Smartphone Dependency in Relation to Cognitive Presence of Thai and International Accounting Students

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ABSTRACT

The objective of this quantitative research was to investigate Smartphone Dependency in relation to cognitive presence of Accounting Students in Thailand. The sample consisted of 396 Thai and International accounting major students, selected from two universities using the stratified random sampling. The Japanese version of the Smartphone Dependency Scale (J-SDS), with five dimensions namely; Craving and Withdrawal; Overuse and Tolerance; Virtual Life Orientation; Disturbance of Concentration in Class; and Physical Symptoms, constructed by Ezoe, Iida, Inoue &Toda (2016), with the Cronbach Alpha of α =.968 and the Cognitive Presence Scale, constructed by Ju Kang, Ji-un Park & Shin (2007) with the Cronbach Alpha of α =.928 were utilized as the research instruments. Pearson's Correlation Coefficient and independent t-test were used for data analysis. The hypothesis were: 1) there was a relationship between Smartphone Dependency and Cognitive Presence; 2) there were differences in the five factors of Smartphone Dependency between male and female students; and 3) there were differences in the five factors of Smartphone Dependency between Thai and International students. The findings indicated that the first hypothesis was partly supported since Virtual Life Orientation dimension was significantly correlated to Cognitive Presence. The second and third ones were also supported, since female students scored higher than males on the Physical Symptoms; and Thai students scored higher than International students on the Virtual Life orientation.

KEYWORDS: Smartphone Dependency, Cognitive Presence, Accounting Students in Thailand

Introduction and Research Problem's Significance

"Social media is fine, depending on how you use it". (Edward Enninful, n.d.)

Smartphone usage is an indispensable part of life. The utility of a Smartphone is most often perceived as convenient and fast. Smartphone's use touch screens with roaming internet access via cellular networks or Wi-Fi which make it possible to download Smartphone applications as well as other functions like digital cameras, media players and for Global Positing Systems (GPS) navigation.

Majority of university students these days are composed of Generation Y and Z for whom technology is an integral part of life and who spend a daily part of life on social networking (Cassidy, Britsch,Griffin, Manolovitz, Shen, & Turney, 2011). Studies confirm that mobile technology can support student learning, this is especially true with Smartphone's, which are conducive for tasks such as easy information access, communication and photography (Pomerantz & Brooks, 2017). Recent studies show that 78% of students consider a relationship between their phones and academic success at least moderately, while 83% use their Smartphone's for one or more course-related activities and 25% use their Smartphone's for all courses (Pomerantz & Brooks, 2017).

However, the downsides of using Smartphone's could be distraction and often lower levels of performance since it allows access to internet, texting, games, and other social media like Facebook, Google, Twitter, Instagram, virtual worlds, etc. (Bryer & Zavatarro, 2011). The "technological addiction" of a Smartphone is similar to substance related disorders (Lin et al., 2014) which can hamper students' concentration with their studies because of anxiety experienced when the Smartphone is not in their possession (Selwyn, 2003; Hiscock, 2004: Samaha & Hawi, 2016). Van Deursen et al., (2015) agreed that one of the risk factors for addiction is using the Smartphone socially. Close to half of the instructors in one survey agree that mobile devices are beneficial but a little more than half doubted the benefits and were concerned about it being a distraction (Brooks, 2015).

A debatable question is of multitasking and monotasking. Carr (2010), believed that multitasking distracts concentration on one task for a longer period of time and shifting back and forth from the real to the virtual world increases the "absent-presence" phenomenon (Gregen,2002; Kleinman, 2004). Accounting students may need plenty of concentration to solve problems assigned in classrooms. Technology could isolate these students because attention is directed

at the technological device more than other students and the instructor leading to off-task behavior (Fisher, Lucas, & Galstyan, 2013; McGrail, 2007). Smartphone's have remarkable capabilities which promote student learning but despite the best efforts of teacher's students may use their Smartphone's as digital amusements. The question that needs to be addressed, "Is Smartphone dependency detrimental to classroom cognitive presence of Thai and International Accounting students"?

