

Internet Addiction and Academic Performance of University Students

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Abstract: *This study has an aim to investigate the relationship between internet addiction and academic performance of university students. For this purpose, 267 undergraduate students were selected from different colleges affiliated with Sambalpur University. Internet addiction scale developed by Young (1998) was used to collect the data from the sample. The results of this study revealed that on an average 47.65 university students are internet addicted irrespective of their gender, streams of education and habitat. This study also revealed that academic performance of university students can be significantly predicted by internet addiction as the $R^2 = .034$ (3.4%). Gender and habitat were not significant predictors of internet addiction, but streams of education were significant predictors of internet addiction. With reference to gender and streams of education there is significant difference but with reference to habitat or residence there is no significant difference. There is also no significant difference in internet addiction due to the interaction between gender and streams of education, gender and habitat, streams of education and habitat, and among gender, streams of education and habitat.*

Keywords: Internet addiction, Academic performance, and University students

Introduction:

With the emergence of technology and high-speed internet, more students are using the internet to fulfil their individual needs. Every student can be able to access the knowledge and information at anytime and anywhere via the internet. On the other hand, Covid-19 pandemic has changed the structure and function of the educational system. It increases the demand of online learning as well as shifts the process of delivering instruction from the traditional way to digital forms of learning. In this regard, students have spent more time on the internet for various purposes (Ito et al., 2008). This excessive use of the internet especially among university students can create an interest among the researchers to know whether the overuse of the internet leads to addictive behaviour or does spending more time in the internet affect the academic career of the students?

The use of the internet has been significantly increased throughout the world, especially among young people. It has been found that 18.3% from Great Britain (Niemz et al, 2005); 16.2% from Poland (Licwinko et al, 2011); 15.1% from Taiwan (Lin et al., 2011); 9.8% from USA (Anderson, 2001); 5.6% from China (Dong et al., 2012); and 2.8% from Iran (Ghamari et al., 2011) university students are internet addicted. In India, the number of internet users has increased from 5 million in 2000 to 560 million in 2019 (Internet World Stats as cited by Kumari et al., 2022). The reason for the growing demand of using the internet among the users especially in young generations is complicated. Some students use it to facilitate their research, academic works, interpersonal relationships, and business transactions (Goel et al., 2013). On the other hand, others may use it to indulge in social media platforms (Kuss & Griffiths, 2011; Leung & Lee, 2012) like Facebook (Kittinger et al., 2012), Instagram, YouTube, WhatsApp (And one et al., 2016; Chen et al., 2017) and online chatting (Huang, 2006; Leung, 2004).

Though the use of the internet has brought significant contribution to our life, but its excessive use may lead to addiction. Internet addiction is defined as an uncontrolled use of the internet that can impair social and functional behaviour of an individual (Solomon, 2009). Additionally, the lack of control over the use of the internet may lead to various psychological, social, academical, and occupational problems for individuals (Davis et al., 2002; Goldsmith et al., 2000). The term 'Internet Addiction' was first used by Dr. Ivan Goldberg in 1995. According to him, when the individuals excessively or compulsively use the internet, they can become internet addicted. Several terms are also associated with it like 'Internet addiction disorder', 'pathological internet use', 'problematic internet use', 'excessive internet use', and 'compulsive internet use'.

Related literatures:

It has been found that the use of internet has both positive and negative implications. Constant touch with friends, planning for summer vacation, economic management, improving in communication skills as well as using successful strategies for academic benefits are some of the advantages of internet (Mishra, 2014). Similarly, some other studies have also shown that the use of internet has increased academic performance of the students as it provides necessary information for completing the homework (Borzekowski

& Robinson, 2005; Jackson et al., 2006). On the other hand, disruption in daily habits, conflict in family relationships, and low academic performance are some of the negative effects of internet (Akhter, 2013; Frangos, 2009; Moisan, 2012). Apart from these, it also negatively affects the physical such as Disturbed in sleep pattern, headache, and fatigue (Jeon, 2005; You, 2007; Yang & Tung, 2004) and psychological Unable to control emotions, restlessness, irritability, anxiety, and lack of proper way of thinking aspects of the students (Ferraro et al., 2007).

