



DIGITAL TECHNOLOGY OVERUSE AS A PREDICTOR OF
DIGITAL AMNESIA AND PRODUCTIVITY

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A RESEARCH PROJECT
SUBMITTED IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR
THE BACHELOR OF SOCIAL SCIENCE (HONS) PSYCHOLOGY
FACULTY OF ARTS AND SOCIAL SCIENCE
UNIVERSITI TUNKU ABDUL RAHMAN

OCT. 2020

Running head: PREDICTORS OF DIGITAL AMNESIA AND PRODUCTIVITY

Digital Technology Overuse

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This research project is submitted in partial fulfilment of the requirements for the Bachelor of Social Science (Hons) Psychology, Faculty of Arts and Social Science, Universiti Tunku Abdul Rahman. Submitted on 16 August 2020.

PREDICTORS OF DIGITAL AMNESIA AND PRODUCTIVITY

ACKNOWLEDGEMENTS

It would be impossible to complete this thesis without a host of individuals and organisations' assistance and cooperation. Therefore, we are deeply thankful to Dr Sonia Khodabakhsh (Supervisor 1), Sanggari a/p Krishnan (Supervisor 2), Ahmad Ridzuan Samsudin (Help Counselling Center), Wilson Wong (Malaysia Counselling Center), Syed Anuar Bin Syed Ali (Positive Counselling Center), and Yeoh Guan Jin (Psychological Health Concern).

We are deeply grateful to our parents for their warm and sweet encouragement as well as their understanding. Besides, we must give special thanks to several friends whose continuous support and wise counsel that we value and appreciate immeasurably: Chong Pei Yee, Tan Sheng Shan, Lee Jing Yean, and Tan Man Ting who gave us solid moral support. Also, we appreciated our participants having their time to complete the survey so that we were able to carry out this study.

To every one of you, we thank you. This thesis has been completed by having all your efforts and contributions.

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DECLARATION

We declare that the material contained in this paper is the end result of our own work and that due acknowledgement has been given in the bibliography and references to ALL sources be they printed, electronic or personal.

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PREDICTORS OF DIGITAL AMNESIA AND PRODUCTIVITY

APPROVAL FORM

This research paper attached hereto, entitled “Digital Technology Overuse as a Predictor of Digital Amnesia and Productivity” prepared and submitted by” Chiew Ooi Yan, Liew Wen Xin, Lai An Qi” in partial fulfillment of the requirements for the Bachelor of Social Science (Hons) Psychology is hereby accepted.

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Abstract

Currents Malaysian young adults are the most prominent group for the future of developing individual contribution to society. They are the most interactive group on using digital technology. In this case, we found that there is more remarkable digital technology overuse. The present study is required to examine the relationship between digital technology overuse and digital amnesia and productivity. Moreover, also a study about whether digital technology overuse does significantly predict digital amnesia. On the other hand, the current study also sought whether digital technology overuse significantly predicted low productivity. Overall, the present study is mainly targeted at young adults in Malaysia. The instruments included in this research study are Digital Addiction Scale (DAS), Everyday Memory Questionnaire-Revised (EMQ-R) and Work Productivity and Activity Impairment: Specific Health Problem (WPAI-SHP). In this study, 121 participants were required to use convenience sampling through an online survey spread across various social media platforms. The data collection will be applied on Qualtrics online platform. Besides, the proposed statistical analysis is Simple linear regression. The results found that it is significant between digital technology overuse and digital amnesia. However, digital technology overuse is not significant with productivity. Furthermore, the results revealed that digital technology overuse is negatively significantly predicted digital amnesia. Nonetheless, there is no significant predicted low in productivity when digital technology overuse. Theoretically, the present research has committed to the latest results of the past literature, especially on Malaysian young adults. Hence, it was looked upon as limited. Besides, the practical contribution of the present finding should be beneficial in mental health and non-governmental parties. Thus, it enables them to devise related activities and modules to assist young adults in Malaysia who face excessive use of digital technology.

Keywords: digital technology overuse, digital amnesia, productivity, young adults

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List of Abbreviations

ADHD	Attention Deficit Hyperactivity Disorder
PSIMA	Persatuan Psikologi Malaysia
PERMA	Positive emotion, Engagement, Relationships, Meaning and Accomplishments
ACCEPTS	Activities, Contributing, Comparison, Emotion, Pushing away, Thought and Sensation
COVID-19	Conorairus Disease
DAS	Digital Addiction Scale
EMQ-R	Everyday Memory Question – Revised
WPAI-SHP	Work Productivity and Activity Impairment – Specific Health Problem
UTAR	Universiti Tunku Abdul Rahman

Chapter I

Introduction

Background of Study

Over the past decade, the development of digital technology has been wholly transforming every virtual element in today's society. For instance, digital devices like smartphones, tablets, laptops, desktops, smart TV, and smartwatches are all other digitally equipped technological devices. Whereas applicable for economic transactions, knowledge gathering, social networking, innovative digital products, art & culture, interpersonal relationships, internet services and general information (Kesici & Tunc, 2018b). Rowan (2010) stated that technology's intrusion in human lives is affected rapidly along with force. Hence, there will be little time left to decide ways to adapt to the profound changes digital technology happens in our lives. It is because digital technology can ease a person's life by saving time, having relaxation, quick information access, and making an instant transfer. Indeed, society slowly accepted digital devices and adapted them due to the conveniences they used commonly anywhere they wanted from home to the workplace (Temel et al., 2014).

On the other hand, new digital technology cannot survive without the Internet and social media. They do play a significant role in today's societal standards. According to Willson (2017), the algorithmic selection in an application plays a vital role in personalising information that brings endless information. Such as suggestions for the latest post, website, news feed and entertainment content. Also, notify for the recent activities or events and messages. As a result, people experience digital overuse due to their online and offline lifestyle, which makes them overburdened to balance out usage between the Internet and social pressure. They could access anywhere and anytime 24-7 (Buchi et al., 2019; Duke & Montag, 2017a).

Based, Midia (2019) estimated that people's average time spent on digital entertainment is about 4.5 hours daily. Besides, on the internet survey conducted in 2016 stated by the Malaysian Communications and Multimedia Commission (2016), the dependency on digital technology and entertainment consisted of 80 percent of internet users are through the smartphone. For example, they connected to their social platforms like YouTube, Facebook, Instagram, and WeChat. A 2017 study by MCMC Internet Survey found that young adults aged 15 to 30 are the highest among all age groups at 50.7 percent. Hence, the Internet's power does play a very cuticles role in the accessibility of the sources through intelligent devices from digital technology (Ofcom Report, 2011). In an endless supply of information and entertainment, the individual will be aware of the time passed when using electronic devices.

Moreover, it damages a person's concentration abilities, cognitive skills, relationships, friends or families and the development of brains and health (Firth et al., 2019). In other words, the overuse of digital technology may lead to digital amnesia and affect the loss of productivity in a person. Therefore, in this present study, a survey will be conducted among young adults in Malaysia to understand how digital overuse would predict digital amnesia and productivity.

Problem Statement

Digital amnesia is the growth of human memory threat due to the overuse of technology introduced in Dublin in 2007 (O'Gorman, 2015). In other words, people who stored information on digital devices have higher chances of forgetting about it (Sparrow et al., 2011). According to Kaspersky (2015), more than half of the consumers use smartphones to jot down the notes, record, and store information they need to memories at 53 percent. Simultaneously, other popular digital methods reinforced memory, such as sending emails or texts at 30 percent and writing on the online calendar at 32 percent. In comparison, one of the fifth respondents depends on their

memories when necessary, 21 percent. Hence, people think it is convenient and reliable for the information to remember. All they must do is save it in the devices, and the device will recall everything. For instance, keep the phone number on the device's phone book and special events like birthdays or select dates on a reminder note.

Furthermore, digital technology overuse may affect individual productivity as they have been distracted by workflow achievement (Montag & Walla, 2016). Csikszentmihalyi & Csikszentmihalyi (1992) mentioned that flow happens when an individual in a situation or environment fully immersed in certain events or activities space out and forget about time even as becoming very productive. To achieve the state of flow must complete these two points: the present situation must be about the individual ability and difficulty level. On the other hand, digital technology plays a crucial role in achieving flow without distraction (Csikszentmihalyi, 1999; Alton et al., 2014). In this case, past research results showed a slight disruption from the participants at 2.8s for the flow of concentration. While the rise of errors in the cognitive task of sequence-based (Alton et al., 2014). In other words, digital technology, along with acoustic and visual signals alarming the individual due to the incoming messages such as an interrupter from social media (Rennecker & Godwin, 2005). Hence, there is the ability to hinder flow experience besides the associated negative impact on productivity. Also, there is a possibility of further achieving the state of flow by using digital technology in the work environment to stabilise task-related productivity further.

Subsequently, whether digital technology overuse is the general and broad latent wonder that happens the Internet as daily use overcomes the standard of an individual or the personal optimum that is imprecise. Therefore, this study mainly focuses on digital technology overuse as the predictor of digital amnesia and productivity among Malaysian young adults.

Significance of Study

Since digital technology has become the daily-use item that individuals nationwide require, many issues need the user's attention from the digital technology had raised (Oberst et al., 2017). This study aims to determine whether digital technology overuse will influence individuals' digital amnesia and productivity among young adults in Malaysia. For example, daily forgetfulness will bring out discussion between that person and their family and friends whether this kind of situation is normal or abnormal (Van der Werf & Vos, 2011). Memory slips are frustrating, annoying, and troublesome (Pendick, 2020). People may not be able to recall the latest events. It will affect people's daily life. As an example, Lisa forgets to bring her home key and out for work. After work, she cannot get into her house and needs people to help her unlock the door.

According to Franssila et al. (2014), the overuse and dependence on digital technology may harm the ability to concentrate, increasing forgetfulness, and affect work problem-solving effectiveness. Additionally, digital technology such as smartphones will harm people as people overuse digital technology for a long time although they need sleep. This situation makes people unfit to work for many hours during the day (Assiri, 2016). In other words, people who use a smartphone for a long time will reduce their productivity. This will affect people's productivity as people are low in problem-solving skills and high in forgetfulness.

Therefore, this study wants to bring awareness that digital amnesia and productivity may negatively impact their daily lives. Besides, provide support for this group of young adults to overcome future issues while enjoying the advantages of technology. Meanwhile, the rapidly old age population worldwide must prevent and prepare when the occurrence of a disaster in this group of a young generation grows old.

Research Objectives

1. To identify the relationship between digital technology overuse and digital amnesia among young adults in Malaysia.
2. To identify the relationship between digital technology overuse and productivity among young adults in Malaysia.
3. To examine does digital technology overuse predict digital amnesia among young adults in Malaysia
4. To examine does digital technology overuse predict productivity among young adults in Malaysia

Research Questions

1. Is there any significant relationship between digital technology overuse and digital amnesia among young adults in Malaysia?
2. Is there any significant relationship between digital technology overuse and the productivity of young adults in Malaysia?
3. Does digital technology overuse significantly predict digital amnesia among young adults in Malaysia?
4. Does digital technology overuse significantly predict productivity among young adults in Malaysia?

Hypotheses

1. H_0 : There is no significant relationship between digital technology overuse and digital amnesia among young adults in Malaysia.
 H_1 : There is a significant relationship between digital technology overuse and digital amnesia among young adults in Malaysia.

2. H₀: There is no significant relationship between digital technology overuse and the productivity of young adults in Malaysia.
H₁: There is a significant relationship between digital technology overuse and the productivity of young adults in Malaysia.

3. H₀: Digital technology overuse not significantly predicts digital amnesia among young adults in Malaysia.
H₁: Digital technology overuse significantly predicts digital amnesia among young adults in Malaysia.

4. H₀: Digital technology overuse not significantly predicted low productivity among young adults in Malaysia.
H₁: Digital technology overuse significantly predicted low productivity among young adults in Malaysia.