Objectives of the Research

1. To discover the relationship between Smartphone dependency and cognitive presence of Thai and International Accounting students.

2. To determine the differences of Smartphone dependency among male and female and among Thai and International Accounting students

Review of Related Literature and Concept

The Global Digital Report of 2019 revealed that there are 92 million subscribers of mobile phones, 55% active mobile internet users and 49 million mobile social media users. Thai persons who utilized social media between the ages of 19-24 were the highest (National Statistics Office, 2013), therefore adolescents compared to adults are more prone to indicate the negative effects of using a Smartphone (Kwon, Kim, Cho, & Yang, 2013; Kim et al., 2012).

Garrett and Danziger (2008), study revealed that taking short breaks during tasks by using technology can increase brain capacity and lead to greater productivity, creativity and innovation.

Ariga and Lleras (2011), do not support the conventional idea that lack of attention is related to poor performance. In fact, researchers like, Smith, Wood, Adams, Wieman, Knight, Guild and Su (2009), Crossgrove & Curran (2008), Stephens (2005) and Fitch (2004), argue that technology can enhance learning by permitting educators to develop numerous ways of presetting information and encourage different learning approaches. Shmulsky (2013), posited that integrating technology can enhance reading speed and comprehension especially for students with learning disabilities.

Other theorists differ in views. In an article entitled, "Too much face and not enough books", Junco & Cotton (2012), proposed that the amount of time spent on Facebook and checking Facebook were negatively related to time used for studying. Hiawatha (2012), Friedman & Heafner (2012) and Lowry (2010), indicated that exposure to technology has manifested a large dependence on retrieving answers from the internet as of

result of which cognitive ability declines and people find it hard to think, absorb, understand and analyze information. Bauerlein (2008), insists that although plenty of information can be assessed in the digital age it has led people to become "dumber". McGrail (2007) and Fisher, Lucas, & Galstyan (2013), believed that using technology can lead to social isolation since it inhibits communication with other students and the instructor. In 2012, Paul, Baker, Cochran, published an article about the relationship of academic achievement and online social networking and discovered a negative relationship between the two factors.

Smartphone dependence can be considered inability to resist using the Smartphone despite the negative impact on the person. The Smartphone Dependence Scale consists of five-factor structures (Ezoe, Iida, Inoue, & Toda, 2016), which are:

1. Craving and Withdrawal: includes feelings of pain, tension and anxiety and impatience when unable to use a Smartphone.

2. Overuse and Tolerance: refers to controlling usage of the Smartphone but a failure to do so and compensating by spending the previous time lost to use the Smartphone.

3. Virtual Life Orientation: refers to usage of the Smartphone as being a priority compared to communication and interaction with other friends, family or acquaintances.

4. Disturbance of Concentration in Class: refers to lack of concentration in class and inability to pay attention to classroom work and projects.

5. Physical Symptoms: refers to physical symptoms like headaches, back pain, wrist pain and shoulder pain.

Cognitive presence refers to a state of "being there" by constructivists like Garrison et al., (2001). A deeper definition is the "the extent to which learners are able to construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry" (Garrison et al. 2001, p. 11). Garrison et al., (2001), conceptualized Cognitive Presence using the Practical Inquiry (PI) model, which includes four stages (which are) as follows:

1. A triggering event, in which some problem or issue is recognized by the learners in order to be scrutinized, individually and in groups.

2. Exploration, in which the problem or issue is scrutinized individually and in groups by the learners using communication and reflection.

3. Integration, in which the learners develop meaning from the ideas brainstormed during exploration.

4. Resolution, in which the learners use the new knowledge acquired for application to the new situation or setting (Garrison & Arbaugh, 2007).

A plethora of studies indicated that that gender differences in Smartphone addiction were negligible and that compared to males (Park & Lee, 2014), who use Smartphone's calling and applications, females use Smartphone's for social contact and relationships (Long et al., 2016 & De-Sola Gutiérrez et al., 2016), Asian countries scored higher that their Western counterparts for smart phone addiction (Lee, 2015, Kee et al., 2016; Lopez-Fernanadez, 2017 & Lachman et al., 2018). Cognitive presence can have an impact on helping learner's engagement as well as an impact on learner's satisfaction and achievement (Kang, 2005; Wang & Kang, 2006).

