us Lestari Special Grant Semarang 600-IRMI 5/3/LESTARI (069/2019).

8. REFERENCES

- Afzal, M. T., & Fardous, N. (2016). Students' Preferences of Technology Usage for Their Learning Engagement. *American Journal of Educational Research*, 4(10), 749-751.
- Andreassen, T. Torsheim, G.S. Brunborg, S. Pallesen (2012). Development of a Facebook addiction scale. *Journal of Psychological Reports*, 110 (2012), pp. 501-517
- Anuar, N., Mujayid, Z., Idris, A. S., & Noh, N. A. M. (2013). Prevalence of Internet Usage and Academic Purpose Among Pre-degree Student: A Case Study.
- Apuke, O. D., & Iyendo, T. O. (2018). University students' usage of the internet resources for research and learning: forms of access and perceptions of utility. *Heliyon*, 4(12), e01052
- Baggio, S., Starcevic, V., Studer, J., Simon, O., Gainsbury, S. M., Gmel, G., & Billieux, J. (2018). Technology-mediated addictive behaviors constitute a spectrum of related yet distinct conditions: A network perspective. *Psychology of Addictive Behaviors*, 32(5), 564.
- Bian, L. Leung (2015). Linking loneliness, shyness, smartphone addiction symptoms, and patterns of smartphone use to social capital. *Social Science Computer Review*, 33 (2015), pp. 61-79
- Burnay, J. Billieux, S. Blairy, F. Larøi (2015). Which psychological factors influence internet addiction? evidence through an integrative model. *Journal of Computers in Human Behavior*, 43, pp. 28-34
- Caplan, S. E. (2002). Problematic Internet use and psychosocial well-being: Development of a theory-based cognitive-behavioral measurement instrument. *Computers in Human Behavior*, 18, 553-575.
- Caplan, S. E. (2003). Preference for online social interaction: A theory of problematic Internet use and psychosocial well-being. *Communication research*, 30(6), 625-648.
- Caplan, S. E., & Turner, J. S. (2007). Bringing theory to research on computer-mediated comforting communication. *Computers in human behavior*, 23(2), 985-998.
- Cardak, M. (2013). Psychological well-being and Internet addiction among university students. *Turkish Online Journal of Educational Technology-TOJET*, 12(3), 134-141.
- Cheng, Y. M. (2011). Antecedents and consequences of e-learning acceptance. *Information Systems Journal*, 21(3), 269-299.
- Chou, C., Condron, L., & Belland, J. C. (2005). A review of the research on Internet addiction. *Educational Psychology Review*, 17(4), 363-388.
- Cummings, J. N., & Kraut, R. (2002). Domesticating computers and the Internet. *The Information Society*, 18(3), 221-231.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management science*, 35(8), 982-1003.
- Demirci, M. Akgönül, A. Akpınar (2015). Relationship of smartphone use severity with sleep quality, depression, and anxiety in university students. *Journal of Behavioral Addictions*, 4 (2015), pp. 85- 92
- Dong, G., & Potenza, M. N. (2014). A cognitive-behavioral model of Internet gaming disorder: Theoretical underpinnings and clinical implications. *Journal of Psychiatric Research*, 58, 7-11
- Elise, A. (2018). College students battle video game addiction.
- Greenfield, P. M. (2000). Three approaches to the psychology of culture: Where do they come from? Where can they go?. *Asian Journal of Social Psychology*, 3(3), 223-240.

