A PATH MODEL OF THE EFFECTS OF ATTITUDES TO THE INTERNET, DEPRESSION, ANXIETY, STRESS, GENDER, AND STUDY TIME ON INTERNET ADDICTION AND ACADEMIC PERFORMANCE OF UNDERGRADUATE STUDENTS IN KACHIN REGION OF MYANMAR

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Abstract: Internet addiction has become an increasing problem with young people these days. The objectives of this study were to determine the relationship between attitudes toward the internet, depression, anxiety, stress, gender, and study time on internet addiction and academic performance in the second year students of Institute of Education and Maija Yang College in Maija Yang of Kachin Region in Myanmar. In August 2018 113 students completed a self-report survey questionnaire which included the Internet Addiction Test, DASS-21, and the Internet Attitude Scale. Multiple regression analysis was used to predict internet addiction, study time, and academic performance. Results showed that anxiety, gender, and internet attitude were significant predictors of internet addiction. The research did not find any significant predictors of study time. Gender (female) and study time were significant positive predictors of academic performance, while internet addiction was a negative predictor of academic performance (GPA). Although females reported having higher levels of internet addiction, they also had higher GPA. The findings, limitations, recommendations, and conclusion of the study were discussed accordingly.

Keywords: Internet Addiction, Academic Performance, Anxiety, Gender, Study Time.

Introduction

Internet addiction is described as an individual's inability to control his/her use of the internet, which eventually causes psychological, social, school, and/or work difficulties in a person's life. Generally, addictive behaviors are found and concerned with having inappropriate lifestyle changes that ruin both the physical and mental health of personalities among young people. Adolescent students use the internet and online technology frequently, especially for communicating with friends and family members through social

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media such as Facebook, Instagram, emailing, messaging, and using chat programs (Usman, Alavi & Shafeq, 2014). According to Akhter (2013), researchers have shown that excessive use of the internet or internet addiction can harmfully affect the physical health, family life, and academic performance of students. Academic problems are caused by internet addiction, including such consequences as declining study habits, a significant drop of grades, absence from classes, and poor involvement in extracurricular activities. In addition, addictive internet use frequently causes psychological distress, such as anxiety, depression, feelings of loneliness, social isolation, and a compulsive fear that life without the internet would become empty, boring, and joyless (Akhter, 2013). Mafe and Blass (2006) suggested that nowadays the most internet-dependent users are young people. The risk of becoming an internet addict is highest for young internet users between 19 to 24 years old, more than for older users (Soule, Shell, & Kleen, 2003). Young and Rogers (1998) have proposed that internet addiction is most prevalent among university students.

In a study of over thirteen thousand students in multiple school centers in seven European countries (Greece, Spain, Poland, Germany, Romania, the Netherlands, and Iceland), the prevalence of adolescents who were reported to have internet addictive behavior (IAB) was between 7.9% and 22.8% (Tsitsika, Janikian, Schoenmakers, Tzavela, Olafsson, Wójcik, et al., 2014). In China, 34% of Chinese college students between the ages of 19 and 28 were estimated to suffer from social network addiction (Wan, 2009). The prevalence of internet addiction among Iranian university students was 43.7% in Iran (Hashemain, Moghadam, Delpisheh, & Moghadam, 2014). In Korea, the prevalence of Korean adolescents having an internet addiction was reported to be between 1.6% and 38% by another study as well (Kim, Ryu, Chon, Yeun, Choi, Seo, & Nam, 2006). In a systematic review of 658 articles concerning problematic internet use among US adolescents and college students published in the JAMA, the overall assessment reported that internet addiction in the US youth was estimated to be at 26% prevalence (Moreno, Jelenchick, Cox, Young, & Christakis, 2011). Most of the internet addictions are most prevalent among the younger age groups, and most university students have wider and easier access to the internet connection by means of mobile devices (Teke, 2011).

In Myanmar, in a study by Kyaw and colleagues, 72% of the participants were estimated to be using mobile internet daily in Myanmar. Among them, 38% of the participants are between 16-24 years old (Kyaw, That, et al., 2015). Suhail and Bargees (2006) reported that using the Internet impacts education in positive ways through growing communication with professors and

classmates, increasing access to educational databases and libraries, and improving study time and study habits. Previous studies of Internet usage has been inclined to focus on internet addiction among teenagers (Son, 2003). Although the advantages of the internet have been agreed to by most researchers as permitting students to have access to productive research tools such as having the opportunity to get educational information, engage in worldwide communication, and so on (Young, 1996), many students fall behind in their studies because of excessive investments in online relationships. As using the internet is very popular around the world, excessive usage internet can also have a negative impact on some individuals and on society at large. According to the American College Health Association-National College Health Assessment (ACHA-NCHAL) conducted in 2009, 19.7% of the college students surveyed revealed that there have been negative impacts of using the internet on their academic performance over previous years (ACHA-NCHA, 2009). Students reported they had troubles in their studies, getting enough sleep, and completing assignments as well (Nalwa & Anand, 2003). Young (1996) said that using the internet addictively can cause unhealthy effects on individuals, academic problems, changes to their social behavior, abilities, and habits. While many researchers from many countries have conducted research about internet addiction, there have been no previous studies on the subject in Maija Yang, Kachin Region, Myanmar. Thus, the purpose of this study was to concentrate on the undergraduate students' internet use in Maija Yang Institute of Education and Maija Yang College in the Kachin Region of Myanmar, and examine its impacts on academic performance.