A recent study conducted by TangmunkongvorakulI, Musumari, Thongpibul, Srithanaviboonchai, Techasrivichien, Suguimoto, Ono-Kihara, Kihara (2019), on association of excessive Smartphone use with psychological well-being among university students in Chiang Mai, Thailand, discovered that a negative correlation exist between Smartphone addiction and psychological well-being. Another study conducted on Smartphone addiction and academic performance by Dsouza and Sharma (2020), in a Thai cultural context found an insignificant relationship between the two variables. Lack of studies in the Thai cultural context on Smartphone addiction in an educational setting especially with students from a single major, motivated the researcher to fill in the gaps in literature. Therefore, the researcher framed three Hypotheses as follows.

Hypotheses

1. There is a relationship between the five factors of Smartphone Dependency namely, Craving and Withdrawal, Overuse and Tolerance, Virtual Life Orientation, Disturbance of Concentration in Class, Physical Symptoms and Cognitive Presence of accounting students.

2. There are differences among the five (dimensions) factors of Smartphone Dependency of male and female accounting students.

3. There are differences among the five dimensions of Smartphone of Thai and International accounting students.

Methodology and Data Analysis

To measure Smartphone Dependency, the Japanese version of the Smartphone Dependency Scale (J- SDS) constructed by Ezoe, Iida, Inoue &Toda (2016), was used. It consisted of 29 items on a four point Likert Scale from 4, strongly agree to 1, strongly disagree and

contains five (dimensions) factors namely, Craving and Withdrawal, Overuse and Tolerance, Virtual Life Orientation, Disturbance of Concentration in Class and Physical Symptoms. The Cronbach Alpha was α =.968 for the total scale, which confirmed the reliability of this scale.

To measure Cognitive Presence, the scale constructed by Ju Kang, Ji-un Park & Shin (2007) was used .It consisted of 21 items on a five point Likert scale from 5, strongly agree to 1, strongly disagree and contains three factors namely, the degree to which the content is understood, the degree of knowledge construction and the management learning resources. The Cronbach Alpha was α = was 0.928 for the total scale, which confirms the reliability of this scale.

The simple random sampling technique was used to collect data from Thai male and female students at an international university. Each sample was approached personally and requested for completion of the scales on a voluntary basis which yielded 396 samples.

For the 1st hypotheses, Pearson's Correlation Coefficient was utilized to find out the relationship among the five factors of Smartphone Dependency with Cognitive Presence of total accounting students. The 2nd hypotheses used the independent t-test to test differences between the five (dimensions) factors of Smartphone Dependency of male and female accounting students. The t-test was also used for testing the 3rd hypotheses for the differences among the five dimensions of Smartphone Dependency of Thai and International accounting students.

Findings, Conclusions and Discussion

Table 1 The Relationships between the factors of Smartphone Dependency and Cognitive Presence of total Accounting Students

Dimensions of Smartphone Dependency	**N=395**	**Pearson's Correlation Coefficient (r)**	**Significance value (p)**
1. Craving and Withdrawal		.131	.09
2. Overuse and Tolerance		-.22	.667
3. Virtual Life Orientation		-.107*	.034
4. Disturbance of Concentration in Class		-.076	.133
5. Physical Symptoms		.084	.087

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

Table 1 indicated that except for Virtual Orientation (r= -.107, p < 0.05), none of the other variables like Craving and Withdrawal, Overuse and Tolerance, Disturbance of Concentration in Class and Physical Symptoms of Smartphone Dependency have a significant correlation with Cognitive Presence (r= .131, -.22, -.076, .084, p > 0.05). Therefore, Hypothesis 1 was partly supported and showed that when accounting students experienced an increase in Virtual Life, it would lead to a decrease in their cognitive presence.