Conceptual Definition

Digital technology overuse. A widespread potential phenomenon occurs when daily internet use exceeds personal standards or a sense of ambiguity about the best of individuals. This perception spans different areas of life, gadgets, and applications. Therefore, it can be view as a cumulative abstract result of the interaction between particular utilisation patterns and technology advancements (Büchi et al., 2019). According to Montag and Elhai (2020), overuse of digital technology has a negative impact, such as consuming savage media substances or suffering from cyberbullying.

Digital amnesia. It is changing memory due to the rapid transformation of digital technology. As well, enabling people today not to remember the information because of the trust

on their smartphones, such as phone numbers, passwords, appointment schedules and many more to remember and store the data (Greenwood & Quinn, 2017). Thus, it led to the threat of human memory dependency on digital technology. Besides, the maintenance of information shows memory decline. In other words, the cognition ability in the human will slowly experience rust. However, it can increase recalling the information stored in digital devices (Kaspersky Labs, 2016a). Therefore, digital amnesia is known as forgetting details as there is the trust of the smart devices to store and remember (Kaspersky Lab, 2015).

Productivity. The rate at which a person produces goods or services, and the number produced, compared with how much work, time and money needed to form them (Oxford University Press, n.d.). In other contexts, productivity refers to the capability of a person, organisation, or team to work efficiently in a period to maximise output (Psychology Today, n.d.). In other words, it refers to how effectively a person can finish his or her work or academy task given.

Young adults. In Malaysia, young adults known as those fall between 15 to 30 years old (Yunus & Landau, 2019).

Operational Definition

Digital technology overuse. The scale used to measure is the adapting Digital Addiction Scale: DAS of overuse and dependency (Kesici & Fidan Tunç, 2018a). The scale is to conclusive the level of digital technology overuse among young adults. The scale included 8-items was used in this adapted study to measure digital technology overuse. The sub- dimension of overuse consists of 5-items, and dependency has 3-items. The higher score, the higher the level of digital technology overuse.

Digital amnesia. The scale used to measure is the Everyday Memory Questionnaire-Revised: EMQ-R (Royle & Lincoln, 2008). The scale aims to measure subjective memory failure in daily life. The questionnaire first developed 28-items, but after that, the questionnaire decreased to 13-items and changed the name to EMQ-R because of further research with retrieval factors and attentional tracking factors that stand strong reliability.

Productivity. The scale used to measure is the Work Productivity and Activity Impairment Questionnaire-Specific Health Problem: WPAI-SHP (Ciconelli et al., 2006). The scale was developed to determine how an individual's productivity is affected by their conditions. There are 6-items in the scales and it calculates the percentages of impairment with higher scoring, the more damage and decreases of productivity.

Chapter II

Literature Review

This literature reviews the relationship between digital technology overuse, digital amnesia, and productivity related to the past studies. This chapter, digital technology, known as innovative technology, consisted of various benefits, especially for today's young adults living in contemporary society. For instance, smartphones, computers, tablets, smart TV, smartwatch, and many other intelligent appliances liven up individuals and society (Rasi et al., 2020). Past studies show that digital technology overuse is the cause of excessive individual usage of electronic devices. That resulted in worry from the adults towards young people regarding mental health and the wellbeing of their daily activities (Dirin et al., 2019).

Moreover, excessive use of digital technology is essential to prevent the risk of having a normative top-down perception. In this case, Rasi et al. (2020) found that an average young adult spends on digital technology, a smartphone, for more than four hours. Some research found that people who overuse their digital technology are likely to have an interruption in their daily activities, especially when over texting and time spent on the Internet (Bhattacharyya, 2017; Dirin et al., 2019). Therefore, digital overuse has become an evolving social issue as it is a lack in undoing but much more common (Gui & Büchi, 2019). In other words, young adults are enthusiastic about exploring the latest digital technology, which is more likely to be problematic (Hussain et al., 2017; Yu & Sussman, 2020).

According to Annie Dayani Ahad Abdullah and Muhammad Anshari (2017), innovative technology significantly impacts young adults' lives. Moreover, it leads to mentally exhausting experiences and raises attention, concentration, memory, and learning. Thus, require more time and a more remarkable chance to make a mistake when carrying out activities. Thus, the rapid

changes in technology show that the use of digital devices also transformed drastically. The omnipresence and necessity of digital technology use reason to assume that the resulting digital technology overuse contributes to individual digital amnesia and reduction in productivity.

Digital technology overuse and digital amnesia

Small et al. (2020) emerging scientific evidence shows the effect of constant digital technology use on brain function and behaviour. The study has indicated few potential negative impacts of digital technology in decreased attention, impaired social intelligence and emotional, technology addiction, social isolation, poor impact on cognitive and brain development, and poor sleep quality. The overuse of digital technology interferes with emotional and social intelligence, increases attention deficit hyperactivity disorder (ADHD) symptoms, and interferes with brain development, addictive behaviour symptoms of excessive use of digital technology, and sleep quality indicated in this study. The study found out that digital screen exposure will harm people's sleep quality, negatively impacting people's cognition and behaviour. The study states that bad sleep quality will, along with brain changes, increase the risk for age-associated cognitive impairment, decreased functional connectivity like digital amnesia as well as Alzheimer disease. Hence, technology is not only part of the changes in people's lives. Moreover, changing how people remember and recall information.

Based on Hoehe and Thibaut conducted a study (2020), emerging evidence that digital technology will affect the human brain and behaviour positively and negatively. The researchers mention that the memory process will influence the overuse of digital technology. Indeed, all-time reachable online information will change the way people store, recall, retrieve and value knowledge. Digital amnesia is known as the process of forgetting information that an individual does not need and trust towards the digital devices as their storage and reminder (Kaspersky Lab,

2015; Lodha, 2019). Nevertheless, some past studies like Kaspersky Lab (2016b) & Mills (2014) illustrate that simply forgetting is unproblematic due to the appearance when an individual is excessively dependent on information from the external that is personally related to their lives. For example, transforming memories into photos and posting them to social media as the storage to look back. Another enables information mistaken from memory is a type of symptom that are huge issues with losing memories and forming an imbalance in the brain. This is due to the individual's excessive dependence that leads to digital technology overload resulting more towards the left side of the brain at the expense of the right brain. Hence the right side of the brain is for memory and concentration. Therefore, past studies like O'Gorman (2015) & Lodha (2019) found that overuse of digital technology would threaten people's memory, such as the symptoms of digital amnesia.

In addition, Sparrow et al. (2011) & Wilmer et al. (2017) demonstrated that the power and flexibility of the digital devices in a click away encourage the perception and habit of looking out for information online automatically without putting in any effort to recall before it. Able to prevent an individual from building up long-term memory. Thus, these studies prove that digital technology overuse is significant to digital amnesia. It resulted in people aged 45 and above having this habit and perception to retrieve information on any device and replace autobiographical memory (Kaspersky Lab, 2015). Previous research by Sparrow et al. (2011) found that individuals will also take advantage of receiving information whenever they want through the Internet, making them have lower chances to remember the fact. Nevertheless, better in remembering how to access that information is called the "Google Effect". Also, wondering that humans are more symbiotic towards digital technology. At the same time, deterioration in remembering such details and contributing to memory enables the details to be found. Further,

the term evolved in some research studies known as digital amnesia. For example, Kaspersky Lab (2015) indicates that the expectation of having later access to details allows an individual less likely to encode and store the details in the long-term memory. This is why some of the recent researchers specified that digital amnesia is when an individual is in a blank state towards information that used to believe in the digital devices to store and remember.

Furthermore, Amorim et al., (2018) found that an adult's incremental usage of digital devices, especially smartphones, will be shorter in duration and lack efficiency in sleeping. In this manner, digital technology such as smartphones, television, social media, computers, and eBooks if overused will affect people's memory. Multitasking is familiar thanks to widespread technology use. When using digital technology, multitasking will influence people's memory (Schoor et al., 2015). Digital multitasking refers to concurrently engaging in two or more digital technology types or using digital technology when engaging with non-media activities (Jeong & Hwang, 2012) for instance, talking on the phone while watching television or reading novels or listening to music. Besides, it negatively affected media multitasking and performance in some cognitive domains such as working memory, long-term memory, relational reasoning, and sustained attention (Uncapher & Wagner, 2018). The data of the study reveal lower working memory performance with media multitasking. In other words, media multitasking will harm human memory.

Moreover, some studies found that excessive use of digital technology is significantly predicted to digital amnesia when people do not get anxious about memorising the information due to the connection with their trustable devices (Kaspersky Lab, 2015; Wimber et al., 2015). Besides, Bhattacharyya (2017); Kaspersky Lab (2015), Kaspersky Lab (2016b) & Mills (2014) found that women and young people below 35 years old have as a phenomenon higher chances

to experience immense distress when experiencing data loss on digital devices and smartphones. Hence, it shows that researchers believe stress and overuse of digital technology, especially smartphones, are one reason that can cause amnesia or memory adversely in humans. Consequently, it is a threat that is always recording information on the mobile devices, leading people, particularly young adults, less likely to transfer information in long term memory and may cause disruption from encoding the information in the exact ways (Wimber et al., 2015). On the contrary, Kaspersky Lab (2015); Sparrow et al. (2011); Swaminathan (2020) mentioned that digital amnesia with the expectation of later exposure to information enables an individual to better encoding and storing in long term memory. Indeed, digital amnesia is labelled as the "Google effect". Besides, some research does not precisely discuss the issues related to digital technology like smartphones and excessive use (Bianchi & Phillips, 2005; Billieux et al., 2008; Kwon et al., 2013; Lee et al., 2014b).

Concurrently, some studies somehow retain access to the boundless database where the information can improve cognition. Whereas many about how fast the technology changes in terms of scene affect one's life (Frith & Kalin, 2015; Humphreys & Liao, 2011; Kuhn, 2010; Pentzold & Sommer, 2011; Özkul and Humphreys, 2015). Correspondingly, Lodha (2019) highlighted the availability of literature about digital amnesia more on disadvantages than advantages. Such as ways of people have been, memories and with whom they have interacted. Hence, the procedure that is the absence of security is to prevent the information which has been saved in digital devices and lurking risk of behaviour addiction. Therefore, the adversity of the growing circumstances in digital amnesia is essential to take notes.

Digital technology overuse and productivity

The advancement and conveniences of today's digital technology and the Internet enable one's life to be much more productive, for example, with just one clickable to make communication, latest information or complete a booking. On the other hand, the excessive usage of digital technology can be the possibility of the massive value of features and tools accessible on such devices as tablets, laptops, and smartphones. It can result in overabundance in productivity, time, and material (Arnd-Caddigan, 2015; Lee, 2017; Ward et al., 2017). According to Csikszentmihalyi and Csikszentmihalyi (1992), productivity is part of the state of flow. In other words, an individual was fully immersed in the task while forgetting the time and space. In this case, an individual can complete the task on time without any distractions like notifications from intelligent devices and procrastinating on social media. Some studies have indicated that digital technology in an organisation has good communication, workflow, and flexibility to access the information, whether internally or externally (Harmon & Demirkan, 2011; Lu et al., 2015; Stieglitz & Brockmann, 2012). Also, researchers mentioned that the usage of digital technologies increases employee productivity, job satisfaction, and efficacy (Chang et al., 2013; Lu et al., 2015).

Researchers highlighted that 95 percent of the digital devices used by university students are smartphones (Fu et al., 2020). This group of youth gives in to greater cognitive loads at a specific time for evolution and study. Based on Sophia & Radhakrishnan (2017) wrote that students usually used such digital technology for browsing, reading, taking notes and downloading academic resources. Other than that, university students are also used for social media checking, surfing the Internet, and communicating using messenger's applications, even having classes (Ataş & Çelik, 2019). This resulted in most from past studies stating that excessive use of digital technology such as smartphones will affect the students' academic

performance, incredibly stimulating their health issues (Media Use in School-Aged Children and Adolescents, 2016; Fu et al., 2020; Yu & Sussman, 2020). Because sleep plays a vital role in the student's memory and concentration during learning moments, some of the past studies show that excessive usage of digital technology may lead to digital burnout and make people less productive, such as students' academic productivity, when there is interruption while studying. Thus, it leads the students to take a longer time to study the material and increase stress (Hubbard, 2014; Rosen & Samuel, 2015).