Purpose of the study
1. To examine the effects of anxiety, stress, depression and attitudes toward the internet on internet addiction and academic performance of undergraduate students in Maija Yang.
2. To study gender differences with reference to internet addiction.
3. To investigate the impact of internet addiction on academic performance of the undergraduate students in Maija Yang.

Literature Review
According to Schneider (2006), the internet is enormous which is used all around the world for personal or for communication, research, entertainment, business transaction, and education. More people have been motivated to use it very often by these developed movements, and it has been a heavily strong application in twenty-first-century (Wanajak, 2011). Diverse researchers have searched to figure out the reasons why they are addicted to the internet (Wanajak, 2011). One of the examples, the users who are internet addicted are

for their personal needs such as in a sense of belonging; achievement of self-actualization; and dialogue and sexual images (Suler, 2000). Similarly, said that the people who are addicted to the internet practiced more personal satisfaction for escaping through online communications (Chou et al., 1999). Moreover, other researchers indicated that internet addicted people reveal that using internet is exciting, relaxing, and entertaining. By seeing that, the users with internet addiction (IA) are described for more satisfaction and enjoyment in internet interaction and normal internet users (Wanajak, 2011).

These days, according to Morrissey and Doyle (2008), addiction is currently defined as including abnormal psychological dependency on a variety of things such as food, sex, pornography, gambling, computers, internet, exercise, work, watching TV or videos, shopping, and spiritual obsession. Substance dependence, pathological gambling, and technology addiction are more related to Internet addiction. The characteristics of Internet addiction are shared by all forms of substance dependency, pathological gambling, and technology addiction, which have been shown to be the core components of addiction. Griffiths (1995) first introduced this newer conceptual framework to understand IA, where the definition of technology addiction was as a non-chemical or behavioral dependency involving human-machine interaction. One of the examples of technology addiction is television addiction (TV addiction). In the mid twentieth century, TV addiction was first introduced and later it was accepted as widespread among educators, parents, and journalists due to its impacts on the users (McIlwraith et al., 1991). According to Kubey (1996), TV addiction is not identified as any mental disorder, but its behaviors are the same as pathological gambling, paralleling five among the seven criteria of substance dependence, such as spending large amounts of time watching television; spending longer periods of time or more often than had been intended in watching television; repeatedly making unsuccessful efforts to cut down watching TV; giving up or withdrawing from valuable family time, social activities, and occupational activities that had previously happened in order to watch television. Eventually, TV addiction's diagnostic criteria became relevant to IA, such as preoccupation with using the technology; spending rising up amounts of time using the technology; making unsuccessful attempts to cut down or control one's use; replacing other activities with technology use; and causing problems with technology use to its users and others Kubey (1996).

Internet Addiction
Goldberg coined the term "Internet addiction" which was initially used to discuss the negative effects of using the internet excessively and having an impact on individuals' lives in the same way as substance abuse such as drug

addiction. These kinds of internet addicts can be harmed physically and emotionally from such dependency (Goldberg, 1995). There are different types of internet addiction, such as online addiction, cyperspace addiction, internet addiction disorder, net addiction, pathological internet use and high internet dependency (Davis, Flett et al., 2002). According to Griffiths (2000), there are six common core components to internet addiction, which are common to different types of addiction, such as salience, mood modification, tolerance, withdrawal, conflict, and relapse. They are defined as follows:

Signs of Internet Addiction
According to Illinois Institute for Addiction Recovery (2010), the followings are signs of internet addiction - 1) Preoccupation with the internet, 2) Increasing large amounts of time for using internet in order to get satisfaction, 3) Frequently and repeatedly, unsuccessful efforts to stop or control internet use, 4) Feeling of depression, restlessness, and irritability when trying to stop the internet use, 5) Staying on online longer than initially intended, 6) Because of excessive use internet, jeopardized or risked loss of important relationships, educational or job opportunities, 7) Telling lies to family members and others about hiding the extent of engagement with the internet, and 8) Using internet is for escaping from problems or releasing a dysphonic mood.

Theories of Internet Addiction
There are many different varieties of theories or conceptualizations about internet addiction.

Goldberg's Internet Addiction Theory
Goldberg (1996a) first introduced the internet addiction disorder term. The new disorder's criteria defined people who spend too much time on computers, which results in them experiencing occupational, social, family-related, financial, mental, physiological, or psychological problems. Goldberg (1996b) stated that his clarification of internet addiction as follows: maladaptive pattern of internet use, conducting to clinically significant impairment or suffering as manifested through three or more of the following, happening at any time of the same period of 12-months: (1) tolerance, (2) withdrawal, (3) persistent desire or unsuccessful efforts to control or cut down internet use, (4) spending so much time in activities of related to internet use, (5) giving up or reducing important social, occupational, or recreational activities because of internet use, and (6) keeping using the internet in spite of knowledge of persistence or repeated social, occupational, physical, or psychological problems. Goldberg said that the factors such as maladaptive behaviors such as harmful sleep problems, social problems, emotional problems, and ability

or capacity problems are because of internet addiction which can influence study time and effect academic performance.