With reference to the use of internet there is a variation in gender. Though a significant number of studies state that boys are more prone to internet addicted (Akhter, 2013; Chou et al., 2005; Morhan-Martin & Schumacher, 2000; Yang & Tung, 2007; Simos et al., 2008; Widyanto & Griffiths, 2006) but others have supported to girls (Igarashi et al., 2005; Shahrestanaki et al., 2020) and some said that there is no difference in gender (Preza et al., 2004; Chung, 2011). Instead of these inconsistencies in gender, most of the researchers of India have documented that boys are more internet addicted (Kumari et al., 2021; Bhat & Kawa, 2015; Goel et al., 2013; Jain et al., 2020; Sinha et al., 2018). But this variation in using internet among the students is mostly culture specific. For instance, in eastern culture female students are strictly regulated by their family members to use internet whereas male or boys are getting more freedom from their family to use the internet which may be the reason of internet addicted. On the other hand, in western culture there is less emphasis on regulating the use of internet in terms of gender which may be the reason for no difference of gender in using of internet.

Previous empirical evidence indicates that excessive use of internet has an adverse effect on the academic performance of the students (Nemati & Matlabi, 2017). The students who spend more time in internet have less interest in studying, lack of concentration on the classroom, as well as less involvement in academic activities (Beyens et al., 2015). Along with the above, it can also lead to absenteeism in the classroom and increase the dropout rates. In this regard, a study has been conducted on 9949 Chinese students and found that excessive use of internet can negatively affect academic performance, increase dropout rates and absenteeism in the classroom (Anthony et al., 2021).

Though a significant number of research studies have been conducted around the world to study the impact of internet addiction on academic performance (Fitzpatrick, 2008; Thatcher & Goolam, 2005; Ko et al., 2006; Ferraro et al., 2007) but it is very less explicit in Odisha state especially in Bargarh district. Despite its various effect, there are very few numbers of studies available in Bargarh district.

RQ1: Does academic performance of university students predict by internet addiction?

RQ2: Does internet addiction predict by gender, streams of education, and habitat?

RQ2: Does internet addiction vary in terms of gender, streams of education, and habitat?

Research objectives:

1. To find out the level of internet addiction of university students.
2. To study whether academic performance of university students can be predicted by internet addiction.
3. To study whether internet addiction of university students is predicted by gender, habitat, and streams of education.
4. To study whether internet addiction can be differed by gender, habitat, streams of education, and their interaction.

Research hypotheses:

H₀₁: Academic performance cannot be predicted by internet addiction.

H₀₂: Internet addiction cannot be predicted by gender, habitat, and streams of education.

H₀₃: Internet addiction cannot be differed by gender, habitat, and stream of education.

Methodology:

Method: The present study is quantitative in nature and the aim is to study the association between internet addiction and academic performance of university students. For this purpose, descriptive survey cum correlational research design was used.

Participants: A total group of 267 undergraduate internet users were selected from 4 different colleges of Bargarh district affiliated by Sambalpur University. For this, convenience sampling technique was used.

Instruments: Internet addiction test (IAT) was used for assessing the level of internet addiction. This scale was developed by Kimberley Young, 1998. This scale consists of 20 items and each item is scored in five-point rating ranged from 0-5. The range of internet addiction 0-29 indicates normal level of addiction, 30-49 indicates mild level of addiction, 50-79 indicated moderate levels

of addiction and 80-above indicates severe levels of addiction. The reliability of this scale is 0.899 (Cronbach Alpha). Previous semester marks were considered as academic performance of the university students.

Statistical techniques: The collected data were analysed by using percentage, graph, average, SD, ANOVA, and regression.