(Virtual life Orientation refers to usage of the Smartphone as being a priority compared to communication and interaction with other friends, family or acquaintances, whereas Cognitive Presence is a state of "being there" (Ezoe, Iida, Inoue, & Toda, 2016). According to Chakraborty et al., (2012), when a person is addicted to something there is a preoccupation with certain behavior, repetition of the behavior and avoidance of the real world, problem with control of the behavior, pathological symptoms like tension, withdrawal and restlessness and irritability when the behavior is not permitted. McGrail (2007) and Fisher, Lucas, & Galstyan (2013), in the review of related literature indicated that when students were dependent on the Smartphone they lost their abilities to communicate effectively with other students and the instructors which eventually led to social isolation. Haug et al., (2015), discovered a correlation between Smartphone Dependency and time spent browsing social networks. Im et al., (2013), indicated that 68.5% university students in South Korea used their Smartphone for social networking. Alosaimi et al., (2016), reported that the most common reason for Smartphone use was for "connecting to social networks". According to Frobes (2016), social network applications like WhatsApp, Facebook and WeChat were leading messengers throughout the world. It is obvious that students use Smartphone to increase and maintain their supported relationships (Kim et al., 2017) and it is not the Smartphone per se that increases addiction rather the applications that the Smartphone provides to its users that could cause addiction (Pontes, Szabo, & Griffiths, 2015). If students use their Smartphone excessively instead of face to face communication it could lead to Internet communication disorder (Montag & Zhao, et al, 2018;Wegmann & Brand, 2016), which in turn could lead to a decrease in Cognitive Presence. It could be that accounting students prefer to use their

Apps rather than interpersonal communication.

Table 2 The Comparisons between the factors of Smartphone Dependency of Male and Female total Accounting Students

	Mean *(SD)*		**Mean Differences Test**	
Dimensions of Smartphone Dependency	Male N=174	Females N=222	t-score	Sig
1. Craving and Withdrawal	2.52 (.52)	2.56 (.55)	-.625	0.529
2. Overuse and Tolerance	2.59 (.56)	2.60 (.552)	-.062	.951
3. Virtual Life Orientation	2.26 (.684)	2.27 (.640)	.112	.911
4.Disturbance of Concentration in C Class	2.46 (.659)	2.42 (.699)	.614	.540
5. Physical Symptoms	**2.29** (.885)	**2.53** (.800)	**-2.793**	**.005***

Remarks: SD id shown as italic in the brackets; independent sample t-test is performed

*** Significant difference of the mean at p < 0.05**

Table 2 indicates that the obtained 't' value for male and female students on five factors of Smartphone Dependency were-.625,-.062,.112 and .614 respectively which is negligible and insignificant, except for the Physical Symptom (dimension) in which the 't' value was -2.703 and indicated a strong and significant correlation which clearly revealed that female accounting students were prone to higher physical symptoms than male students. Therefore, hypothesis two was partly supported.

Several studies showed little significant gender differences in Smartphone addiction between males and females (Kwon et al., 2013), although some studies have discovered that females were more likely to be addicted (Tavakolizadeh et al., (2014), Demirci et al., (2015) and De-Sola et al., (2016) and used their Smartphone's more often (Sánchez-Martínez, 2009) and (Csibi et al., 2018). Females used their Smartphone's phones primarily for social contacts which involves messaging and social networking whereas males used them for gaming, texting messages and voice applications (De-Sola et al., 2016). Roberts et al., 2014, agreed that the voice calls, text messages and social networking were the most problematic applications. Physical Symptoms refer to various symptoms like headaches, back pain, wrist pain and

shoulder pain (Ezoe, Iida, Inoue, & Toda, 2016). Females manifest an increase in physical symptoms which can be attributed to longer duration on their Smartphone and lower thresholds for pain (Fillingim et al., 2009). Females may tend to get stressed out with constant texting and experience higher psychological stress compared to males (Korpinen, 2011). This psychological stress leads to the lower threshold for reporting pain and impacts the central nervous system and causes activation of the muscles leading to tensional syndrome (Alfvén, 1997) and Simons & Mense (1998).