Impulse Control Disorder Model

Young (1996) analyzed internet addiction as a kind of impulse control disorder since pathological gambling is categorized as one of impulse control disorders from the DSM-IV, and developed the questionnaire of diagnostic for internet addiction which based on the criteria of pathological gambling in the DSM-IV. Problematic internet use (PIU) was proposed by Young and defined as (1) out of control (2) clearly distressing, time consuming or out coming in social, problems of occupation or finance, and (3) both present in hypomania or manic symptoms. The criteria of diagnostic is based on the impulse control model for PIU including (1) maladaptive preoccupation with internet use, and (2) social and occupational impairment, or other important fields of functioning

Suler's Eight Factors of PIU

Suler (2000) told the difference between PIU and healthy could be fulfilled through examining eight factors which decide the type of person's association with the internet as following. (1) Amount of using time and kind of needs being satisfied through the online activity. (2) The primary level of removal of unmet needs that the more the user's causal needs have been stifled or opposed, the more the user will search for methods to meet those needs because the internet is more easier place to meet those needs than the actual world. (3) The kind of internet activity that the more characteristic or a particular activity includes, the more needs the user may try to meet by the internet. (4) The consequence of using the internet on user's real life capacity to function. Function may be affected in work performance, important relationship, and physical health. (5) Subjective feelings of distress that often feelings of depression, anger, guilt, frustration, and alienation related to the internet users are warning signs of pathological internet use. (6) Conscious knowledge of needs that the more people understand their motivations, the more they practice their ability as the unconsciousness conducting to compulsive internet use. (7) Knowledge and the period of the association that as internet users get knowledge and experience, they will often become aware that the activities of internet are not unmet their real needs or the originally of the internet wears off. (8) The steadiness and combination of in-person and cyberspace living that the involvement of healthy internet use are relationship with activities and real world relationship and an integration of online activities.

Grohol's Three Stage Model of PIU
According to Grohol (1999), PIU becomes a rather simple progression of three stages in both existing and new internet use. *At stage one:* users are delighted in using the new application or new technology of the internet. This passion, delighting, or obsession with new things results in the technological excessive use till the subject goes into stage two. *In stage two:* users are even bored and disillusioned using the online with the new technology on the internet and starts to keep away using the technology due to the over using it. This avoidance will last till the subject moves into stage three. *In stage three:* the users discover a balance and start to use the new technology at a usual level that does not intervene with the other areas of functioning. Grohol (2014) determined that each stage of online activity is phased to some degree; every people will finally progress to stage three on their own.

Davis' Cognitive-Behavioral Model of Problematic Internet Use (PIU)
Davis (2001) concluded about using the term "addiction" was that the most appropriate term to explain problematic internet use is "pathological internet use." According to Davis et al. (2002), he additionally made clarification to his model as there being two types of problematic internet use through positing that the two types are specific and generalized. Generalized PIU is multivariate in dimensionality and is generalized overuse of the internet. The people who are involved with generalized PIU will often spend a great deal of time online without having a specific purpose or reason. Generalized pathological internet use involves such things as overuse of instant messaging, emails, online games, chat rooms, etc. Davis (2001) described the distal contributory causes of PIU by utilizing a diathesis-stress framework. Under the framework of the diathesis-stress model, dysfunctional behavior is the result of a pre-existing diathesis (susceptibility) and stress (a stressful life experience).

Hall & Parsons' Internet Behavior Dependency
Hall and Parsons (2001) do not utilize a pathological model for problems of the internet. Firstly, excessive use of the internet is a comparatively inoffensive problem of living, and it is an effort made to compensate for absence of life satisfaction in other fields of functioning. Secondly, the average individual can moderate the behavior which is associated with uncontrolled internet use. Finally, Hall and Parsons (2001) postulated that internet behavioral dependence is generated by a maladaptive coping method that can be controlled by treatments of cognitive behavioral therapy. They said that fulfilling or achieving responsibilities at home, school, or work; wasting more time online with less pleasure; making self-control on internet usecan have positive effect on their academic performance.

Attitudes towards the Use of the Internet
There are a lot of applications of the Internet as a modern technology in various educational, commercial, political, and health fields that directly affect the nature of people's lives (Al Otaibi, 2012). Klobas and Clyde (2000) reported a longitudinal study in Iceland between 1993 and 1998 to find out the attitudes of adults in Iceland to the use of the Internet. They found that a positive attitude to the use of the Internet for those uses that became more widespread in the years 1994 to 1996. Duggan and colleagues studied 395 university students' attitudes to the educational use of the Internet by using a survey (Duggan, Hess, Mogan, Kim, & Wilson, 2001). Additionally, there were also preferential attitudes associated with good educational websites, sharing information with friends on the Internet, diverse reasons for using the Internet for educational purposes, and a high frequency of using the Internet (Duggan, Hess, et al., 2001).