Table.1. Distribution of sample (N=267)

Category	Group	N	Percentage
Gender	Girls	155	58.05%
	Boys	112	41.95%
Habitat	Rural	161	60.29%
	Urban	101	39.71%
Stream of education	Arts	152	56.92%
	Science	46	17.22%
	Commerce	69	25.84%

Results:

The collected data was analysed via SPSS.27. The following tables represent the results of the present study.

1. Descriptive analysis of the internet addiction:

Table.2. Range of internet addiction (N=267)

Range	Frequency	Percentage	Results
0-29	28	10.48%	Normal
30-49	105	39.32%	Mild
50-79	97	36.32%	Moderate
80-100	34	12.73%	Severe

From the above table it can be said that out of 267 students 10.48% (28) students are normal level of internet addicted, 39.32% (105) students are mild level of internet addicted, 36.32% (97) students are moderate level of internet addicted, and 12.73% (34) students are severe level internet addicted. The results of the above table are represented with the help of graph.

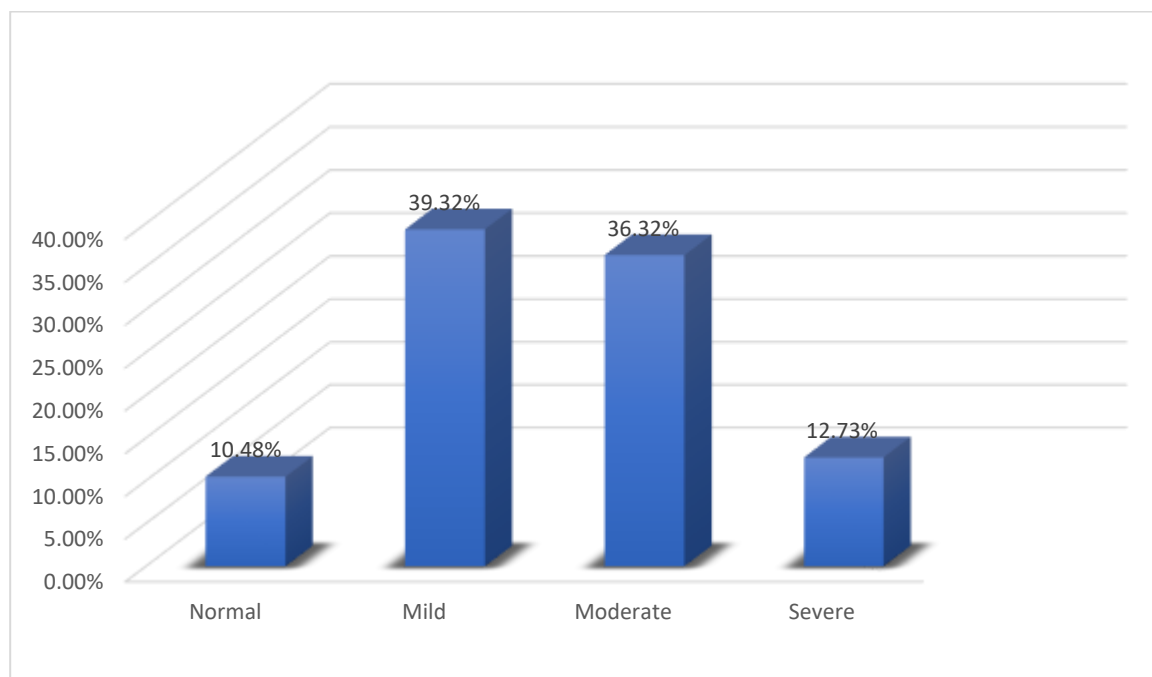


Figure-1

Table.3. Mean and SD of internet addiction in terms of gender, habitat, and stream of education.