Moreover, researchers found that young adults are the most vulnerable groups with the highest usage of digital devices known as smartphones (Bentley et al., 2015; Yu & Sussman, 2020). The excessive usage of digital technology will lead to physical, mental, sleep and social disturbances issues like technostress (De-Sola Gutiérrez et al., 2016; Hung et al., 2011). In this case, the task demands require individuals to excel in social, cognitive, and physical skills related to psychological cost. Studies showing the significant impact between the tasks given causes stress due to excessive usage of technology and directly affect individual productivity. In which the validation of the contrary association of technostress as of digital devices communication on quality of life and employee productivity (Lee et al., 2016). As well, task productivity regulates as the reference of productivity. It is also referred to as the extent that an application improves the user's output per unit of time (Torkzadeh & Doll, 1999). Previous studies highlighted a long-term negative effect of continuous connection usage of digital technology shown to be low in the level of productivity and the engagement of work and leisure (Rosen & Samuel, 2015).

In addition, Karr-Wisniewski & Lu (2010) found that digital technology overuse is significant predicted productivity. It demonstrates that excessive individual usage of digital technology in an organisation to access more information for completing the tasks will result in a

loss in productivity. This research mainly focused on the three related functions, which are not associated with the technology itself but individual usage of digital technology. These functions influence technology-based productivity losses through the overuse of such information, communication, and system features. Moreover, there was more significant productivity loss through communication from the knowledge worker, which is consistent with the evidence found in the past studies. Eighty percent of participants at the ages of 26 and 50 years old participated in this study; meanwhile, forty eight percent are female, and fifty two percent are male. In this case, the participants who work for eight hours daily reported an average of 6.44 hours spent with the computers. Indeed, the Yerkes–Dodson law was applied in this study known as inverted U-shaped association between performance and arousal consisting of such stress, anxiety and more and performance. Yerkes & Dodson (1908) indicate that there is an optimal arousal level for the given task. Then, Rennecker & Godwin (2005) has defined the interruption of work as "asynchronous interaction that the recipient does not begin, is not scheduled and results in the recipient stopping their present activity". In this case, the knowledge workers are likely interrupted almost every three minutes. This is because of the explosion of communication through digital technology. For example, messengers, email, calls and other interruptions, despite the fact it takes an individual work for almost eight minutes without distraction to reform the productivity thought (Fried, 2005). As a result, the relationship between overuse of digital technology and productivity were significant and strong. Consequently, the lower level of productivity is due to the greater level of digital technology overuse.

On top of that, Zhang & Rau (2016) stated that technology is one of the primary sources of multitasking. However, it is not always successful in proving that technology is multitasking. Notably, when an individual must be in the mode of switching tasks that lead to progress such as

the next chore, loss in time, particularly towards complicated or unskilled tasks (Rennecker & Godwin, 2005). Hence, most studies prove the interruptions are disturbing (Jackson et al., 2001) and less likely greater productivity (Mano & Mesch, 2010). For this reason, information overuse due to usage of digital technology has an inverted U- shaped relationship with performance (Yin et al., 2018). Besides, the usage of digital technology for communication has developed into an unpredictable concern that improves individual task performance. This happens when the communication decreases in the form of delay and instantaneously raises interruption on their work productivity, causing increased usage of digital technology (Rennecker & Godwin, 2005). Nevertheless, a finding explains that the greater the level of disruption does lower individual productivity (Yin et al., 2018). Also, continuous connection usage of digital technology for communication can motivate an individual engagement in the latest work approaches that might be productive (Wajcman & Rose, 2011). Thus, technology overuse in the workplace is one of the reasons for the increase in innovation and effectiveness (Tarafdar, Cooper, & Stich, 2019). As well, having better productivity in the knowledge of work (Palvalin et al., 2013). Overall, the distraction from digital technology towards work performance is increased and decreased.

Furthermore, digital technology overuse like smartphones is always connected to result like loss of productivity because of the distraction and time distortion just by merely hearing the notification sound or vibration (Montag et al., 2015a; Stothart et al., 2015). Besides, most everyday life problems due to smartphone use are forming into a habit (Oulasvirta, 2012). Notably, ordinary people will check on their smartphones every 18 minutes (Markowitz, 2015) and the first five minutes before and after going to sleep (Montag et al., 2015b) even though they are busy with current work. Hence, the distraction affected individual work productivity the minute carried in the mid of other tasks (Iqbal & Horvitz, 2010; Leiva et al., 2012; Pielot &

Rello, 2015; Stothart et al., 2015), and it will begin more apparent when the task is cognitively demanding (Mark et al., 2015). Pielot et al., (2014) prove that the distraction causes low work productivity by digital technology of excessive usage of mobile phones, other than in the public environment. It could also be said, these studies have found that there is a negative prediction on productivity when digital technology overuse. The German publication supported the concept of inverted U-function that connected smartphones and product usage, indicating that the right amount of digital technology or smartphone could make an individual more productive (Montag, 2016). Therefore, overuse could affect work productivity for instance, counterproductive when digital technology is overused.

Correspondingly, the issues of digital technology overload became obvious and crucial that young adults are not really into such attention by stealing mechanisms as the past studies indicated that after the interruption from an event, average takes about 25 minutes for an individual to achieve full productivity (Mark et al., 2005; Mark et al., 2008; Iqbal et al., 2018). From what we have found, young adults are likely to spend most of their time on digital technology to complete their daily tasks for work or private. Therefore, it is part of their daily problem solver and enables them to boost productivity. Even though digital technology frequently experiences a general sense of overuse. There is a gap in research on its predictor in generalising task productivity, such as work or academic and private life. The Pew Research Center (2015) studies highlighted that some participants are not full-time employees and are likely to use smartphones at work over their learning time (Smith, 2015). This resulted in the excessive use of digital technology, especially smartphones, to cause lower productivity levels, always hypothesised, but the empirical evidence on such elements is limited Duke and Montag (2017b). Also, a moderate relationship between smartphone addiction is the premise from

excessive use (Greenfield, 2012; Lee et al., 2014a) and the self-reported decline in productivity. The reason for smartphone use during working hours and the subsequent forfeiture of work hours for using it. The study also pointed out the negative relationship between usage of digital technology of smartphones and negative impact on an individual's personal life. Also, it suggests that digital technology, especially smartphone users, will face the effect negatively on an individual at work-related and non-work-related productivity.

Theoretical Framework

Transactive Memory Theory

According to past studies, people today face digital amnesia as they excessively rely upon and trust in their digital technology, especially smartphones. In fact, that the life history today is something commented on in memory is transforming. Thus, the Transactive Memory Theory from Wegner is effective and efficient in identifying the behaviour of an individual in sharing their memory with people who are close and has long been carried on (Wegner et al., 1991). Conversely, this theory believes that people in today's society cannot remember everything, which results in the urge to store their memory on digital devices. Besides, people rely significantly on digital devices, which will affect them from excessive digital technology use and memory decline. In this case, participants who are trustable to store data in their computer have higher chances to experience memory loss compared with participants who are not (Sparrow et al., 2011). In other words, forgetfulness happens as an individual significantly relies on and believes in storing the information on digital devices. Transactive Memory Theory is essential for this study. It enables the present studies to determine excessive use of technology due to trust and relies on digital devices affected by digital amnesia.

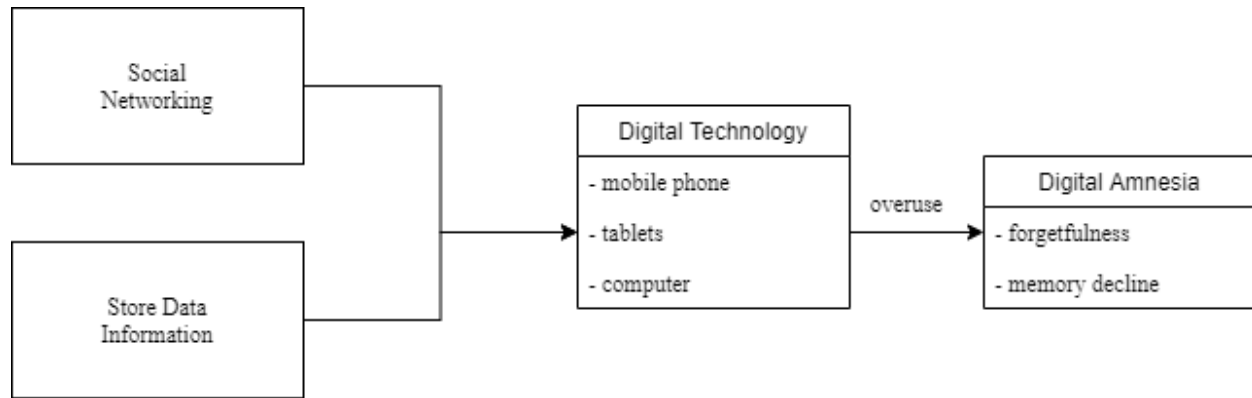


Figure 2.1: Theoretical framework of Transactive Memory Theory

Inverted U-function

Inverted U-function is also known as the Yerkes-Dodson law, where there is a connection between the alteration in motivation and arousal (Teigen, 1994). The previous study used inverted U-function to comprehensive digital technology has become part of our life and plays a vital role in completing the task productively. However, from a German Publication, Montag (2015c) drew that an Inverted U-function between digital devices usage such as smartphones will affect individual productivity towards their task performance. In other words, it may affect one productivity performance when excessive usage on digital devices. For instance, Montag & Walla (2016) emphasised a relationship between the phenomena of excessive usage of digital technology such as smartphones and productivity through inverted U-function. The fact that numerous aspects influenced young adults task productivity performed whether it is in the form of work or academic (Palvalin et al., 2013; Rosen & Samuel, 2015; Tarafdar et al., 2011; Upadhyaya & Vrinda, 2020).

Furthermore, this theory shows that digital devices enable people to work productively; however, overuse of digital devices could happen. Besides, when an individual is overwhelmed with multiple tasks such as replying to emails, calls, and other applications like messenger while

completing current tasks. In figure 2.2 show that the left side curves are low in digital use and the centre is an average level of digital use. Hence, the right sides of the curves are high in digital use, known as overuse of digital devices. Besides, vertical lines on the left side from low productivity levels at the bottom to the top peak are high in productivity. Therefore, at the centre of the curve is an optimal level of digital devices usages and productivity. Thus, through inverted U-function, theorised that the productivity gain in performing would also increase when digital devices usage increases. It shows that individuals have sufficient time to complete the task efficiently. Nevertheless, productivity gain would decrease to the point of becoming counterproductive; subsequently, it only works until surpassing an optimum level usage of digital devices. In this sense, the right amount of using digital devices will have better productivity. Nevertheless, excessive use of digital devices will result in negativity in productivity. Due to the constant distraction from other tasks or psychological health, they were leading to experience low productivity when the digital devices overuse (Browning et al., 2021; Hassan et al., 2021; Sarabadani et al., 2018).

Moreover, there is not much time spent on completing multiple tasks at once through digital devices, which are not necessary yet is a waste. In this case, when an individual, like young adults, is trying to complete their task for academics or work, they need to pay attention, especially towards complex processes. The literature found that flow will only occur when a person is fully immersed in a task without knowing the time and space and deep concentration level with positive emotion accompanying the flow (Csikszentmihalyi & Csikszentmihalyi, 1991; Csikszentmihalyi & LeFevre, 1989). Hence, the flow will never happen when there is always interruption while completing the current task. Therefore, individuals placed in a situation constantly distracted will have higher chances to experience poor productivity and

continuously spend time on digital devices. For instance, every incoming messenger or email from the assignment mate or co-workers will notify at the screen corners of the digital devices that carry individuals away and increase usages in digital devices. Overall, inverted U-function allows present studies to determine the extent digital technology overuse is to which productivity.

