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Nomophobia and smartphone addiction among college students

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ABSTRACT

The use of smartphones creates problems of nomophobia and addiction among the younger generation. This study aims (a). to determine the effect of fear of not being able to communicate on smartphone addiction among students; (b). to determine the effect of fear of losing connectedness on smartphone addiction among students; (c). to determine the effect of fear of not being able to access information on smartphone addiction among students; and (d). to determine the effect of fear of not being able to communicate on smartphone addiction among students. This research is designed as a quantitative research with a survey approach. The population of this research is undergraduate students in West Java, while the sampling technique of this research is convenience sampling, and with a sample size of 123 samples. The research data were analyzed using descriptive and inferential statistical tests using multiple linear regression tests. The results showed that overall the fear of not having a smartphone affects smartphone addiction among students. The nomophobia factors that influence dating include the fear of losing connectedness and the fear of losing convenience.

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1. INTRODUCTION

Mobile phones are essential communication devices, first demonstrated by Motorola in 1973 and commercially available since 1984 (Byatt, 2021). Cell phones have become an indispensable part of our lives in recent years. The number of mobile subscriptions continues to increase every year. In 2016, there were more than seven billion users worldwide. The percentage of internet usage also increased globally seven times, from 6.5% to 43% between 2000 and 2015. The percentage of households with internet access increased from 18% in 2005 to 46% in 2015 (Byatt, 2021).

The 21st century has witnessed ever-increasing technological advancements, leaving an imprint on all aspects of life. One of these advancements is the smartphone, and its many apps or applications offer quick access to the Internet and social media through various applications such as WhatsApp, Facebook, Twitter and Skype. The smartphone has also facilitated sending SMS and faxes and navigating the Internet. Furthermore, smartphones include entertainment such as games, Cam, video, Bluetooth, multimedia, radio, YouTube, movies, GPS, and other applications. One of the most critical advantages of smartphones is easy wireless access to electronic mail, instant messaging and multimedia, and the possibility of using Office Applications afterwards (Aljomaa et al., 2016).

Technology and information in Indonesia are developing rapidly. All kinds of information can be obtained easily obtained through various technological media(Kurniawati, 2022). One of the advances in technological media What is widely used is smartphones. (Kuncoroputri et al., 2023) explains that smartphones is a smartphone that has computer-like capabilities and is equipped with sophisticated operating system. Smartphones allow users to stay connected with other people without space and time limits through the facilities they have, such as SMS (Short Message Service), telephone and internet facilities (Kuncoroputri et al., 2023).

Internet facilities on smartphones can make it easier for individuals to chat, browse, play online games, access various social media such as Instagram, Path, Facebook, Twitter, WhatsApp and others. Results APJII (Association of Indonesian Internet Service Providers) survey shows growth Internet users in Indonesia continue to increase. The 2014 internet user survey totaled 88.1 million users, in 2016 there were 132.7 million users, so there was an increase of 44.6 million internet users over two years. The survey also found that society In comparison, Indonesia uses smartphones the most to access the internet other media. This is supported by the Indonesian Digital Association (IDA) survey stated that 96% of Indonesian urban communities use smartphone media for looking for information (Mailanto, 2016).

The results of research conducted by the United Nations (UN) agency for children, the United Nations International Children's Emergency Fund (UNICEF), Ministry Communications and Informatics, and Harvard University noted that internet users on among children and teenagers in Indonesia is predicted to increase to 30 million user. This study explores online activities among children and adolescents aged 10-19 years, As many as 98% of 400 child and adolescent respondents admitted that they knew about the internet and 79.5% of them are internet users (Panji, 2014). This is supported by the results Crowd DNA survey (online survey institute), of 11,000 teenagers aged 13-24 from 13 countries, one of which is Indonesia, found that Indonesian teenagers consume the above digital media average compared to other countries (Solopos.com, 2015)

Nowadays, the use of smartphones is quite widespread, especially among young people (Aljomaa et al., 2016). in Indonesia, the use of smartphones based on BPS data in 2022, as many as 67.88% of Indonesian residents over five years old have smartphones. Meanwhile, data (Riyanti et al., 2022) that Indonesia is the fourth largest smartphone user globally, with 192.15 million people owning smartphones.