Category	Group	Mean	SD
Sex	Girls	48.21	17.630
	Boys	53.94	17.195
Habitat	Rural	48.35	17.598
	Urban	48.76	17.225
	Arts	53.61	17.305
Streams of education	Commerce	48.26	15.727
	Science	37.46	13.285
Total		47.65	16.56

The above table displays the descriptive statistics i.e., mean, and standard deviation of internet addiction among university students in relation to their gender, habitat, and streams of education. In this table, it was found that the Mean and SD of internet addiction for girls is 48.21 & 17.630 respectively, and for boys is 53.94 & 17.195 respectively. The Mean and SD for rural students is 48.35 & 17.598 respectively and for urban students is 48.76 & 17.225 respectively. Similarly, the mean and SD for arts students is 53.61 & 17.305, for commerce students is 37.46 & 13.285 respectively, and for science students is 47.65 & 16.56 respectively. It has been also found that on an average 47.65 university students are internet addicted irrespective of their sex, habitat, and streams of education which means they have moderate level of internet addicted.

2. To study whether academic performance of university students is Predicted by internet addiction or not:

One of the objectives of present study was to investigate whether the academic performance of university students is predicted by internet addiction or not. In this study, both academic performance and internet addiction are scaled variables. Academic performance is an outcome variable whereas internet addiction is an independent variable. For this, Simple linear regression was used. The results of simple linear regression were given below.

Table.4. Regression coefficient of internet addiction and academic performance of university students

Variables	B	β	R^2	SE	F-value	P-value	t-value	P-value
Constant	464.822			12.383				
Internet addiction	-.731	-.184	.034	-.731	9.263**	.003	37.538**	.001

** Significant at 0.01 level

* Significant at 0.05 level

The above table shows the results of simple linear regression where the outcome variable (academic performance) was regressed or predicted by internet addiction. It is found that internet addiction is a significant predictor of the academic performance of university students. The result of R^2 is .034 which means 3.4% difference or variation in academic performance of students is due to internet addiction. The f statistic of this model is 9.263 for the df (1, 265) which is significant at 0.01 level. Similarly, the t-value of this study is 37.538 which is also significant at 0.001 level. So, the null hypothesis i.e., academic performance cannot be predicted by internet addiction is rejected at 0.01 level.

3. To study whether Gender, Habitat, and Streams of education as predictors of Internet addiction or not.

One of the objectives of this study is to find-out whether gender, habitat, and stream of education are significant predictors of internet addiction or not. In this objective, gender has two categories i.e., boys and girls, habitat has two categories rural and urban, and streams of education have three categories i.e., arts, commerce, and science. To fulfil the above objectives, simple linear regression was run by converting the above cited independent variables into dummy variables with the help of SPSS.27

Table. 5. Results of simple linear regression

Model	Regression weight	β	R^2	F	P-value	t-value	P-value
1. Gender	Girls (Ref.)						
	Boys	.731	.000	.114	.736	.338	.736
2. Habitat	Rural (Ref.)	.416	-.004	.036	.849	.191	.849

		Urban						
		Arts (Ref.)						
3. Stream of education	Commerce	-5.344	.153	23.887**	.001	1.974*	.049	
	Science	-16.141				6.911**	.001	

**Significant at 0.01

*Significant at 0.05

From the above table it is found that only stream of education is a significant predictor of internet addiction ($R^2-.153$, $F-23.887$, $P<.001$) whereas gender ($R^2-.000$, $F-.114$, $P>.005$) and habitat ($R^2-.004$, $F-.036$, $P>.05$) is not significant. It has been found that only 15.3 % variation in internet addiction is predicted by stream of education. So, the null hypothesis i.e., internet addiction cannot be predicted by gender and habitat is accepted whereas the null hypothesis i.e., internet addiction cannot be predicted by the streams of education is rejected.

4. To study whether internet addiction of university students is differed by gender, habitat, streams of education, and their interaction or not.

In this objective there are three independent variables i.e., gender, habitat, and streams of education and one dependent variable i.e., internet addiction. Gender has two levels i.e., boys and girls, streams of education have three levels i.e., arts, commerce, and science and habitat has two levels i.e., rural, and urban. In this regard, 3-way ANOVA ($2*3*2$) was run with the help of SPSS.27.