Table 3 The Comparisons between the Dimensions of Smartphone Dependency of Thai and International Accounting Students

	Mean *(SD)*		**Mean Differences Test (SD)**	
Dimensions of Smartphone Dependency	Thai N=201	International N=195	t-score	Sig
1.Craving and Withdrawal	2.54 *(.43)*	2.55 *(.62)*	-.102	.919
2.Overuse and Tolerance	2.59 *(.42)*	2.60 *(.66)*	-.190	.8 50
3.Virtual Life Orientation	**2.17 *(.53)***	**2.35 *(.75)***	**-2.787**	**.006***
4. Disturbance of Concentration in Class	2.40 *(.58)*	2.47 *(.76)*	-1.002	.317
5. Physical Symptoms	2.39 *(.75)*	2.47 *(.92)*	-.884	.377

Remarks: SD id shown as italic in the brackets; independent sample t-test is performed

*** Significant difference of the mean at p < 0.05**

Table 3 indicated that the obtained 't' value for Thai and International accounting students on five factors of Smartphone Dependency were-.102,-.190-1.002 and -.884 respectively which were negligible and insignificant, except for the Virtual Life Orientation in which 't' value was, -2.787, which indicated a strong and significant relationship which clearly revealed that Thai accounting students , as compared with the international accounting students, were more dependent on their Smartphone usage as a priority compared to communication and interaction with other friends, family or acquaintances. Therefore, hypothesis three is partly supported.

The review of related literature indicated that Asian countries scored higher than their Western counterparts for

Smartphone addiction (Lee, 2015; Kee et al., 2016; Lopez-Fernanadez, 2017 & Lachmann et al., 2018). Hypothesis one also showed that compared to other factors of Smartphone Dependency, Virtual Life Orientation was significantly correlated with Cognitive Presence. Pavia et al., (2016), agreed that Smartphone addiction was a compulsive behavior which can affect the time spent with the phone and interpersonal relationships. Cultural contexts can influence the differences in amount of Smartphone addiction (Kwon et al., 2013). Khumsri et al., (2015), discovered that Thailand had a higher rate of Smartphone, Internet and Social media addiction as compared to most Asian countries as well as the United States. Since, the data for this research was collected from Generation "Y" who are very "social and tech savvy", and for whom traditional media is outdated, it can be admitted that this generation are more comfortable communicating online with internet and gadgets rather than face-to-face communication and take advantage of social media to establish an identity and share information about themselves and others (Bangkok Post, 2014). Compared to other demographic groups, university students were likely to use electronic devices much earlier (Smith et al, 2011), consequently lead to negative health and social problems like lower academic and work performance (Boumosleh & Jaalouk 2018; Duke & Montag, 2017) and a decrease in social interaction (Mishra et al, 2014; Rotondi et al, 2017). Youth who were inclined to higher levels of connectedness socially were eventually reported to have better well-being than vice versa (Jose, Ryan, & Pryor, 2012).

Scope, Limitations, Significance and Implications for Future Research

The invention of the Smartphone creates virtual rather than social relationships, which can be easily distracting. The present quantitative study intends to discover whether Smartphone's can enhance or deter Cognitive Presence of accounting students in the classrooms. The review of literature showed that the findings were contradictory with some research which indicated that Smartphone's could be beneficial, but on the other hand it could interfere with student's test scores and their Grade Point Average (GPA). A qualitative study using focus groups, surveys and interviews with accounting as well as students from other majors could be further conducted to get an insight on the time spent each day with the Smartphone and the time during which the Smartphone was used most frequently so as to get in-depth honest responses and make generalizations. Technological records rather than self-reported responses

could be provided with more accuracy of data.

A longitudinal study can be essentially beneficial to gain more knowledge related to the age levels in which dependency of Smartphone usage is the highest. Other demographic information like family background, socio-economic status, educational levels and cultural environments can also be advantageous to make cross-cultural comparisons of students from different levels in schools and universities from different faculties.

More experimental studies should be conducted to create an experimental and control group in order to set up the necessary intervention programs that can create an environment of using Smartphone which can actually increase personal development and classroom participation.

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