Internet Addiction and Depression, Anxiety, and Stress
The study by Thomee, Eklof, Gustafsson, Nilsson, and Hagberg (2007) assessed whether a high level of information and communication technology use was a risk factor for developing psychological symptoms among young users who perceived stress, symptoms of depression and sleep disturbances. The concept of internet addiction was explored and the relationship between addictive symptoms and depression was also examined by Morrison and Gore (2010). The effects of the internet addiction levels on depression, loneliness, and self-esteem of secondary school students. The results as a positive, mid-level and significant relation with internet addiction has come out when depression, loneliness and self-esteem. Therefore, internet addiction is linked to depression to those who regard themselves as dependent on the internet report high levels of depressive symptom. Goel, Subramanyam, & Kamath (2013) studied anxiety among adolescents and youth, and showed that adolescents with excessive internet use had high scores on anxiety. Moreover, Jalalinejad Razieh, et al., (2012) studied among male and female university students and the relationship between addictions with anxiety and stress, and found that internet addiction among male students was more than for women.

Internet Use and Academic Achievement
For the study of Suhail and Bargee (2006), the survey for their study was with 200 university students from Pakistan, and around three quarters of respondents recorded that there were at least three aspects of positive effects in using the internet on their learning. First, internet use improved their grades. Second, the internet increased their skills of reading, writing, and information-processing. Third, the internet has been a helpful or useful tool in their studies. On the other hand, there have been some studies, for example by Chen & Peng

(2008), which found that there were negative associations with internet use and academic performance among college students. As an example, non-internet users mostly had higher academic grades than most users of the internet as a group. In the early studies of Young (1998b), students in this survey also had difficulties with studying, completing homework assignments, and getting enough sleep because of their overuse of the internet.

Gender Differences in Internet Addiction

It has been suggested by some studies that although there is not much of a gender gap in computer use among adolescents, boys and girls are still significantly different in what they do online (Clemente, 1998; Odell, Korgen, Schumacher, & Delucchi, 2000; Imhof, Vollmeyer, & Beierlein, 2007). One of the studies by Hamade (2009; n.d.) indicated the distribution of three levels of students' internet addiction, which showed that 75.6% of female students had no sign of addiction compared to only 46.6% of male students. Moreover, less than 25% of girl students had addicted behavior of the internet, but more than 50% of boy students were addicted. Besides, while around 18% of males were greatly addicted to the internet, only 6% of females were greatly addicted. According to Chen & Peng (2008) and Lin & Yu (2008), it is a fact that more females use the internet to look for information and more males use the internet to play games. Chen and Peng (2008) constructed patterns for genders based on a large national survey in Taiwan; while males spent more time playing online games than females, female spent more time making friends and chatting as well as searching for academic information.

Conceptual Framework
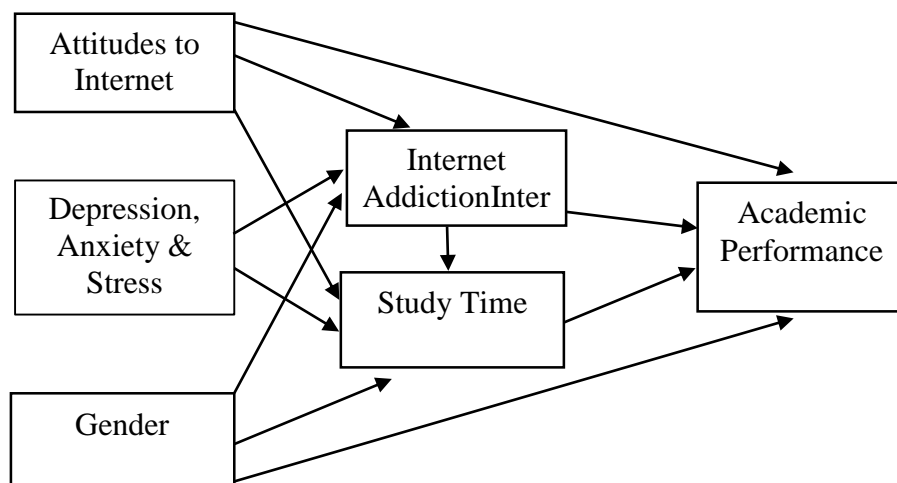
Figure 1: *Conceptual framework of relationship between internet addiction and academic performance.*

Research Methods

Research design
This research investigated the relationship between internet addiction and academic performance among undergraduate students at Maija Yang.

Participants and sample
The locale of the study was the Institute of Education and Maija Yang College in Maija Yang, and the main purpose of this study was to determine the impact of internet addiction on academic performance of the Dip.Ed students at IEd and Maija Yang College. Students studying in their second academic year were the participants of this study in August 2018 as they had already completed their first year and so it was easy to calculate academic performance as the mean value of their cumulative grade point average (GPA).