Table. 6. Results of three-way ANOVA

Source	Sum of Squares	df	Mean Squares	F	Sig.	Results
Gender	1012.054	1	1012.054	3.879*	.050	Significant
Streams of education	12600.493	2	6300.247	24.147**	.001	Significant
Habitat	783.733	1	783.733	2.831	.094	Not significant
Gender*streams of education (2*3)	61.378	1	30.689	.118	.889	Not significant
Gender*habitat (2*2)	2.327	1	2.327	.009	.925	Not significant
Streams of education*Habitat (3*2)	467.093	2	233.547	.895	.410	Not significant
Gender*Streams of education*Habitat (2*3*2)	199.908	2	99.954	.383	.682	Not significant
Error	66531.678	255	260.909			
Total	709107.000	267				
Corrected total	80716.704	266				

a. R Squared= .176 (Adjusted R Squared= .140)

*Significant at .05

**Significant at .01

4.1. Variation in internet addiction due to the gender:

From the above table no 6 it can be said that the F value is 3.879 for gender which is significant at 0.05 level of significance. It means there is a significant difference in internet addiction between boys and girls. So, the null hypothesis i.e., internet addiction can not be differed by gender is rejected.

4.2. Variation in internet addiction due to the streams of education.

The above table 6 shows the F-value for streams of education is 24.147 which is significant at 0.01 level. It means, there is a significant difference in internet addiction among arts, commerce, and science students. So, the null hypothesis i.e., internet addiction cannot be differed by streams of education is rejected.

As there is a variation in internet addiction due to streams of education and significant differences exist among arts, commerce, and science students, so, it can be better for conducting post-hoc test to know whether each stream is significantly differed from each other or not. For this purpose, Turkey method was employed with the help of SPSS.27.

Table.7. Multiple comparison.

(I)Stream of education	(J) Stream of education	Mean difference (I-J)	Std. Error	Sig.	95% confidence interval	
					Lower bound	Upper bound
Arts	Commerce	5.34	2.718	.123	-1.06	11.75
	Science	16.14**	2.345	.001	10.61	21.67
Commerce	Arts	-5.34	2.718	.123	-11.75	1.06
	Science	10.80**	3.075	.002	3.55	18.05
Science	Arts	-16.14**	2.345	.001	-21.67	-10.61
	Commerce	-10.80**	3.075	.002	-18.05	-3.55

**Significant at .01

*Significant at .05

The above table7 shows the mean difference in internet addiction among arts, commerce, and science students. From these multiple comparisons it is found that Arts vs Science students and Commerce vs Science students are significantly different in internet addiction at 0.01 level whereas Arts vs Commerce students is not significantly different in internet addiction.

4.3. Variation in internet addiction due to the habitat:

From the above table 6 it can be said that the F value for habitat is 2.831 which is not significant at 0.05 level of significance. It means there is no significant mean difference in internet addiction between rural and urban students. So, the null hypothesis i.e., internet addiction can not be differed by habitat is accepted.

4.4. Variation in internet addiction due to the interaction of gender and streams of education:

The above table 6 shows the F value of interaction between gender and streams of education is .118 which is not significant at 0.05 level of significance. It means the mean score of internet addiction of boys and girls belonging from arts, commerce, and science streams of education did not differ significantly. So, the null hypothesis i.e., internet addiction cannot be differed due to the interaction between gender and streams of education is accepted.

4.5. Variation in internet addiction due to interaction between gender and habitat:

From the above table 6 it can be said that the F value for the interaction between gender and habitat is .009 which is not significant at .05 level of significance. It means the mean score of internet addiction of boys and girls belonging to rural and urban areas did not differ significantly. So, the null hypothesis that internet addiction of university students can not be differed by the interaction between gender and habitat is accepted.