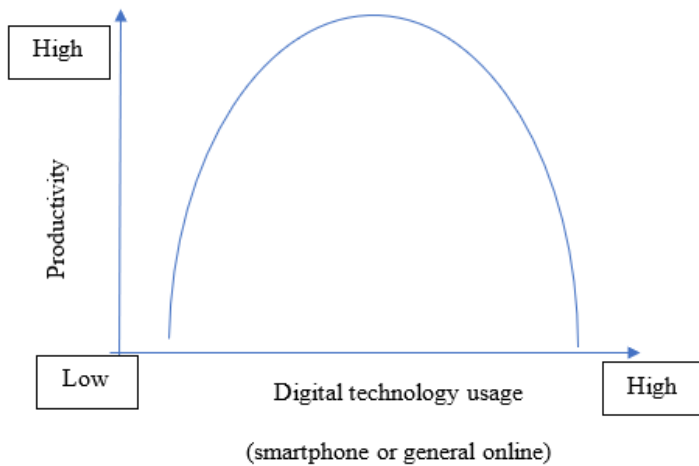


Figure 2.2: Theoretical framework of Inverted U-function

Conceptual Framework

The present studies consist of one independent variable and two dependent variables in the study: digital technology overuse, digital amnesia, and productivity. The strength and direction associations are the reason for current research. Moreover, the independent variable is used to identify the relationship and predict digital amnesia or productivity. Also, to identify whether digital technology overuse is the best predictor predicting digital amnesia or productivity in simple linear regression.

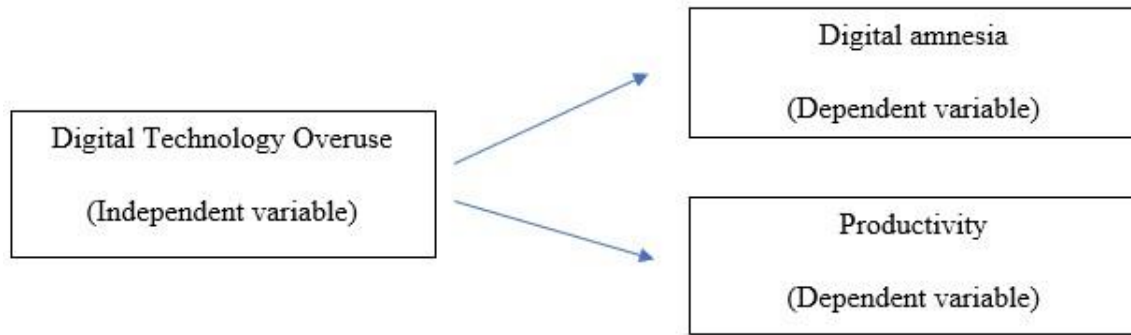


Figure 2.3: The conceptual framework of “Digital technology overuse as the predictor of digital amnesia and productivity among adults in Malaysia”.

Chapter III

Methodology

Research Design

The study survey research is quantitative. Quantitative research is preferred for this study since it collects the sample in randomized that prevent the data to become bias, it is also able to focus the information of the problem. A cross-sectional survey design is selected as the study survey research design to explore the relationship between digital amnesia, productivity, and digital technology overuse among young adults in Malaysia. The reason for choosing a cross-sectional survey as the research design is because it is time-saving and economical during the conduction (Wang & Cheng, 2020). Furthermore, this kind of research design will carry out accurate information or data about the prevalence of the result (Setia, 2016). The independent variable for this study is the overuse of digital technology, whereas the dependent variables are forgetfulness and productivity.

Research Sample

This study population involved young adults all over the Malaysian. According to Ahmad (2019), the young adult's population between 15 to 30 is nine million or about 28 percent. The reason for choosing young adults as the participants for the study is that young adults nowadays have a significant impact on the usage of digital technology during their daily lives (Annie & Anshari, 2017).

The convenience sampling method is used as the collection of data research. The reasons for choosing convenience sampling due to the costless sampling method, efficient to collect the data, and it is simple to implement. The targeted location that we choose for our participants to have

their free time to finish the questionnaire is going through the online survey using social media such as Facebook, Instagram, WhatsApp, Microsoft Team and other platforms (Etikan et al., 2016). The reason that we choose to have an online survey is due to the impact of COVID-19. The data collection will be more difficult than usual for safety reasons. Hence, participants will not be that willing to hang out in such a situation. In other words, it enables the collection of data from respondents who were pursuing studies or working at different locations or environments in a limited time instead of having physical visitation. Besides, the online survey provides a chance for participants all over the country. Thus, have an equal opportunity to join this study.

Research Location

Malaysia is divided as peninsular Malaysia and East Malaysia. There is a federation of 13 states in Malaysia which are Sabah, Sarawak, Kuala Lumpur, Negeri Sembilan, Perlis, Kelantan, Pahang, Perak, Kedah, Selangor, Johor, Penang, and Malacca (One World Nations Online, n.d.). Department of Statistics Malaysia (2020) show Malaysia's population was approximately 36.69 million. This study was mainly focus on young adult that reside at Malaysia as Kuala Lumpur, Negeri Sembilan, Perlis, Kelantan, Pahang, Perak, Kedah, Selangor, Johor, Penang, Malacca, Sabah, and Sarawak.

Instrumentation

The self-administered questionnaire consisted of four sections for the data collection. It consisted of three instruments which are the adapted Digital Addiction Scale (DAS), Everyday Memory Question – Revised (EMQ-R), and Work Productivity and Activity Impairment – Specific Health Problem (WPAI-SHP); all the instruments were reliable and validated. Besides that, four questions were created in the first section to collect demographic information for

participants. The participants are required to select their gender, age, ethnicity, religion, nationality, employment status and occupation.

Digital Addiction Scale (DAS)

This study adapted the Digital Addiction Scale (DAS) to conclude the level of digital technology overuse among young adults. There are 8-items that were adopted to measure digital technology overuse. The sub-dimension of overuse consists of 5-items, and dependency has 3-items to be measured using a five-point Likert-type. The participants are requested to rate from 1 “Totally Agree” to 5 “Totally Disagree”. For example, of the items is “While eating my meal, I am occupied with mobile phone, tablet, or computer”, “I continuously look at the digital devices (mobile phone or tablet) in a trip, picnic or social environments where I am with my friend”, and “That my digital are broken or get lost makes me anxious”. The overuse of digital technology was measured when the points were summed up and divided by the number of items. Hence, the higher the score, the higher the level of individuals overusing digital technology. The reliability calculated for the sub-dimensions consists of "overuse" is ($\alpha = 0.753$) while the reliability for the sub-dimension "dependence" is ($\alpha = 0.695$). Besides that, the criterion validity was stated as a significant and having positive relationship (Kesici & Fidan Tunç, 2018a).

Everyday Memory Questionnaire – Revised (EMQ-R)

The Everyday Memory Questionnaire-Revised (EMQ-R) is the subjective measure of memory failure in daily life leading to digital amnesia. The EMQ-R is to measure everyday memory composed of 13-items using a five-point Likert-type. The example of EMQ-R is “Having to check whether you have done something that you should have done”, “Completely forgetting to do things you said you would do, and things you planned to do” and “Repeating to

someone what you have just told them or asking someone the same question twice”. Participants requested to rate from 1 “Once or less in the last month” to 5 “Once or more in a day”. The everyday memory was measured when the points are being mean total by the number of items. The higher the score, the higher the memory failure in daily life. The reliability calculated which is ($\alpha = 0.92$), hence, it is validated for use (Royle & Lincoln, 2008).

Work Productivity and Activity Impairment: Specific Health Problem (WPAI-SHP)

Work Productivity and Activity Impairment: Specific Health Problem (WPAI-SHP) determines how an individual’s productivity is affected by their conditions. The WPAI-SHP is to measure the individual’s productivity with the composed of 6-items using percentage. The example of WPAI-SHP is “During the past seven days, how many hours did you miss from work because of any other reason, such as vacation, holidays, time off to participate in this study.”, and “During the past seven days, how many hours did you actually work?”. The participant is requested to answer the first four questions according to their situation and rate from 0 “Health problems did not affect my work” to 10 “Health problems completely prevented from working”. The individual’s productivity was measured when the points were multiplied by one hundred to express in percentages. The higher the scoring, the more the impairment and decreases of productivity. The reliability calculated, which is ($\alpha = 0.74$) (Ciconelli et al., 2006). This scale is valid to be use as a measurement tool because it provides significant positive relationship.

Research Procedure

Before the questionnaire was created, we received permission from the scale author for educational use with the name of the UTAR ethical committee. After that, the questionnaire will make through Qualtrics since the data collection is done through an online survey. The questionnaire's content will firstly be having the informed consent as the notification for the

participant to understand that they will be anonymous; they will stop the questionnaire anytime if they feel uncomfortable. It is voluntary to complete the online survey. The next step for the participants is to finish the questionnaire that separates into three parts which is the Digital Addiction Scale (DAS), Everyday Memory Questionnaire- Revised (EMQ-R), and Work Productivity and Activity Impairment – Specific Health Problem (WPAI-SHP). After the data had finished collected, SPSS was used to calculate data for the results.

Pilot Study

The pilot study was conducted to test whether the questionnaire has any typos and confuse the participants. It was shown to measure the reliability of the instruments for the study. There were 20 volunteers involved in the pilot study. Hence, all the feedback was collected as a correction for the questionnaire. For the pilot study of Digital Addiction Scale (DAS), the Cronbach's alpha is ($\alpha = 0.79$); meanwhile, the Cronbach's alpha of Everyday Memory Questionnaire – Revised (EMQ-R) is ($\alpha = 0.88$), and the Cronbach's alpha for the Work Productivity and Activity Impairment – Specific Health Problem (WPAI-SHP) is ($\alpha = 0.71$).

Data Analysis

The data will be analysed after the collection using SPSS. Besides, the descriptive statistics that include age, gender, ethnicity, and the total scores from DAS, EMQ-R, and WPAI-SHP will be present in the table form with mean and the standard deviation. In the inferential statistics, the Pearson Correlation Coefficient and Simple Linear Regression were adapted to obtain the statistical results among the variables. The Pearson Correlation analyses the correlation between digital technology overuse and digital amnesia and the correlation between digital technology overuse and productivity. The Simple Linear Regression is used to investigate

digital technology as the predictor of digital amnesia and productivity. thus, the significance level of ($p \leq .05$) use in the research.

According to Gupta et al. (2019), the normality test has proceeded to measure central tendency and the data analysis in the statistical methods. The skewness and kurtosis were also presented to correct both the small and large samples. The skewness measures the direction and degree of skewness in the distribution of statistical data and a numerical feature of the degree of asymmetry in the distribution of statistical data. For kurtosis is a statistic that describes the steepness of the distribution of all values in the population (Kim, 2013). If the values for skewness and kurtosis are both 0 and the z-score between 1.96, it can be considered the data is a normal distribution. Zubir et al. (2018) stated that the Q-Q plot is a scatter chart that corresponds to the normal distribution with the abscissa and the sample value as the ordinate. If the points on the Q-Q plot are approximately near the straight line, it identifies that the sample data is a normal distribution.

Chapter IV

Results

Data Cleaning

A total of 187 responses have been collected using Qualtrics. There is 1 response that was deleted because of the different nationalities, as this study was targeted at young adults in Malaysia. Besides that, 56 responses have been removed due to incomplete information such as age and the filling of the questionnaire. On the other hand, the age range in the current study was between 15 to 30. Hence, 9 responses were also removed due to the unfulfillment of the age. At the end of the filtering, a total number of 121 responses was left for the result calculation.