Sample size
The proposed path model was to be examined through path analysis, so the sample size required is determined by both the power of the statistical tests used in multiple regression analysis, the effect size of the predictor variables, and the number of predictor variables in the model. The required sample size was determined by using the statistical program G*Power 3.1.9.2 (Faul, Erdfelder, Lang, & Buchner, 2007). The program was set with the α error probability level at 0.05, power at 0.95, and effect size at 0.30 (medium, with estimated partial R^2 of .25) for a total of five predictor variables, and the required minimum sample size was determined to be 46. In order to enhance the reliability and external validity of the obtained findings, the decision was made to use a sample size of 113.

Research instruments
This research used a survey questionnaire to measure internet use. Self-report instruments were created specifically for this study. There was a 30-item questionnaire on the survey consisting of six subsections organized as follows: (1) demographic information, (2) time spent on academics, (3) internet usage patterns, (4) attitudes about internet use, (5) intensity of internet use, and (6) perceptions of the internet's impact on academics.

Internet Addiction Test (IAT)
Internet addiction was measured with the 20 items of Young's internet addiction test (IAT) which was developed by Young (1998). There were 20 questions which were designed to identify people as mildly, moderately, or severely addicted to the internet. The validity and reliability of this test has

been provided by Young, and Cronbach's alpha for various samples was 0.92 (Young, 1998).

The Depression Anxiety, Stress Scale (DASS-21)
was designed by Lovibond and Lovibond (1995) as a short version, self-rated questionnaire to assess the severity of the symptoms of depression, anxiety and stress; it consists of statements referring to the past week. Cronbach's alpha for various samples ranged for depression was .90, for anxiety was .82, and for stress was .86 (Lovibond, S.H. & Lovibond, P.F., 1995).

The Internet Attitude Scale (IAS)
is a 40-item 4-point Likert-type questionnaire (strongly disagree, disagree, agree, strongly agree) one-dimensional inventory for measuring attitudes towards the Internet. The validity and reliability of this test has been provided by Zhang (2007) for the first experiment with 302 undergraduate and graduate students; second experiment with 608 employees of a local enterprise. The report demonstrated that the Cronbach's alpha obtained was 0.81 for attitudes to the Internet.

The students' academic performance was measured with the actual grade point average (GPA) achieved in the previous semester.

Data Collection and Procedure
The data were collected at the Institute of Education (IEd) and Maija Yang College in Maija Yang in August 2018. The participants had the nature, purpose of the current study, and the instructions of the questionnaires explained, including being assured about the confidentiality of the data. The questionnaires were distributed at the Institute of Education in Maija Yang to 64 second year students from the Diploma of Education (Dip. Ed) program and 49 second year students from Maija Yang College.

Data Analysis
Independent sample t-tests were conducted to examine the differences in internet use and internet addiction by gender, and multiple linear regression analysis was used to determine the relationship between the predictor variables, internet addiction and academic performance.

Research Findings
The participants included 24 male and 88 female students who were all second year students from four different majors (table 1). The majority of the students (56.64%) were from Diploma of Education program, and the Environmental Development major had the least students (6.19%).

Table 1: *Demographics of participants (N = 113)*

Variables	Frequency	Percentage (%)
Gender		
- Male	24	21.23%
- Female	89	78.76%
Major		
- Computer Science	23	20.35%
- Political Science	19	16.81%
- Environmental Development	7	6.19%
- Diploma of Education	64	56.64%

Reliability analysis was conducted on the measures of internet addiction, the depression, anxiety, and stress scales of the DASS-21. The 20-item Internet Addiction scale had a Cronbach's alpha is 0.897; the scale mean is 61.04 and the SD is 15.95. The seven-item Depression subscale had an internal consistency Cronbach's alpha coefficient of .84. The subscale mean was 15.12 and the SD was 4.25. The seven-item Anxiety subscale had an internal consistency Cronbach's alpha coefficient of .814; the Anxiety subscale mean was 13.38 and the SD was 4.22. The Stress subscale had an internal consistency Cronbach's alpha coefficient of .710, a mean of 16.17 and an SD of 3.18.

Table 2 shows the means, standard deviations, and medians for the six modeled factors of gender, depression, anxiety, and stress, attitudes toward the internet, internet addiction, study time, and GPA. A value of 1 was assigned to males and 2 to females, and the mean of 1.78 reflects the high percentage of females in the sample. Based on the means and comparison to community normative samples, it is very clear that the participants revealed having a high level of interest in internet use, and also have above average scores in stress, anxiety, and depression as measured by the DASS-21 (Antony, Bieling, Cox, Enns, & Swinson, 1998, p. 180).

Table 2: *Means and Standard Deviations for the Six Factors Modeled in Path Analysis*

	Mean	**SD**	**Median**
Gender	1.78	.42	2.00
Depression	15.12	4.25	16.00
Anxiety	13.38	4.22	14.00
Stress	16.17	3.18	17.00
Attitudes to internet	126.77	10.75	126.00
Internet addiction	61.04	15.95	62.00
Study Time	3.76	1.67	3.58
GPA	74.24	4.99	74.33

Table 3 compares the DASS-21 scores for our sample to three other studies which have normative samples on the sub-scales of depression, anxiety and stress (Antony et al., 1998, p. 180). It shows that our undergraduate students have relatively high scores, almost matching the same levels of stress, anxiety, and depression of a clinical sample suffering from social phobia (Antony et al., 1998, p. 180).