- Greenfield, P. M. (2009). Technology and informal education: What is taught, what is learned. *Journal of Science*, 323(5910), 69-71.
- Grohol, J. (2009). *Internet addiction a new disease?*. Moscow: Akropol
- Haghighi, B. T., Othman, M., & Hashim, F. H. (2011, November). Internet Addiction and dependency: A case study in UNITEN, Malaysia. In *ICIMU 2011: Proceedings of the 5th international Conference on Information Technology & Multimedia* (pp. 1-4). IEEE.
- Hamissi, J., Babaie, M., Hosseini, M., & Babaie, F. (2013). The Relationship between Emotional Intelligence and Technology Addiction among University Students. *International Journal of Collaborative Research on Internal Medicine & Public Health (IJCRIMPH)*, 5(5), 310–319.
- Huang, C. (2012). Internet use and psychological well-being. *Encyclopedia of Cyber Behavior*. 1. 302- 314.
- Idrus, H., & Salleh, R. (2017). Perceived self-efficacy of Malaysian ESL engineering and technology students on their speaking ability and its pedagogical implications. *The English Teacher*, 15.
- Igarashi, T. Motoyoshi, J. Takai, T. Yoshida (2005). The text messaging addiction scale: Factor structure, reliability, and validity. *Paper presented at sixth biennial conference of the Asian association of social psychology, Wellington, New Zealand* (2005, April)
- Jackson, T. (2008). Where is the “wellbeing dividend”? Nature, structure and consumption inequalities. *Local Environment Journal*, 13(8), 703-723.
- Jamaluddin, H., Ahmad, Z., & Zainal, N. (2011). Exploratory Study on Internet Addiction among Varsity Students in Malaysia. In *Kertas kerja dibentang dalam International Conference on e- commerce, e-Administration, e-Society, e-Education, and e-Technology (e-CASE & e-TECH 2011)* di Tokyo, Jepun.
- Kapahi, A., Ling, C. S., Ramadass, S., & Abdullah, N. (2013). Internet Addiction in Malaysia Causes and Effects. *IBusiness*, 05(02), 72–76. <https://doi.org/10.4236/ib.2013.52009>
- Kraut, R. (2002) The HomeNet project questionnaire 3. Carnegie Mellon University. U.S.A
- Kuss, M.D. Griffiths. (2012). Internet gaming addiction: A systematic review of empirical research. *International Journal of Mental Health and Addiction*, 10, pp. 278-296
- Latif, R. A., Aziz, N. A., Taufik, M., & Jalil, A.-D. (2017). Impact of Online Games Among Undergraduate Students. *ICOCI Kuala Lumpur. Universiti Utara Malaysia*, (028), 25–27.
- Leung, L. (2004). Net-generation attributes and seductive properties of the internet as predictors of online activities and internet addiction. *CyberPsychology & Behavior*, 7(3), 333-348.
- Lemmens, P.M. Valkenburg, J. Peter (2011). The effects of pathological gaming on aggressive behavior. *Journal of Youth and Adolescence*, 40 (2011), pp. 38-47
- Lin, L.R. Chang, Y.H. Lee, H.W. Tseng, T.B. Kuo, S.H. Chen (2014). Development and validation of the smartphone addiction inventory (SPAI). *PLoS One*, 9 (2014), p. e98312
- Ludlow, D. (2009). Ensuring quality of life in Europe's cities and towns.
- Malaysian Communication and Multimedia Commission. (2018). Internet User Survey 2018 : Statistical Brief Numbered Twenty-Three.
- Malaysian Communications and Multimedia Commission. (2020). Changing Usage Patterns Influence Internet Speed in Malaysia. <https://doi.org/10.1002/9781119081708.app9>
- Mendelevich, V. D. (2013). Features of deviant behavior in the Internet space. *Journal of Practical Medicine*, 1, 143-146.
- Morahan-Martin, J., & Schumacher, P. (2000). Incidence and correlates of pathological Internet use among college students. *Computers in human behavior*, 16(1), 13-29.
- Mok, S.W. Choi, D.J. Kim, J.S. Choi, J. Lee, H. Ahn (2014) Latent class analysis on Internet and smartphone addiction in college students. *Journal of Neuropsychiatric Disease and Treatment*, 10 (2014), pp. 817-828
- Muduli, J. R. (2014). *Addiction to technological gadgets and its impact on health and lifestyle: A study on college students*, (Doctoral dissertation).
- Nalwa, K., and Anand, A. (2003). Internet addiction in students: a cause of concern. *CyberPsychology and Behavior*, 6, 653–656.