The frequency of smartphone use can involve various uses and features. Smartphone technology, and internet technology in general, can be characterized by uses such as productivity enhancement (e.g., reminders and emails), information retrieval (e.g., web browsing, browsing news), and social information and relationships (e.g., social media, messaging). Additional uses include diversion and relaxation (music), entertainment (e.g., games, movies), monetary compensation (e.g., finding consumer offers) and personal status(Dhir et al., 2015).

The increasingly widespread use of smartphones raises concerns about the overuse of these and other technologies and the impact of this rampant use and addiction on users' physical and mental health. Excessive use of these devices can trigger addictions and compulsions that negatively impact their users (Elhai et al., 2017; Saleem & Masadeh, 2021). Problematic smartphone use has been recognized as compulsive use that leads to impaired daily functioning regarding productivity, social relationships, physical health, or emotional well-being (Sharon Horwood, 2019).

One of the impacts that can be caused by using high-intensity mobile phones is the occurrence of nomophobia or no mobile phone phobia. The term no-mobile-phone phobia(Fuady et al., 2022; Roque Hernández & Guerra Moya, 2022; Yildirim & Uk, 2014; Yildiz Durak, 2019) is defined as the fear of not being able to use or not being able to reach a smartphone. Nomophobia is often characterized by problems related to controlling self-satisfaction with the functions or facilities presented by the mobile phone so that, in the end, an individual experiencing nomophobia loses self-discipline (Farchakh et al., 2021). Various psychological factors are involved when an individual overuses a mobile phone, such as low self-esteem and an extroverted personality. The burden of this problem is now increasing globally. Other mental disorders, such as social phobia, anxiety, and panic disorder, can trigger nomophobic symptoms (Bhattacharya et al., 2019). Nomophobia is considered a contemporary digital, virtual and societal disorder that refers to discomfort, nervousness, anxiety and suffering caused by lack of smartphone contact (Gonçalves et al., 2020).

Nomophobia can promote the development of mental disorders, personality disorders (Lee et al., 2018), self-esteem issues, loneliness, and people's happiness (Ozdemir et al., 2018), especially in younger populations (Roque Hernández & Guerra Moya, 2022). It significantly impacts health, harming other aspects of life, such as studying and working, by creating a solid dependence on mobile technology.

(Yildirim & Uk, 2014) revealed that nomophobia consists of four aspects: being unable to communicate, losing connectedness, not being able to access information, and giving up convenience. Not being able to communicate relates to feelings of loss or anxiety when unable to communicate via mobile phone; anxiety is due to the inability to contact or be contacted. Losing connectedness or fear of losing connectivity relates to feelings of loss when unable to connect with services on a mobile phone, such as losing internet signal connectivity or Wi-Fi networks, resulting in being unable to check the latest information or updates on social media. Not being able to access information or not being able to access information relates to a sense of inconvenience when unable to access or obtain information via a mobile phone. Giving up convenience relates to feeling inconvenienced when unable to be near a mobile phone.

Despite the benefits of smartphones, many studies have found a correlation between problematic use and nomophobia (Cao et al., 2018; Jocelyne Matar Boumosleh, 2014; Kim et al., 2017). Other studies have shown that excessive smartphone utilization can lead to dependence (Ozdemir et al., 2018). Some studies have found that anxiety or nomophobia can increase the tendency of severe smartphone dependence (Buctot et al., 2020; Cheng et al., 2021; Gezgin et al., 2018). Previous researchers tend to evaluate the influence of nomophobia on smartphone addiction. Examining further the influence of the dimensions of the dimensions of nomophobia on addiction is an interesting thing to study. The dimensions of nomophobia several studies confirm the findings of (Fuady et al., 2022; Yildirim & Uk, 2014), namely the fear of losing connection, the fear of losing comfort, the fear of not being able to communicate and the fear of not being able to access information.