Table 3: *Means and Standard Deviations for the DASS-21 compared to normative samples*

	Males	**Females**	**Total**	**UK**	**NCV**	**SOC**
Depression						
M	11.80	16.07	15.12	2.83	2.12	13.19
SD	3.894	3.867	4.247	3.87	3.64	9.28
Anxiety						
M	10.28	14.27	13.38	1.88	1.22	12.22
SD	3.208	4.069	4.222	2.95	1.77	10.20
Stress						
M	13.60	16.90	16.17	4.73	3.51	16.57
SD	2.160	3.051	3.181	4.20	3.78	10.91

Note. UK = United Kingdom nonclinical normative sample: NCV = Nonclinical Volunteers; SOC = Social Phobia

The Prediction of Internet Addiction from Internet Attitudes, Depression, Anxiety, and Stress
The first stage of the analysis in the path model is the prediction of internet addiction. The predictor variables were gender, attitudes toward the internet, depression, anxiety, and stress. Table 4 shows the overall significance of the effects of gender, internet attitude, and the DASS-21 components on Internet Addiction. This table shows the independent variables were able to explain

slightly more than half (50.4%) of the explainable variance for internet addiction.

Table 4: *General Linear Regression Analysis of Internet Addiction as predictors of Gender, Internet attitude, Depression, Anxiety and Stress*

Model	Mult R	Adj.R.Square	SE	F	Sig
1	.725	.504	11.24	23.742	.000

R squared = 50.4%, P < .001

Table 5 describes the regression of the dependent variable of Internet Addiction by the predictor variables of gender, internet attitudes, and DASS. Based on the regression analysis, the finding indicates that internet attitude and anxiety have significant on Internet addiction. Results report that anxiety is the most significant predictor of addiction, with the highest beta value (β = .429, t = 4.376, P < .001). Internet attitude is also a significant predictor of addiction, showing a beta value (β = .278, t = 3.894, P < .001). In addition, gender is marginally significant as a predictor (β = .150, t = 2.000, P = .048). It seems that female students are more likely to report being addicted to the internet than are male students. Anxiety has the greatest relationship with the variable of internet addiction. However, depression and stress were not significant predictors.

Table 5: *Regression Analysis of Internet Addiction as predictors of Gender, Internet attitude, and DASS*

	B	SE	β	T	Sig
(Constant)	-28.179	13.116		-2.148	.034
Gender	5.744	2.871	.150	2.000	**0.48**
Internet Attitude	.412	.106	.278	3.894	**.000**
Depression	.367	.397	.098	.923	.358
Anxiety	1.861	.425	.492	4.376	**.000**
Stress	-.226	.575	-.045	-.394	.694

Dependent Variable: Internet Addiction

There was no significant result from the regression analysis on the dependent variable of study time by the predictor variables of gender, internet attitudes, and depression, anxiety, and stress from the DASS-21.

Academic Performance as measured by Grade Point Average (GPA)
Table 6 shows the overall significance of the effects of study time, internet addiction, gender, and internet attitude on the students' academic performance as measured by Grade Point Average. This table shows the independent variables that were able to explain 15% of the variance in Grade Point Average.

Table 6: *General Linear Regression Analysis of Grade Point Average with predictors of Gender, Study time, Addiction, and Internet attitude*

Model	Mult R	Adj.R Square	SE	F	Sig
1	.426	.151	4.460082	5.933	.000

Adjusted R square = 15%, P < .001

Table 7 presents the analysis of the regression analysis on the dependent variable of GPA by the predictor variables of gender, study time, addiction, and internet attitudes. Based on the regression analysis, table 7 shows that gender, study time, and internet addiction were significant predictors; however, internet attitude was not. Gender was the best predictor of GPA, and because the sign is positive this means that actually the female students had the higher average grades (β = .333, t = 3.476, P=.001). Internet addiction had a negative influence on GPA, and was the next strongest predictor (β = -.327, t = -3.143, P = .002). Internet attitude was not a significant predictor of GPA. Finally, study time was also a strong predictor of GPA (β = .215, t = 2.458, P = .016). Among the three significant predictors, gender (being female) had the highest positive relationship with Grade Point Average.

Table 7: *Regression Analysis of Grade Point Average with predictors of gender, study time, addiction, and internet attitude*

	B	SE	β	t	Sig
(Constant)	61.617	5.400		11.411	.000
Gender	3.980	1.145	.333	3.476	**.001**
Study Time	.643	.262	.215	2.458	**.016**
Addiction	-.103	.033	-.327	-3.143	**.002**
Internet Attitude	.074	-.045	.160	1.661	.100

Dependent Variable: Academic Performance (GPA)
When we remove internet attitude from the list of predictors, the resulting regression equation has a multiple R of .401, an R square of .160, and an adjusted R square of .137, so it accounts for around 14 percent of the variance in GPA. These modified results are shown in table 8. Gender has the strongest influence on GPA with females having higher grades (β = .332, t = 3.438,

P = .001). Addiction is the next most important predictor (β = .260, t = -.688, P = .008). This was followed by study time (β = .220, t = 2.491, P =.014).Among them, gender still has the highest predictive relationship with Grade Point Average, and the predictors maintained the same order in terms of relative importance in predicting GPA.