Descriptive Statistics

Table 5.1

Demographic information of participants (n = 121)

	<i>n</i>	<i>%</i>	<i>M</i>	<i>SD</i>
Ages			22.88	3.35
Sex				
Male	54	45		
Female	67	55		
Race				
Chinese	84	69.42		
Malay	20	16.53		
Indian	17	14.05		

Employment status

Employed	45	37.19
Unemployed	1	0.83
Student	75	61.98

Note. *n* = number of participants; % = percentage; *M* = mean; *SD* = standard deviation. Sample of 121 participants were from Malaysia.

The demographic information of participants was displayed in Table 2. This study consisted of 121 participants with an age range from 15 to 30 (*M*=22.88, *SD*=3.35). There were 67 females (55%) and 54 males (45%) participating in this study. Among the participants, the majority of them were Chinese (69.42%), followed by Malay (16.53%) and Indian (14.05%). In addition, 75 participants (61.98%) were students, 45 participants (37.19%) were employed and only one of the participants (0.83%) was unemployed.

Adjustment of Outliers

There was no outlier being adjusted as no significant outlier was identified in this study.

Normality

Table 5.2

Skewness and kurtosis for digital technology overuse, digital amnesia and productivity.

Variable	Skewness	Kurtosis
Digital Technology Overuses	0.64	0.66
Digital Amnesia	0.51	-0.54
Productivity	0.47	-0.62

Normality assumption were evaluated by Q-Q Plot. The distribution of the points of EMQ and WPAI were close to the reference lines (see Appendix B). The expected score is like the observed data score. The assumption of normality was met.

Besides, skewness and kurtosis were also applied to evaluate the normality. According to Gravetter and Wallnau (2017), acceptable range for skewness and kurtosis value is between -2 to +2, the statistic no exceeds the range will show the data is normally distributed. Table 5.2 shows both skewness and kurtosis value of the three variables that fall within the acceptable range.

Inferential Statistic

Relationship between Digital Technology Overuse, Digital Amnesia and Productivity

H₀: There is no significant relationship between digital technology overuse and the productivity of young adults in Malaysia.

H₁: There is a significant relationship between digital technology overuse and the productivity of young adults in Malaysia.

Table 5.3

Pearson Correlation among digital technology overuse, digital amnesia and productivity.

	1	2	3
1 Digital Technology Overuse	-		
2 Digital Amnesia	-0.19*	-	
3 Productivity	-0.17	0.44	-

*. Correlation is significant at the 0.05 level (2-tailed)

Pearson product moment correlation was conducted to identify the relationship between digital technology overuse and digital amnesia. The result shows that there is a negative significant relationship between digital technology overuse and digital amnesia, $r(121) = -0.19$, $p < 0.03$. The correlation coefficient has fallen between the range of 0.10 to 0.30 which is considered weak relationship according to Cohen's rule of thumb (Cohen, 1988). Therefore, there is a weak relationship between digital technology overuse and digital amnesia. While the significant level is $p < 0.05$ which is acknowledge as significant between the relationship of the variable. Hypothesis was supported.

H0: There is no significant relationship between digital technology overuse and the productivity of young adults in Malaysia.

H1: There is a significant relationship between digital technology overuse and the productivity of young adults in Malaysia.

Pearson product moment correlation was conducted to identify the relationship between digital technology overuse and productivity. The results show that there is no significant relationship between digital technology overuse and productivity, $r(121) = -0.17$, $p = 0.06$. While the significant level is $p = 0.06$ which is acknowledged as non-significant between the relationship of the variable. Therefore, the hypothesis was rejected.

Digital Technology Overuse and Digital Amnesia

H0: Digital technology overuse not significantly predicts digital amnesia among young adults in Malaysia.

H1: Digital technology overuse significantly predicts digital amnesia among young adults in Malaysia.

Table 5.4

Model summary of digital technology overuse and digital amnesia.

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	Durbin-Watson
1	0.19	0.04	0.03	11.88	1.29

Note. Predictor: (Constant), Digital technology overuse

Dependent variable: Digital amnesia

Table 5.5

ANOVA statistics between digital technology overuse and digital amnesia

Model	Sum of Square	df	Mean square	F	Sig
Regression	650.01	1	650.01	4.60	0.03
Residual	16801.69	119	141.20		
Total	17451.70	120			

Note. Predictor: (Constant), Digital technology overuse

Dependent variable: Digital amnesia

Table 5.6

Coefficient table of digital technology overuse in predicting digital amnesia.

Standardized Coefficients	95.0% Confidence Interval for β

Model	Beta	t	Sig.	Lower Bound	Upper Bound
(Constant)		10.28	0.00	31.34	46.29
Digital Technology Overuse	-0.19	-2.15	0.03	-0.88	-0.04

Note. Dependent variable: Digital amnesia

Simple linear regression was used to examine does digital technology overuse significantly predicted digital amnesia among young adults in Malaysia. The model was statistically significant, $F(1,119) = 4.60, p < 0.05$ and accounted for 3% of the variance. It was found that digital technology overuse significantly predicted digital amnesia ($\beta = -0.19, p < 0.05$). Digital technology overuse negatively predicted digital amnesia. Beside, 3% of productivity was explained by digital technology overuse. Therefore, hypothesis was supported.

Digital Technology Overuse and Productivity

H₀: Digital technology overuse not significantly predicted low productivity among young adults in Malaysia.

H₁: Digital technology overuse significantly predicted low productivity among young adults in Malaysia.

Table 5.7

ANOVA statistics between digital technology overuse and productivity.

Model	Sum of Square	df	Mean square	F	Sig
Regression	0.24	1	0.24	3.63	0.06
Residual	7.98	119	0.07		

Total	8.22	120
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Note. Predictor: (Constant), Digital technology overuse

Dependent variable: Productivity

Simple linear regression was used to examine does digital technology overuse significantly predicted low productivity among young adults in Malaysia. The result shows that the model was not statistically significant, $F(1,119) = 3.63$, $p = 0.6$.

Chapter V

Discussion

The relationship between digital technology overuse and digital amnesia among young adults in Malaysia.

The present study finding exhibited a significant negative correlation between digital technology overuse and digital amnesia. Overall, the results show that a higher level of digital technology overuse resulted in lower digital amnesia.

Besides, the current study findings tally with the previous study by Kaspersky Lab (2016b) & Small (2020) that clarified that excessive use of digital technology would lead to digital amnesia that will affect recall, concentration, and attention and other performances. Based on the past study results, it has been claimed that people who tend to rely on and frequently check on their digital devices to get their task done with such astonishing functions from the tools may cause them to feel advanced. However, without the digital devices which will disable them from specific disabilities to recall their memories or tasks should be done. This will decrease the ability to social interaction and daily functioning. Also, a previous study reported that average young adults use digital technology for more than four hours per day (Rasi et al., 2020). Because of the advancement of digital technology, young adults are attracted to the contribution of effortless and accessibility. In other words, these people can have accessibility anywhere and anytime without specifically remembering what they should do or essential details. It can be set on their digital devices, enabling them to be reminded and look through needed details without much effort and efficiency rather than storing them on their minds. Hence, this past study revealed

that digital technology overuse has a significant relation with digital amnesia (Kaspersky Lab, 2015).

Moreover, previous studies also presented similarly with the present study that digital technology is negatively significant to digital amnesia, especially in business. It does bring a vast impact to these groups of people. However, some studies found that digital devices overuse and low digital amnesia are trendy in learning as required for complex identification. Also, it affects their motivation and results in poor accomplishment due to high dependency on digital devices, which has weakened the student's mind and acting independently (Musa & Ishak, 2020). Consequently, the present study found that 38.02 percent are the highest selection by the young adults agree to have their meals with smart devices like mobile phones, tablets, or computers (see Appendix C). Correspondingly, they are also most likely one or less in a month of the 31.40 percent has the issues of forgetting the location of the items kept and continually searching at the incorrect places (see Appendix C). Besides, young adults need communication to support their development by connecting their digital devices to access information. For instance, young adults usually use Google to search for the needed information. For instance, these students spend time on social communication applications such as WhatsApp's, Trello, Wunderlist, My Study Life, and Microsoft Teams to keep them on top of their class and schedule to prevent forgotten details. Even though working young adults relate to digital devices to complete their tasks and keep updated with the latest news or knowledge; through one-click towards social communication or reminder applications like Facebook, email, Avaaz, Asana or Basecamp. For such issues of an individual, overused digital technology affected digital amnesia because of abuse, reliance, and addiction.

On the other hand, current study findings, supported by a past study based on Lodha (2019), indicated that the retention is weaker and more weak as the data is encoded and stored with fewer sensory inputs. Because an individual multisensory memory divides the senses such as auditory, sensation, vision, and other senses to store the relative data better. It has various digital encoding, which likely applies through the visual senses and sometimes auditory. Whereas this author illustrates that digital technology overuse due to addiction, such as on smartphones, there is a connection with digital amnesia stating that multitasking would lead to interruption resulting from the incapacity of the formation in long term memory and poorer memory. One of the reasons a person's circadian sleep cycle will also affect an individual decline of the synaptic pruning occurs and causes impairing the ability to retain the latest data and produce new memories (Coughlan, 2015). Thus, excessive use of digital technology is low in digital amnesia because interrupted sleep due to digital technology in an individual may also lead to having digital amnesia. Besides, it shows that overuse of digital technology could affect digital amnesia as many scientific reasons could result. Overall, digital technology overuse is significant to digital amnesia.

The relationship between digital technology overuse and productivity among young adults in Malaysia.

The current study found no significant relationship between digital technology overuse and productivity among young adults in Malaysia. One of the present research questions hypothesised a significant relationship between digital technology overuse and the productivity of young adults in Malaysia. Hence, the result was not supported by the claim that digital technology overuse exists in productivity. However, the result is inconsistent with past studies.

Furthermore, studies showed there is a significant difference between digital technology overuse and productivity. According to Karr-Wisniewski and Lu (2010), excessive use of digital technology was significantly low in individual productivity. This explained that such phenomena happened due to the overuse of such information, system features and communication. Like the present study, there is 40.50 percent in which almost half of the young adults in Malaysia reported that they agree on overuse the digital devices out of their purpose (see Appendix C); however, there is no significant found with productivity. Moreover, Buabbas et al. (2020) & Sarla (2019) found common health issues from digital technology overuse, such as damaged eyesight, bulging discs in the neck and back, carpal tunnel in the wrist and sleeping disorder. As well, imbalance of chemicals in the brain resulted in mental health like anxiety or depression. Thus, it does affect an individual's low work productivity and might decline in mental and physical health in daily task performance also high in absentees. In this case, the author found that digital technology overuse is significant to productivity.

In addition, it shows that the current study may not explain the productivity when excessive use of digital technology using the Inverted U-function (Montag, 2015c). The model stated that individual high usage of digital technology would increase productivity until it reaches the peak, leading to counterproductivity known as excessive use of digital technology. In other words, excessive use of productivity will decrease an individual productivity rate. This means that it is significant between digital technology overuse and digital amnesia. However, the present results show a p-value at 0.06, which is slightly higher than 0.05, that there is no significant difference between these two variables. Hence, it makes us curious whether most of the related studies were not in Malaysia. There are primarily studies about working adults and western culture (Ataş & Çelik, 2019; De-Sola Gutiérrez et al., 2016; Montag et al., 2015b). It

may be different from Malaysia culture and young adults' context of personal tasks and life productivity. Thus, it could result in differences in productivity when digital technology is overused. Moreover, different young adults may have different digital technology use at different needs and times as there is a variety of function availability (Kemp, 2020). Therefore, it may differ from Malaysian young adults define the level of excessive use of digital technology affecting their productivity.

On the other hand, Wood & Neal (2016) stated that every individual automatically continues behaviours caused by the ecological factors. Therefore, this could explain that young adults in Malaysia excessive use of digital technology are not significant to productivity; it may be due to the cultivation of positive habits. It could also be said they do less from a repetitive exercise of willpower instead of consuming the time on reforming conservational to the positive behaviour approaches greater in automatic and effortless. As a result, these individuals respond that digital technology overuse is not significantly to productivity compared with previous studies.

The influence of digital technology overuse on digital amnesia among young adults in Malaysia.