4.6. Variation in internet addiction due to the interaction between streams of education and habitat:

The above table 6 shows the result of F-value for the interaction between streams of education and habitat is .895 which is not significant at 0.05 level of significance. It means the mean score of arts, commerce, and science students belonging from rural and urban areas did not differ significantly. So, the null hypothesis that internet addiction of university students can not be differed due to the interaction between streams of education and habitat is accepted.

4.7. Variation in internet addiction due to the interaction between gender, streams of education, and habitat:

The F-value for the interaction among gender, streams of education, and habitat is .383 which is not significant at 0.05 level of significance. It means the mean score of university boys and girls having arts, commerce, and science stream of education and belonging to rural and urban areas in internet addiction did not differ significantly. So, the null hypothesis that internet addiction cannot be differed due to the interaction among gender, streams of education, and habitat is accepted.

Summary:

Table. 8. Summary of the outcomes in objective wise

Objectives	Hypothesis	Accepted/ Rejected	Results
<i>To study the level of internet addiction of university students</i>			10.48%-Normal level of addicted, 39.32%- Mild level of addicted, 36.32% moderate level of addicted, and 12.73% severe level of internet addicted.
<i>To study whether academic performance of university students can be predicted by internet addiction.</i>	Academic performance cannot be predicted by internet addiction.	Rejected	3.4 % of academic performance can be predicted by internet addiction.
<i>To study whether internet addiction can be predicted by gender, streams of education and habitat.</i>	Internet addiction cannot be predicted by gender, streams of education, and habitat.	Hypothesis partially rejected	Internet addiction was predicted by streams of education but not be gender and habitat.
<i>To study whether internet addiction of university students can be differed by gender, streams of education, habitat, and their interaction.</i>	Internet addiction of university students cannot be differed by gender, streams of education, habitat, and their interaction.	Hypothesis partially rejected	Significant difference in internet addiction between boys and girls, arts, commerce, and science students but not in between rural and urban students. Not significant difference between the interaction of gender and streams of education, gender and habitat, streams of education and habitat. Not significant difference among the interaction of gender, streams of education, and habitat.

Discussion:

The main aim of present study was to investigate the relationship between internet addiction and academic performance of university students. The results of this study revealed that on an average 47.65 university students are internet addicted irrespective of their gender, streams of education, and habitat. The results of this study revealed that internet addiction of university students is more than the USA, Great Britain, Poland, China, and Taiwan (Anderson, 2001; Niemz et al, 2005; Licwinko et al, 2011; Dong et al., 2012; Lin et al., 2011).

The result of this study shows that academic performance can be significantly predicted by internet addiction. Excessive use of internet may lead to distraction and procrastination among the university students. University students have spent more time on social media, online gaming, and other online activities which may impair their academic performance. The result of this study is consistent with several previous studies (Nemati & Matlabi, 2017; Beyens et al., 2015).

Gender and residential locality were not significant predictors of internet addiction of university students, but streams of education were a significant predictor of internet addiction. But with reference to gender, streams of education, and habitat, it is found that there is a significant difference in internet addiction between boys and girls university students. As the mean score of boys is higher than girls, so, it can be said that boys are more internet addicted than girls. This result is consistent with previous studies (Akhter, 2013; Chou et al., 2005; Morhan-Martin & Schumacher, 2000; Yang & Tung, 2007; Simos et al., 2008; Widyanto & Griffiths, 2006).

With reference to the streams of education, it is found that there is a significant difference in internet addiction among arts, commerce, and science university students. After the post-hoc test it has been found that there is a significant difference between arts and science, science and commerce but not arts and commerce. The result of this study also revealed that there is no significant difference in internet addiction between rural and urban university students. It is also found from this study that internet addiction cannot be differed due to the interaction between gender and streams of education, gender and habitat, streams of education and habitat, and interaction among gender, streams of education, and habitat.

Conclusion:

In present day internet has become an essential part of every individual especially for university students. Though internet provides number of benefits to the students, but its excessive use can have negative impact on various aspects of university students including their academic performance. Overuse of internet may create distraction from the study, lead to procrastination, as well as affect the psycho-social aspects of the students.

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