The findings of this study are expected to explain in more detail the determinants of nomopobia in influencing the level of addiction among students. Based on the above background, this study aims to determine the specific influence of nomophobia on smartphone addiction among university students. The research questions are developed as follows: (a). How does the nomophobia dimension of the inability to communicate affect smartphone addiction?; (b) how does the nomophobia dimension of losing connectedness affect smartphone addiction? (c). How does the dimension of nomophobia's inability to access information affect smartphone addiction? And (d). How does the dimension of nomophobia giving up convenience affect smartphone addiction?

2. RESEARCH METHOD

Research is based on a positivistic paradigm. This research was designed as a quantitative research study, an explanatory descriptive survey. According to Kriyantono (2009), a quantitative approach is research that describes or explains a problem whose results can be generalized, for this reason the survey research method is used. Explanatory descriptives are explanations that highlight causal relationships between research variables and test hypotheses that have been previously formulated (Singarimbun & Effendy 2013). Quantitative research begins by exploring problems that are the focus of the researcher's attention. Then the researcher defines and formulates the research problem clearly, so that it is easy to understand. After the research problem is formulated, a research design is designed, namely a research model design, this design will guide the overall implementation of the research (Bungin 2008).

This study aims to determine (a). the influence of the nomophobia dimension of inability to communicate on smartphone addiction; (b). the influence of the nomophobia dimension of losing connectedness on smartphone addiction; (c). the influence of the nomophobia dimension of not being able to access information on smartphone addiction; and (d) the influence of the nomophobia dimension of giving up convenience on smartphone addiction. To answer the purpose of this study, the research design was conducted with a positivistic paradigm with a quantitative approach.

Research instruments

Nomophobia Questionnaire (NMP-Q)

The instrument for measuring nomophobia in this study uses four dimensions of nomophobia that have been developed and tested for validity and reliability of the instrument (Fuady et al., 2022). The nomophobia instrument used is described in the following table:

Table 1. Instrument and dimensions of Nomophobia

Instrument	Question	Dimensions
Q1	I will feel very bad if my phone breaks down	
Q2	I would feel terrible if I didn't have my cell phone	
Q3	I don't think I could do much without my cell phone	*losing connectednes*
Q4	I often use my phone more than I need	
Q5	I get angry or upset when someone interrupts me while using my cell phone	*giving up convenience*
Q6	I like to lose track of time when using my cell phone	
Q7	As soon as I wake up in the morning, the first thing I do is check my cell phone	
Q8	When I feel lonely, I use my cell phone to make calls, send messages, open social media etc	*not being able to communicate*
Q9	I often use my cell phone to make calls, send messages or check social media.	
Q10	I sometimes feel anxious if I do not receive messages, calls or notifications from my social media Fear of Not Being able to Access Information	
Q11	If I don't have my cell phone with me, I feel uncomfortable because I can't check my social media.	*not being able to access information*

Instrument diadopsi dari (Fuady et al., 2022; Yildirim & Uk, 2014)

Smartphone addiction questionnaire (SAS_SV)

The addiction instrument was adopted from the SAS-SV short version smartphone addiction measurement which consists of the following items (Kwon et al., 2013);

Table 2. Instrument of smartphone addiction

No	Statement
1	Activities that have been planned are not carried out because of playing cell phones
2	It is difficult to concentrate in class, while doing assignments, or while working because of smartphone use
3	Feeling pain in the wrist or behind the neck when using a smartphone
4	Can't stand not having a smartphone
5	Feel impatient and restless when not holding a smartphone
6	I will never give up using my smartphone even when my daily life has been severely affected by it
7	Constantly checking my smartphone so as not to miss conversations between other people on Twitter or Facebook
8	I use my smartphone for longer than I should
9	people around me tell me that I use my smartphone too much

Research population and sample and sampling technique

The population of this study were undergraduate students in West Java, totaling 871,191 students spread across 597 educational institutions, both in private and public colleges, institutes, and universities in West Java (Education & Culture, 2020). The sampling technique used in this study was convenience sampling technique. The number of samples in this study were 123 students.