Table 8: *Regression Analysis of Grade Point Average with predictors of gender, study time, and internet addiction*

	B	**SE**	**β**	**t**	**Sig**
(Constant)	69.682	2.381		29.265	.000
Gender	3.69	1.154	.332	3.438	**.001**
Study Time	.657	.264	.220	2.491	**.014**
Addiction	-.082	.030	-.260	-2.688	**.008**

Summary of Research Findings.

Figure 2 displays the path analysis of internet addiction and academic performance, with only the significant regression coefficients displayed. To summarize, there were no significant predictors of study time. The findings yielded that the psychological variables of anxiety, stress, and depression did not have any influence on study time; neither did attitudes toward the internet or gender. Furthermore, among the psychological predictors only anxiety from the DASS-21 had a significant positive influence on internet addiction (β = .492, t = 4.376, P < .001). This indicates that the more anxiety the participants have, the higher their reported internet addiction. Although we have modeled anxiety as affecting internet addiction, it is also possible that internet addiction may result in higher levels of anxiety. Internet addiction was also significantly predicted by internet attitude and gender (being female). Positive attitudes toward the internet did not have a significant positive effect on academic achievement, but these attitudes were positively correlated with internet addiction and hence, internet attitude had an indirect effect on academic performance of university students via addiction (multiplying the indirect effects, the result is .290 x -.260 = -.075). Therefore, there was no significant direct effect of internet attitude on GPA. Gender difference does have an influence on internet addiction, in that females report having more internet addiction; however, it is also a significant direct predictor of GPA (β = .332, t = 3.438, P < .001 from table 8). So, female students achieve higher academic performance, but they also have higher levels of internet addiction, which can negatively influence GPA. The indirect effect would be relatively small, β =.158 x -.260 = -.041. Internet addiction was shown to have a significant direct negative impact on academic performance of university students (β = -.260, t = -2.688, P = .008 from table 8). This demonstrates that the more internet addiction the participants report

having, the lower is their tendency to have a good GPA. Finally, self-reported study time (number of hours spent studying per day) has a significant positive impact on academic performance ($\beta = .220$, $t = 2.491$, $P = .014$).
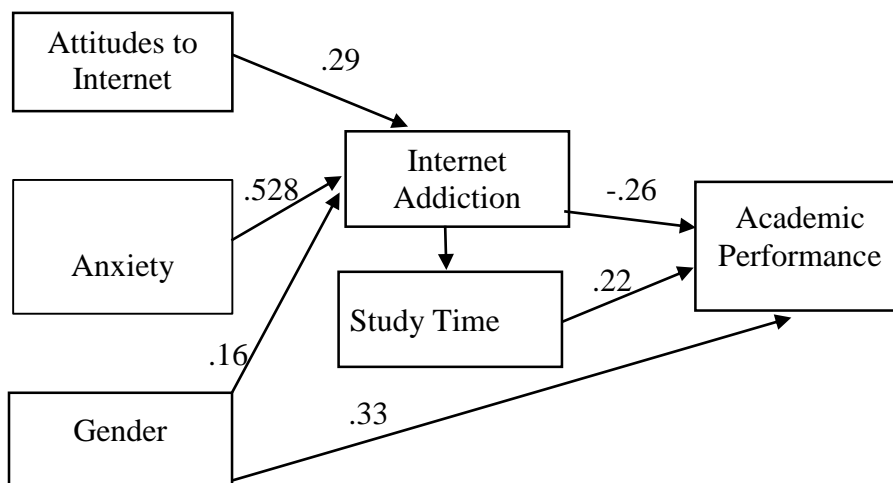
Figure 2. *Path analysis of internet addiction and academic performance.*

DISCUSSION

Influence of Depression, Anxiety, and Stress on Internet Addiction
The results showed that there was no significantly positive influence of depression and stress on internet addiction. However, anxiety was positively correlated with internet addiction. The findings revealed that DASS-21 had not shown any significant effect on study time, and only anxiety from the DASS-21 had a positive influence on internet addiction. The finding is only partially consistent with the previous research (Akin & Iskender, 2011) that stated that there was a positive relationship between internet addiction and depression, anxiety, and stress. Furthermore, it showed consistency with the previous research by Goal, Subramanyam & Kamath (2013) who had shown that adolescents with excessive internet use had high scores on anxiety. The findings show that there is a significant correlation between the anxiety level of Kachin students and their internet addiction. The more addicted to the internet a student reports being, the more anxiety he/she has. However, even the participants who use the internet excessively do not show symptoms or elevated signs of depression or stress.