The present study's findings showed that overuse of digital technology significantly predicted digital amnesia, whereas overuse negatively predicted digital amnesia. In other words, it specified that when high digital technology is overused, it will result in low digital amnesia.

Moreover, the consistent results showed that overuse of digital technology significantly predicted digital amnesia, similar to previous research (Mohammad Maabreh 2020; Sparrow et al. 2011; Wimber et al., 2015). Young adults are high in digital technology overuse with low

digital amnesia because there is no information input for rehearsing. As soon as there is nothing to be practised, the information will decline faster, and nothing begins to store in the long-term memory system. According to Wimber et al., (2015) when an individual was continuously recording the data on digital technology resulted low in committing such information towards long-term memory. For example, the present study of young adults in Malaysia on doing something they must do will check on their digital devices, mostly doing it more than once a week or less than once a day. As well, due to the disturbance that affects the appropriate encoding of the current material. It shows that a person will be affected as they were begging for excessive use of digital technology, which led them to have digital amnesia as they too rely on it, but it may also cause distraction.

Besides, the findings from the current study can be explained through the Transactive Memory Theory (Wegner et al., 1991). The model recognises the effectiveness and efficiency of individual behaviour on people who are close and share their memories and carry on for a long time. The findings of the current study are similar to the model. Meanwhile, the study found that digital technology overuse frequently urges to store their memory on digital devices leading to such situations to the present study young adults that once or less in the last month tend to forget about when the things happened whether it is yesterday or yesterday last week. Also, more than once a month but not less than once a week does not remember what has been told about something from yesterday or a few days ago and may require being reminded about it. For such reasons, digital technology overuse is significantly predicted and negative to digital amnesia.

In addition, current study findings also support past studies based on Sparrow et al., (2011) found that people can remember the folder name consisting of relevant information location rather than the information itself. In addition, people who likely trust their digital

devices have saved their work display poorer memory than those who believe that information cannot store in digital devices. Therefore, this indicates that people's excessive use of digital technology consists of dependency as part of adapting the memory to the initiation of the latest computing and technology in communication, which show low in digital amnesia. Consequently, young adults in Malaysia use digital technology excessively, which shows reliance and dependency but are low in digital amnesia as they do not fully believe in storing information on the devices.

The influence digital technology overuse on productivity among young adults in Malaysia.

The present study's findings showed that digital technology overuse is not significantly predicting low productivity among young adults in Malaysia. Similarly, when young adults in Malaysia excessive use of digital technology may not experience low productivity. Nevertheless, there was a pronounced trend that when an individual's usage of digital technology reached the maximum point known as overuse, their productivity rate will slowly decrease to the lowest level. They will feel overwhelmed due to being unbearable in such a situation.

However, the results of young adults in Malaysia digital technology overuse are not significantly predicted and low productivity were inconsistent. Several researchers proved that digital technology overuse has resulted in a surplus in productivity (Krolo, 2011; Lee 2017; Montag et al., 2015a; Ward et al., 2017). This may be because the distraction and interruption that affect an individual could not entirely focus on the present task. In which Duke and Montag (2017a); Stothart et al., (2015) & University of Southern Maine (2014) illustrated that when an individual could not achieve the state of flow may face low productivity. They will likely spend more time on their digital technology as they could not wholly concentrate on the task when too much back and forth is switching with other sources. On the other hand, the current study found

that more than half of the participants at 55.37 percent of the participants found themselves checking on their digital devices when handling their tasks (see Appendix C). For example, replying or looking at the feeds from communication applications and the notification with vibration or sound such as WhatsApps, Facebook or emails while ongoing with the present task.

Conversely, low productivity does affect young adults, whether they are working or studying, taking longer time to revise the material. Whereas may be due to their health issues, such as increased stress, pressure, and frustration when using digital technology. Based on Mark et al., (2005) presented that an average individual fully concentrated on the task through digital devices are about three minutes before moving on to the next task. However, it consumes about 20 minutes to return to the former task. It can distract an individual from crucial tasks at hand to have a low production rate and excessive use of electronic communication.

Surprisingly, the current study finds 64.46 percent of the young adults in this present research rate from 1 to 5, who are not that serious about their productivity on regulating daily tasks even if they were experiencing health issues like forgetfulness on excessive use of digital technology (see Appendix C). Hence, it highlighted how erroneous predicting that low productivity rates relevant to digital technology overload are repeatedly enriching. Productivity increases have been part of the cultural obsession as they want to do things more effectively and efficiently (Duffy & Costa, 2013). Hence, it makes us wonder whether this group of Malaysian young adults' excessive use of digital technology at the 0.6, which is slightly higher than 0.05 not significantly predicted low in productivity, might have better resilience could differ an individual from the past studies found. Ralph (2019) wrote that everyone is unique with various personalities that affect our productivity level. For instance, more significant conscientiousness will have more attention to detail, organised and goal-directed likely higher productivity than

low in such personality. Correspondingly, external factors like social support, educational background, cultural and environmental may impact a person's high or low productivity (Kim et al., 2019; Psychology Today, 2019). Therefore, we believe that digital overuse could lower their productivity rate; however, it is a matter of how much overuse affects this group of individuals.

Besides, spending hours with digital technology on meaningful or meaningless tasks towards their productivity is different. For instance, spending time on digital technology on meaningful tasks are on the things that should be done like assignments; online classes or meetings; replying to emails and chilling on such Netflix, Facebook, Youtube and Spotify at a particular time. On the other hand, meaningless tasks are procrastination on digital technology which they must spend more time to complete the actual task leading to overuse of digital technology. Overall, at this moment, Malaysian young adults require such digital technology to be more productive to accomplish their tasks even though they are at the fact of excessive use digital technology. That could be why they do not exhibit similar predicted results as the past study low in productivity.

Implications

Practical Implications. The current study has provided some applied inference to society. One of the most important implications is that it enables society, especially young adults in Malaysia, to recognise the particular connection of digital technology overuse with digital amnesia and productivity. It is because digital technology has been part of our life over the past decade where it must use to access most of the information to stay connected with others and entertainment. Thus, a concern in most of the studies found that it will weaken our brain capacity and be harmful to our mental health that may bring the concern to our productivity rate. Even though the present study does not show that young adults in Malaysia are significant to predict

low productivity, we believe that a specific capacity of digital overuse will lead to low productivity, as the previous study has found.

As we know, young adults are the most prominent asset to take over the future generation, and they are the one who have exposed digital technology the most compared with older adults. In this case, they could receive some awareness and latest knowledge that is able to prevent it. This study also conveys some messages related to digital overuse information to certain physical and mental health professionals. For instance, orthopaedic, ophthalmologist, therapist, psychologists, counsellor and respective profession especially in Malaysia. Also, towards policymakers, non-governmental authorities, and other parties. Notably Persatuan Psikologi Malaysia (PSIMA), United Nations, Malaysian Society of Clinical Psychology, Cara Cara Mental Fitness and Centre of Psychological and Counselling Services.

On the contrary, such an important message can be delivered to society through specific programmes and modules like social media, entertainment programmes, forums, educators, and different events. In this case, they can provide such detoxing programmes with the self-care concept for digital technology overuse like introducing “PERMA” model of happiness and wellbeing (Seligman, 2018). This model consists of five main elements known as positive emotion, engagement, relationships, meaning and accomplishments that enable individuals to find their meaning of life and have more incredible positive emotion. As well as presenting the “ACCEPTS” model that is activities, contributing, comparison, emotion, pushing away, thought and sensation (Marra, 2004). In which enable an individual to divert their distress with healthier and comforting methods by building up their distress tolerance skills. Moreover, governmental agencies may have to revise are enable the younger generation to use digital technology

effectively rather than unconsciously causing harm to themselves as society moves towards digitalising artificial intelligence. Whether governmental or non-governmental, all the related parties should propagate related knowledge about excessive use of digital technology as awareness and practical such as in the workplace or academicians. Therefore, they will familiarise themselves with such things that may harm them without an apparent acknowledgement.

In addition, psychoeducation from various fields is vital to provide guidance and support for those interested in having a much more useful life towards productivity and prevention from digital amnesia due to digital technology overuse. Anyhow, prevention can occur anytime and anywhere as long as entire levels of social ecology are working hand in hand.

Theoretical implication. For the theoretical implication, the current study may add in some literature gaps in this awareness topic. Besides, most of the studies found are rarely deliberate about widespread digital technology overuse. Also, most of the studies mainly focus on specific group forces such as working adults or students but not on both groups of young adults. Past researchers focus more on digital overuse of smartphones and internet addiction or technostress than digital technology overuse among young adults, especially in Malaysia. Furthermore, such studies do require more concrete studies like a systematic review of such an exciting topic. Because it brings meaning, especially towards today's digitalisation society, but it is too underrated. Therefore, the present study's finding enables related literature and analyses data for future researchers interested in further research.

Moreover, the present research showed that digital technology overuse among young adults in Malaysia significantly predicts low digital amnesia. Hence, the Transactive Memory

Theory (Wegner et al., 1991) enables impending interested researchers to apply direction effectiveness and efficiency to identify digital amnesia. Besides, this theory allows us to believe the impossibility for an individual to recall all the things required shared to memory towards a device. Thus, this theory has proven that the advancement of digital technology will lead to excessive use of individual memory. As well, practitioners can base on such results and apply them to more relevant research. For example, addiction and dependency due to excessive use of digital technology affected digital amnesia among young adults in Malaysia. Indeed, the programmes offered based on findings can indirectly create prevention and awareness decline in excessive use of digital technology.

On the other hand, society prefers to increase the task productivity of an individual rather than on non-productive tasks. Digital technology overuse will lead to low productivity towards the tasks found in previous research; however, the present study's unpredictability does not show significance. We believe that Inverted U-function (Montag, 2015c) does play a role in the productivity of digital technology overuse, as a result it must achieve a certain level for low productivity. Thus, it must reconsider the status of maximum usages of digital technology overuse for this group of young adults where productivity declines. Consequently, it urges all experts to overcome such issues of digital technology overuse among young adults in Malaysia.

Limitation

Some limitations may need to be addressed in the study. As Queirós et al. (2017) mention, survey data depended on the accuracy of response provided by the participants of the study. In this study, participants' response efforts may be overlooked. Participants' response effort may influence their motivation in the experiment; for that reason, participants' intention to cheat may be affected. People will put more effort or motivation into doing the exciting task

(Simmons, 2014). In this study, not considering participants' response effort may influence the survey data.

In addition, the limitation of this study is the sampling method. The study was using a convenience sampling method in data collection. This sampling method and conventional convenience sample were used as it is simple, cheap, and efficient for this study to collect data in this pandemic situation. Jager et al. (2017) mention that the sample collected by convenience sampling method may lack clear generalisability, especially conventional convenience sample. Because of the participants' different socio demographic backgrounds, they are often biased, like the sample may not show the actual effects of the target population. Besides, using the convenience sampling method, the researcher will ask participants about their subgroup rather than determine them before conducting the study. The participants may give wrong information about their presence in a specific demographic (Gaille, 2020).

Last but not least, the weak generalisation of all Malaysian in this study is one of the limitations. The ratio of ethnicity in the study is not evenly divided. 69.42 % of the participants in this study were Chinese, there were only 16.53% of them were Malay and 14.05% were Indian. As Malaysia was a multiethnic country, many gaps between the races may cause over-representation of one race over another race. For that reason, this finding may not be able to generalize all Malaysian.

Recommendation

Regarding the references of these limitations in the study, researchers should take participants' response effort into account to further enhance the quality of the future study. For

example, the researcher may increase participants' response effort by using attractive incentives to trigger more excellent motivations in completing the experiments.

Next, to further enhance the quality of the future study, a homogeneous convenience sample can be applied in data analysis to make clearer generalisability. The more homogeneous a population, the more probable it is to generate a representative sample, even when using convenience sampling (Jager et al., 2017).