- Neverkovich, S. D., Bubnova, I. S., Kosarenko, N. N., Sakhieva, R. G., Sizova, Z. M., Zakharova, V. L., & Sergeeva, M. G. (2018). Students' Internet Addiction: Study and Prevention. *Eurasia Journal of Mathematics, Science and Technology Education*, 14(4), 1483-1495.
- Nur Nabihah, M.N., Mohd Khairizan, R., Siti Zuraida, M., & Siti Maftuhah, D. (2019). Examining The Use Behaviour of Augmented Reality Technology Through Marlcardio: Adapting The Utaut Model. *Asian Journal Of University Education*, 15(3).
- Özdemir, Y. Kuzucu, Ş. Ak (2014). Depression, loneliness and internet addiction: How important is low self-control? *Journal of Computers in Human Behavior*, 34, pp. 284-290
- Pan, A. K. (2014). *Taming the digital monkey. How to get rid of Internet addiction*. Moscow: AS
- Perrin Social media usage: 2005-2015. (2015). Retrieved from <http://www.pewinternet.org/2015/10/08/social-networking-usage-2005-2015/>
- Rabaya, T., Saparya, S., Mahmud, I., Ramayah, T., & Rawshon, S. (2017). Why are they so addicted?: modeling online games addiction behavior among university students.
- Riva, G., Wiederhold, B. K., Cipresso, P., Casale, S., Primi, C., & Fioravanti, G. (2016). 14 Generalized Problematic Internet Use Scale 2: update on the psychometric properties among Italian young adults. *The Psychology of Social Networking Vol.2*.
- Ryan, R. M., & Deci, E. L. (2001). On happiness and human potentials: a review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology*, 52, 141-166.
- Ryan, A. Chester, J. Reece, S. Xenos (2014). The uses and abuses of Facebook: A review of Facebook addiction. *Journal of Behavioral Addictions*, 3, pp. 133-148
- Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology*, 69(4), 719-727
- Sarda, L. Bègue, C. Bry, D. Gentile (2016). Internet gaming disorder and well-being: A scale validation. *Journal of Cyberpsychology, Behavior and Social Networking*, 19, pp. 674-679
- Shek, D. T. L., Yu, L., & Sun, R. C. F. (2016). Internet Addiction Definition, Assessment, Epidemiology and Clinical Management. *Neuroscience in the 21st Century: From Basic to Clinical, Second Edition*, 3707-3750.
- Sigerson, Angel Y.-L. Li, Mike W.-L. Cheung, Jeremy W. Luk, Cecilia Cheng (2017). Psychometric properties of the Chinese Internet Gaming Disorder Scale Addictive Behaviors, 74, pp. 20-26,
- Tarafdar, M., Tu, Q., Ragu-Nathan, B. S., & Ragu-Nathan, T. S. (2007). The impact of technostress on role stress and productivity. *Journal of management information systems*, 24(1), 301-328.
- Tokunaga, R. S. (2014). A unique problem or the manifestation of a preexisting disorder? The mediating role of problematic internet use in the relationships between psychosocial problems and functional impairment. *Journal of Communication Research*, 41, pp. 531-560
- Wan Abdul Ghani, W. S., Ramlee, N., Ramli, N., Zamri, H., & Ghazali, A. R. (2019). The Study of Internet Addiction with Depression , Anxiety and Social Isolation. *Advances in Business Research International*, 137-145.
- Weinstein, M. Lejoyeux (2015). Internet addiction or excessive internet use. *The American Journal of Drug and Alcohol Abuse*, 36, pp. 277-283
- World Health Organization. (2015). Public health implications of excessive use of the internet, computers, smartphones and similar electronic devices: Meeting report, Main Meeting Hall, Foundation for Promotion of Cancer Research, National Cancer Research Centre, Tokyo, Japan, 27- 29 August 2014. World Health Organization.
- Yeap, J. A. L., Thursamy, R., Kurnia, S., Abdul Halim, H., & Ahmad, N. H. (2015). The assessment of Internet addiction among university students: some findings from a focus group. *Tehnicki Vjesnik - Technical Gazette*, 22(1), 105-111.
- Yuniarni, S. (2018, February). Indonesia Had 143m Internet Users in 2017: *APJII. Jakarta Globe*.
- Young, K. S (1998). Internet addiction: The emergence of a new clinical disorder. *CyberPsychology and Behavior Journal*, 1 (1998), pp. 237-244
- Young, K. S. (2004). Internet addiction: A new clinical phenomenon and its consequences.

American behavioral scientist, 48(4), 402-415.