Gender Difference in Internet Addiction

Another finding of this study that was significant revealed a gender difference to internet addiction. Previous studies have reported that internet addiction was more likely among males (Hamade, 2009), but these results found internet addiction was higher among females than males. A previous study suggested that there is not much of a gender gap among adolescents in using the internet (Hamade, 2009). But the finding is inconsistent with previous research (Hamade, 2009) which found that female students had less internet addicted behavior than male students. Young (1998) noticed that women communicate differently using the internet than men, and men often seek out the most popular internet activities, such as emailing, playing games, surfing for information about hobbies and interests; however, women generally searched for close friendships and preferred unknown communication in which they can conceal their identity. The communication difference may account for differences in the typical type of device students' use for accessing the internet. While all of the students use smart phones, women are more likely to use smart phones exclusively, and male students are more likely to use a variety of devices, such as laptops and desktop computers. Thus, with the advent of smart phones female students may be more frequently using the internet and reporting higher levels of internet addiction.

The Impact of Internet Addiction on Academic Performance

The findings revealed that internet addiction did have a significant direct negative impact on academic performance of students: the more addicted to the internet the students are, the lower their grade point average is. However, although more female students had higher levels of addicted behavior to the internet, they also achieved higher academic performance than the male students. The finding is consistent with previous research that women tend to get higher grades in university studies (Sheard, 2009; Dayioğlu & Türüt-Aşik, 2007). It is also consistent with studies which show that internet use tends to have a positive impact on academic study. For instance, Suhail and Bargee (2006), in a study with 200 university students from Pakistan, found that the students increased their grades, improved their skills of reading, writing, and information-processing, and reported that the internet was a useful tool for their studies. Kuh and Hu (2001) also revealed with students from United States that there were positive effects from internet use, such as intellectual development and personal development. Therefore, this demonstrates that if students use the internet in ways that are purposefully related to school work or research activities or homework, they can also achieve high grades and better academic performance.

Limitations

First, the research is based on self-reported data. From the report of Fischer and Fick (1993), we know that social desirability is a probable problem for research studies with self-report data. There is a tendency for some to answer questions in a survey in the way that they think the researcher wants them to answer, or to present themselves in the most socially desirable manner. Therefore, the participants of this study may not have been completely forthright in the self-report questionnaire. However, the responses to the DASS-21 scales measuring anxiety, stress, and depression were high for a non-clinical sample, suggesting that for the most part the respondents were providing honest and frank assessments of their emotional state, and further suggests that their descriptions of their internet use and addiction are also forthright and not heavily influenced by social desirability response tendencies. The second limitation was that the participants of this research had not been balanced in terms of gender, because there were many more females students than male students at the colleges where data were collected. Previous research (Anderson, 2001; Kubey et al., 2001; Morahan-Martin & Schumacher, 2000; Schere, 1997) has indicated that boys are significantly more likely than girls to experience internet addicted behavior. If there had been gender balance in this survey research, the data might have shown results that are a bit more similar to the other previous studies. The third limitation is the English proficiency of the students. The questionnaire was not translated into Kachin language from English, so the participants might have had some difficulty understanding the questionnaire. However, the researcher explained in the Kachin language first the scales and then each item in the questionnaire in the three classrooms where the surveys were administered. Nevertheless, if we had translated the survey to Kachin, some respondents with pre-intermediate level of English might have been able to provide more accurate answers. The last limitation is that the content of the questionnaire used survey measures that were designed based on Western culture, which might not be suitable for an Asian culture. If the questionnaire could have been designed from an Asian culture perspective, this might have affected the research findings.

Recommendations

As this study was the first time research was conducted in Maija Yang, Kachin State, Myanmar on internet use and addiction, there is really no way of telling if the results are representative, or how the findings may be generalized to the larger population. One way to accomplish this would be to use a version of the questionnaire translated in to the Kachin language, and see if the results are similar. This can help determine which populations are suitable for this kind of research. The next recommendation is that research on internet

addiction could be conducted on a larger sample, which would make the results more reliable. Another recommendation would be to develop an intervention study to explore ways to encourage participants to use the internet less and adopt alternative behaviors during their leisure time, such as playing sports, working out, or making new friends outside instead of spending too much time on the internet.

Conclusions

In this research, the results of the statistical analyses indicated that the participants were positively influenced by the effect of anxiety as measured by the DASS-21, so that the more anxiety they have, the greater their internet addiction; it was also possible that internet addiction may cause the higher levels of anxiety. Generally, contrary to previous research findings, females in this study were more likely than males to use the internet more. Likewise, the results of this research discovered that reported internet addiction was higher among females than males, which are the opposite from others research. However, female students also achieved higher academic performance. It was revealed that internet addiction does have a significant direct negative impact on students' academic performance: the students who reported having internet addicted behavior also got a lower grade point average, but study time was also a significant predictor. Nevertheless, according to the findings of this research, female students had higher levels of internet addicted behavior than male students, but they also performed higher academic achievement than the male students. This is because female students use the internet for purposeful school related activity, such as research on assignments, homework, and information relevant to getting better grades. The female students, therefore, achieved high grades and academic performance. In summary, anxiety influences internet addiction, and internet addiction could also affect anxiety, and there were impacts of internet addiction on academic performance.

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