Lastly, it is recommended that for future study, the researcher should collect data by adopting an equitable sample size with a ratio that is willing to represent the Malaysian ethnicity population. The researcher may refer to the latest report by the Department of Statistics Malaysia for the percentage of ethnic groups for data collection, as a result can generalize all Malaysian.

Conclusion

As for the conclusion, the previous studies have proven a relationship between digital technology overuse of digital amnesia and productivity. Nonetheless, this study shows a significant negative correlation between digital technology overuse and digital amnesia. The study outcomes were unable to provide a significant relationship between digital technology overuse and productivity. The current study for digital technology overuse shows a negatively significant prediction in digital amnesia and no significant prediction in productivity. The findings showed that digital technology overuse will influence the problem in digital amnesia but not affect productivity among young adults in Malaysia. It is encouraged for the impending researcher to discuss further the cause of why digital amnesia is easier manipulated by digital technology overuse to prevent the new generation from becoming too dependent on digital technology.

Mainly, digital amnesia is more relevant than productivity at this point because digital technology only affects digital amnesia but not productivity. This may be due to the new normal lifestyle adapted by this group of individuals like have to go through the accessibility of digital technology for virtual learning, working and entertainment. It could also be said that adopting such a lifestyle of work or learn from home for survival to be more productive.

Furthermore, young adults are vulnerable and valuable assets to the nation. They have been recognised for the future development of the nation. Hence, the advancement and accessibility in digital technology have increased individual usage, leading to increased reliance being a concern towards society. The rise of digital technology overuse among these groups of individuals has led to such biopsychosocial and spiritual issues (World Health Organization, 2015). Overall, this present study has provided insights of the importance that digital technology overuse will affect digital amnesia. Therefore, upcoming experts, especially professionals in this field, should conduct further and in-depth studies for possible prevention. Thus, it is vital to assist in evolving young adults to address digital technology overuse in a much more effective and efficient way.

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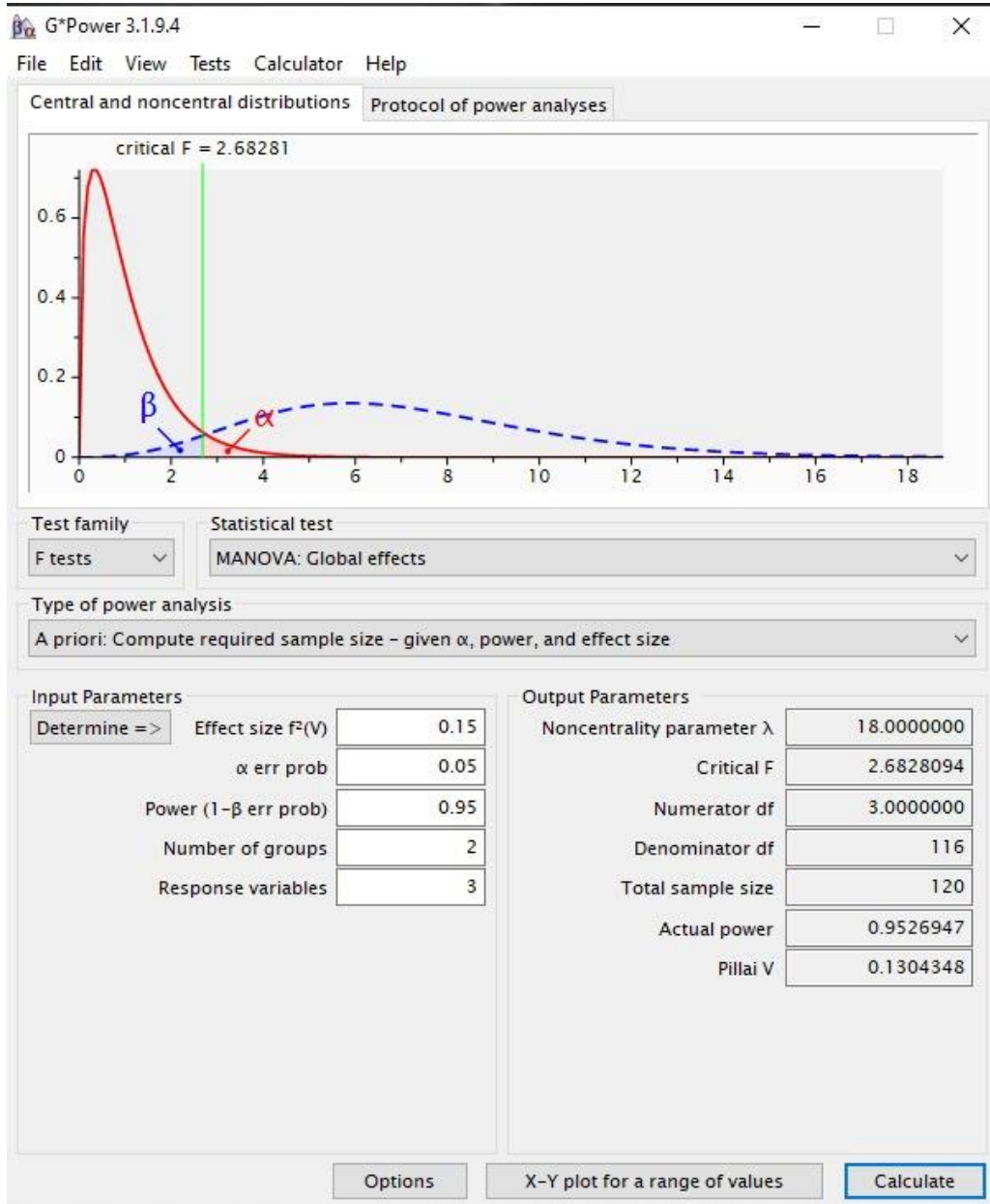
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Appendices

Appendix A

G Power



Appendix B

Q-Q Plot

Figure B1

Q-Q Plot of Digital Technology Overuse

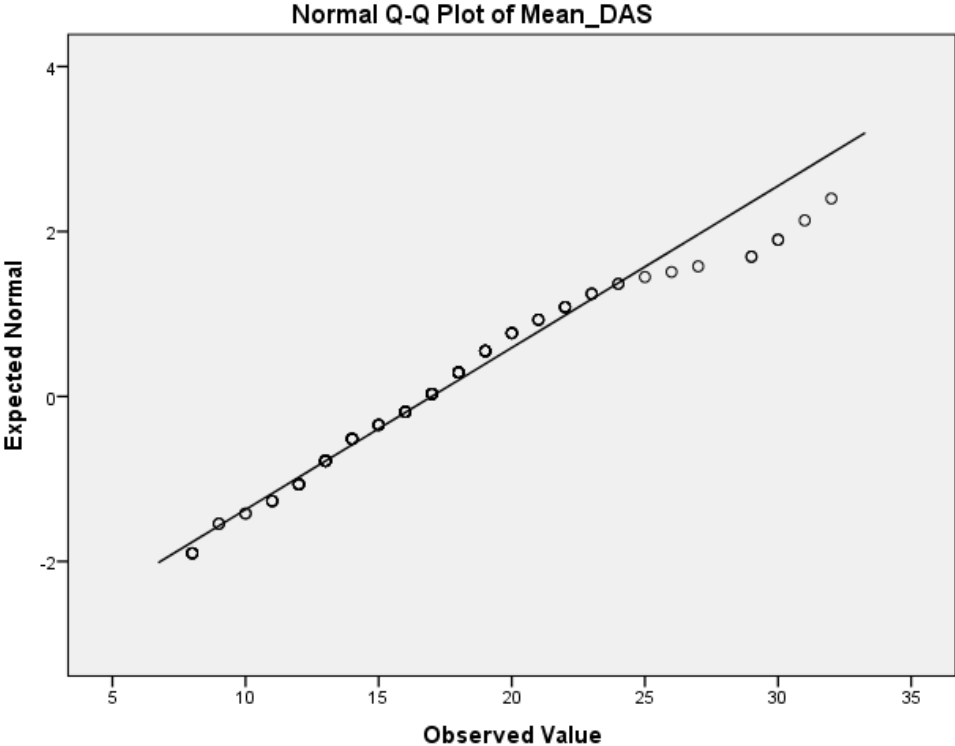


Figure B2

Q-Q Plot of Digital Amnesia

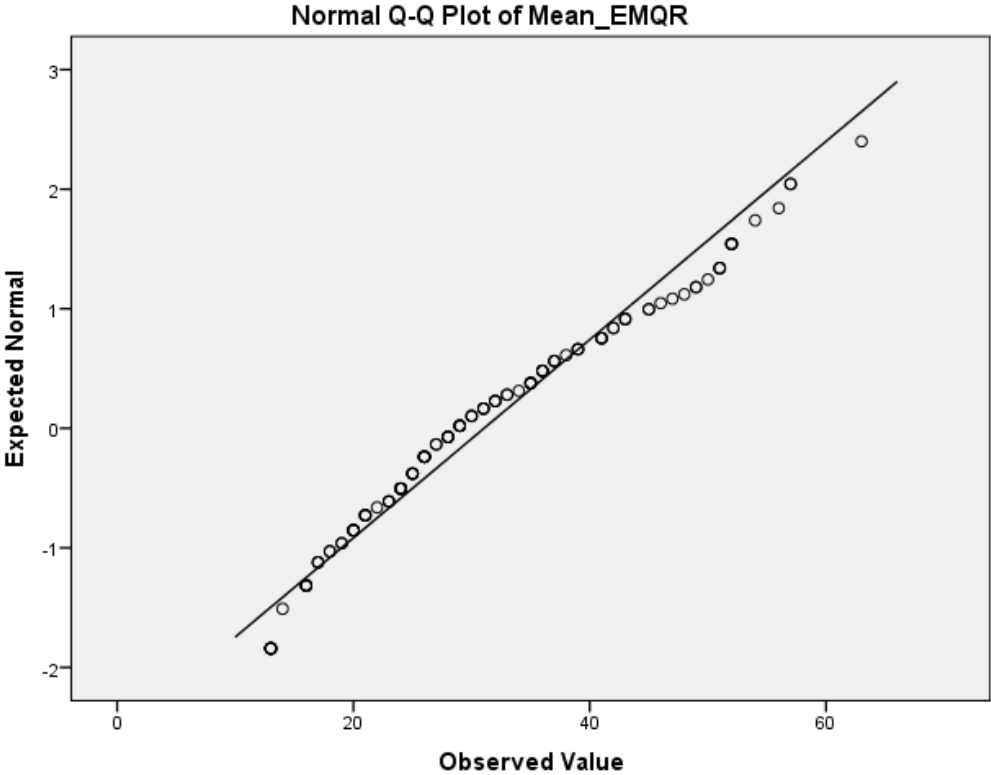
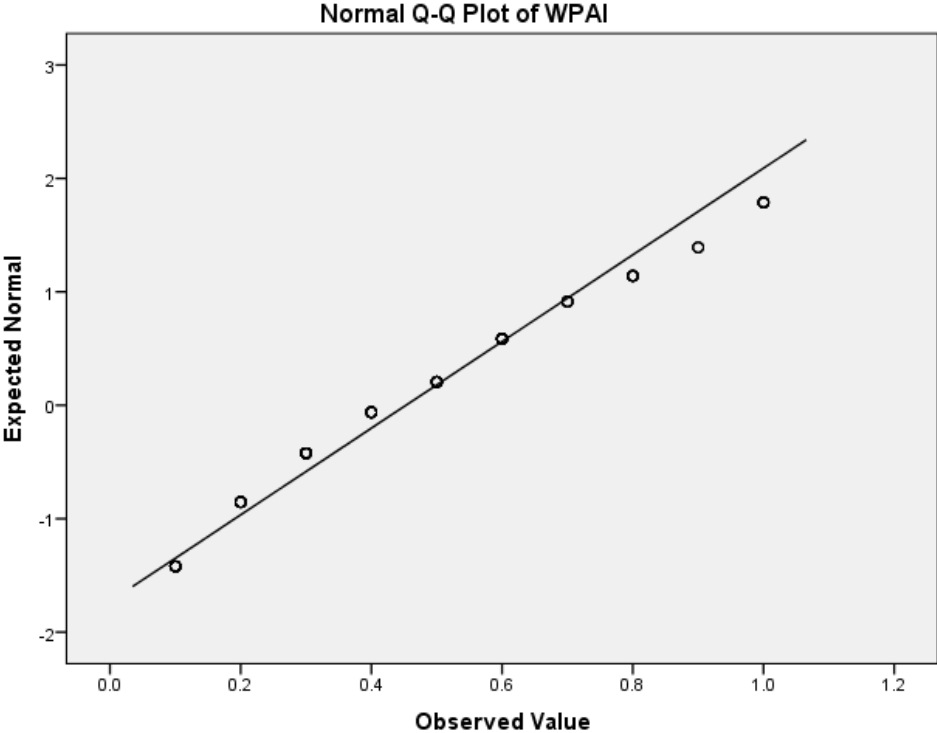


Figure B3

Q-Q Plot of Productivity



Appendix C

Questionnaire Results

Table C1

While eating my meal, I am occupied with mobile phone, tablet, or computer.

Selection	Percentage (%)
Totally Agree	36.36
Agree	38.02
Neither Agree nor Disagree	14.04
Disagree	8.26
Totally Disagree	3.31

Table C2

Forgetting where things are normally kept or looking for them in the wrong place.

Selection	Percentage (%)
Once or less in the last month	31.40
More than once a month but less than once a week	24.79
About once a week	16.53
More than once a week or less than once a day	18.18
Once or more in a day	9.09

Table C3

I overuse the digital devices out of their purpose

Selection	Percentage (%)
Totally Agree	22.31
Agree	40.50
Neither Agree nor Disagree	23.97
Disagree	8.26
Totally Disagree	4.96

Table C4

I find myself checking my digital devices upon dealing with a work.

Selection	Percentage (%)
Totally Agree	28.10
Agree	55.37
Neither Agree nor Disagree	9.92
Disagree	5.79
Totally Disagree	0.83

Table C5

Question: During the past seven days, how much did forgetfulness affect your ability to do your regular daily activities (e.g. work around the house, shopping, childcare, exercising, studying, etc.)? If forgetfulness affected your activities only a little, choose a low number. Choose a high number if forgetfulness affected your activities a great deal.

	Rating	Percentage (%)
Forgetfulness had no effect on my daily activity	1-5	64.46
Forgetfulness had effect on my daily activity	6-10	35.54

Appendix D

Questionnaire**Default Question Block**

Research Topic: Digital Technology Overuse as a Predictor of Digital Amnesia and Productivity among Young Adults in Malaysia.

Introduction

We are undergraduate students from the Faculty of Arts and Social Science of University Tunku Abdul Rahman, currently studies in Psychology Year 3. You are invited to participate in the study entitled "Digital Technology Overuse as a Predictor of Digital Amnesia and Productivity among Young Adults in Malaysia."

Procedure

This questionnaire consists of four sections. The first section is requiring filling out your demographic information. The next three sections will be made up of questions regarding digital technology overuse, forgetfulness and productivity. This survey will take approximately 15 minutes to complete.

PERSONAL DATA PROTECTION STATEMENT

Please be informed that in accordance with Personal Data Protection Act 2010 ("PDPA") which

came into force on 15 November 2013, Universiti Tunku Abdul Rahman ("UTAR") is hereby

bound to make notice and require consent in relation to collection, recording, storage, usage and

retention of personal information.

Notice:

1. The purposes for which your personal data may be used are inclusive but not limited to:-

- For assessment of any application to UTAR*
- For processing any benefits and services*
- For communication purposes*
- For advertorial and news*
- For general administration and record purposes*
- For enhancing the value of education*
- For educational and related purposes consequential to UTAR*
- For the purpose of our corporate governance*
- For consideration as a guarantor for UTAR staff/ student applying for his/her scholarship/study loan*

2. Your personal data may be transferred and/or disclosed to third party and/or UTAR

collaborative partners including but not limited to the respective and appointed outsourcing

agents for purpose of fulfilling our obligations to you in respect of the purposes and all such

other purposes that are related to the purposes and also in providing integrated services,

maintaining and storing records. Your data may be shared when required by laws and when

disclosure is necessary to comply with applicable laws.

3. Any personal information retained by UTAR shall be destroyed and/or deleted in accordance

with our retention policy applicable for us in the event such information is no longer required.

4. UTAR is committed in ensuring the confidentiality, protection, security and accuracy of your

personal information made available to us and it has been our ongoing strict policy to ensure

that your personal information is accurate, complete, not misleading and updated. UTAR

would also ensure that your personal data shall not be used for political and commercial

purposes.

Consent:

1. *By submitting this form you hereby authorise and consent to us processing (including*

disclosing) your personal data and any updates of your information, for the purposes and/or

for any other purposes related to the purpose.

2. *If you do not consent or subsequently withdraw your consent to the processing and*

disclosure of your personal data, UTAR will not be able to fulfill our obligations or to contact

you or to assist you in respect of the purposes and/or for any other purposes related to the

purpose.

Participation

Please keep in mind that you can withdraw from this study anytime. If you have any inquiries, feel free to contact us via email, Chiew Ooi Yan (ooiyan@utar.my), Lai An Qi (quinn.96@utar.my) and Liew Wen Xin (wenxin99@utar.my). Final Year Project supervisor Dr. Sonia Khodabakhsh (soniak@utar.edu.my).

Acknowledgment of notice

I have been notified by you and that I hereby understood, consented and agreed per UTAR above notice

I disagree, my personal data will not processed

Section A - Demographic Information

Gender

Male

Female

Age

Below 15

15 to 30

Above 30

Ethnicity

Chinese

Indian

Malay

Other (Please specify)

Religion

Buddhist

Christian

Hindu

Muslim

Other (Please specify)

Nationality

Malaysian

Non-Malaysian

Employment Status

Employed

Unemployed

Students

Occupation (e.g: undergraduate students, teacher, engineer and others)

Undergraduate Students

Administrative Assistant

Homemaker

Other (Please specify)

Section B - Digital Technology Overuse

Read each item below. If the item is always true for you, mark "Totally Agree"; if general true about you, mark "Agree". If you are not sure, mark "Neither Agree nor Disagree"; if it is not generally true for you, mark "Disagree", and if never true for you, mark "Totally Disagree".

While eating my meal, I am occupied with mobile phone, tablet, or computer.

Totally Agree

Agree

Neither Agree Nor Disagree

Disagree

Totally Disagree

I continuously look at the digital devices(mobile phone or tablet) in a trip, picnic or social environment.

Totally Agree

Agree

Neither Agree Nor Disagree

Disagree

Totally Disagree

I overuse the digital devices out of their purpose

Totally Agree

Agree

Neither Agree Nor Disagree

Disagree

Totally Disagree

I find myself checking my digital devices upon dealing with a work.

Totally Agree

Agree

Neither Agree Nor Disagree

Disagree

Totally Disagree

I deal with the digital devices like tablet even if I do demanding things.

Totally Agree

Agree

Neither Agree Nor Disagree

Disagree

Totally Disagree

That my digital devices are broken or get lost makes me anxious.

Totally Agree

Agree

Neither Agree Nor Disagree

Disagree

Totally Disagree

Even if I leave my house for a short time, I want to take the digital devices like phone tablet with me.

Totally Agree

Agree

Neither Agree Nor Disagree

Disagree

Totally Disagree

I keep digital devices like smart phone or tablet around when I go to sleep

Totally Agree

Agree

Neither Agree Nor Disagree

Disagree

Totally Disagree

Section C - Forgetfulness

Below are listed some examples of things that happen to people in everyday life. Some of them may happen frequently and some may happen very rarely. We should like to know how often on average you think each one has happened to you over the past month.

Having to check whether you have done something that you should have done.

Once or less in the last month

More than once a month but less than once a week

About once a week

More than once a week or less than once a day

Once or more in a day

Forgetting when it was that something happened; for example, whether it was yesterday or last week.

Once or less in the last month

More than once a month but less than once a week

About once a week

More than once a week or less than once a day

Once or more in a day

Forgetting that you were told something yesterday or a few days ago, and maybe having to be reminded about it.

Once or less in the last month

More than once a month but less than once a week

About once a week

More than once a week or less than once a day

Once or more in a day

Starting to read something (a book or an article in a newspaper, electronic devices or a magazine) without realizing you have already read it before.

Once or less in the last month

More than once a month but less than once a week

About once a week

More than once a week or less than once a day

Once or more in a day

Finding that a word is 'on the tip of your tongue'. You know what it is but cannot quite find it

Once or less in the last month

More than once a month but less than once a week

About once a week

More than once a week or less than once a day

Once or more in a day

Completely forgetting to do things you said you would do, and things you planned to do.

Once or less in the last month

More than once a month but less than once a week

About once a week

More than once a week or less than once a day

Once or more in a day

Forgetting important details of what you did or what happened to you the day before.

Once or less in the last month

More than once a month but less than once a week

About once a week

More than once a week or less than once a day

Once or more in a day

When talking to someone, forgetting what you have just said. Maybe saying 'what was I talking about?'

Once or less in the last month

More than once a month but less than once a week

About once a week

More than once a week or less than once a day

Once or more in a day

When reading a newspaper or magazine, being unable to follow the thread of a story; losing track of what it is about.

Once or less in the last month

More than once a month but less than once a week

About once a week

More than once a week or less than once a day

Once or more in a day

Forgetting to tell somebody something important, perhaps forgetting to pass on a message or remind someone of something.

Once or less in the last month

More than once a month but less than once a week

About once a week

More than once a week or less than once a day

Once or more in a day

Getting the details of what someone was told you mixed up and confused.

Once or less in the last month

More than once a month but less than once a week

About once a week

More than once a week or less than once a day

Once or more in a day

Forgetting where things are normally kept or looking for them in the wrong place.

Once or less in the last month

More than once a month but less than once a week

About once a week

More than once a week or less than once a day

Once or more in a day

Repeating to someone what you have just told them or asking someone the same question twice.

Once or less in the last month

More than once a month but less than once a week

About once a week

More than once a week or less than once a day

Once or more in a day

Section D - Productivity

The following questions ask about the effect of forgetfulness on your ability to work and perform regular activities.

Are you currently employed (working for pay)?

No

Yes

The next questions are about the past seven days, not including today.

During the past seven days, how many **hours** did you miss from work because of problems **associated with forgetfulness**? Include hours you missed on sick days, times you went in late, left early, etc., because of forgetfulness. Do not include time you missed to participate in this study. **(eg: 5 hours)**.

During the past seven days, how many **hours** did you miss from work because of any other reason, such as vacation, holidays, time off to participate in this study? **(eg: 5 hours)**.

During the past seven days, how many **hours** did you actually work? (eg: 5 hours)

During the **past seven days**, how much did forgetfulness affect your productivity while you were working?

Consider only how much health problems affected productivity while you were working. If forgetfulness affected your work only a little, choose a low number. Choose a **high number** if **forgetfulness affected your work a great deal**.

Consider only how much forgetfulness affected productivity while you were working.

	Forgetfulness had no effect on my work					Forgetfulness had effect on my work				
	1	2	3	4	5	6	7	8	9	10
	○	○	○	○	○	○	○	○	○	○

During the **past seven days**, how much did forgetfulness affect your ability to do your regular daily activities (e.g. work around the house, shopping, childcare, exercising, studying, etc.)? If forgetfulness affected your activities only a little, choose a low number. **Choose a high number** if **forgetfulness affected your activities a great deal**.

	Forgetfulness had no effect on my daily activity					Forgetfulness had effect on my daily activity				
	1	2	3	4	5	6	7	8	9	10
	○	○	○	○	○	○	○	○	○	○



Appendix E

Turnitin Report for FYP 2

Digital technology overuse as a predictor of digital amnesia and productivity among young adults in Malaysia

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