Validity and reliability

To determine the validity of this research instrument, factor analysis testing was carried out. While the reliability test uses Cronbach alpha. The KMO barlett test results showed a KMO value of 0.826 and a Bartlett's Test of Sphericity value of 0.000. This value indicates that the sample is adequate for the factor analysis test. The results of the validity and reliability analysis are described in the following table;

Table 3. Validity and reliability Instrument

Variable	Instrument	λ	CA
	Q1	0789	
Loss of Connectedness	Q2	0,810	0,738
	Q3	0,781	
	Q4	0,871	

Variable	Instrument	λ	CA
giving up convenience	Q5	0,727	0,635
	Q6	0,920	
	Q7	0,833	
not being able to communicate	Q8	0,808	0,703
	Q9	0,620	
not being able to access information	Q10	0,746	
	Q11	0,870	0,612
	Q12	0,839	
	Q13	0,710	
	Q14	0,734	
	Q15	0,893	
Addict smartphone	Q16	0,843	0,844
	Q17	0,855	
	Q18	0,893	
	Q19	0,820	
	Q20	0,854	
	Q21	0,912	

The table above shows that the instrument's validity has a good level of validity, where the loading factor value is> 0.5. At the same time, reliability, in general, is categorized as quite reliable.

Population and sample

The population of this study was undergraduate students of the Faculty of Communication Sciences, Padjadjaran University, totalling 2,852 students spread across seven study programs. The sampling technique used is convenience sampling. The number of samples in this study was 123 students used as respondents.

Data analysis

The data analysis used descriptive and inferential statistics to answer the research objectives. Descriptive analysis includes mean, standard deviation, and percentage, while the inferential statistical test is a multiple linear regression test.

3. RESULTS AND DISCUSSIONS

This study aims to determine the effect of the determinants of the dimensions of nomophobia on smartphone addiction among students. This research was conducted in West Java, with a sample size of 123 students. The results of the data analysis of respondent characteristics are described in Table 3 below. The results of the data analysis of respondent characteristics are described in Table 3 below;

Table 3. Frequency distribution of gender, age and mean smartphone usage

No.	Variable		frequency	Persentase
1	*Gender*	Male	36	29,30
		Female	87	70,70
		Sum	123	100,00
2		17	1	0,80
		18	27	22,00
	Age	19	69	56,10
		20	22	17,90
	X=19,00; SD=0,752	21	4	3,30
		Sum	123	100,00
3		≤ 5 jam	25	20,32
		6-10	76	61,78
	Smartphone use	11-15	16	13,00
	X=8,19; SD=3,279	16-20	4	3,25
		Missing data	2	1,62
		Sum	123	100,00

In this study, a survey was conducted on 123 students. Based on the analysis of the general description of respondents based on gender, most were women, with as many as 87 respondents (70.70%) while men were 36 (29.30%). Respondents in this study from the aspect of age are known to be mostly 19 years old ($\ddot{x}$ = 19.00; SD = 0.752).

The effect of nomophobia on the level of addiction among students

To determine the effect of nomophobia on smartphone addiction among students, this study was tested with multiple linear regression analysis, using SPSS for Windows. The results of the F test analysis are shown in the following table;

Table 4. F test analysis results of regression models, residuals and summary models

Model	Sum of Squares	Df	F	Sig.
Regresi	34,764	4	8,691	0,000
Residu	26,602	118	0,225	
R= 0,753				
R^2=0,567				
Total	61,366	122		

Based on Table 4, the analysis results show that, in general, the four dimensions of nomophobia (not being able to communicate, losing connectedness, not being able to access information, and giving up convenience) have a significant influence on smartphone addiction among college students F (118;4); 8.691, p < 0.00. This result shows that increasing nomophobia has a positive influence on increasing addiction. Meanwhile, the coefficient of determination R2=0.567 shows that the four dimensions of nomophobia can explain well as a determinant of smartphone addiction by 56.7 percent. At the same time, the other 43.3 percent is explained by factors outside the model.

To determine the partial effect of each dimension of nomophobia (inability to communicate/NC, losing connectedness/LC, inability to access information/AI, and giving up convenience/GC.) on smartphone addiction (addict). Not being able to communicate(, the analysis results are depicted in the following table;

Table 5. Hypothetic Test

Hypotesis	β	t-value	Sig.
NC→ Addict	-o,111	-1,704	0,091
LC → Addict	0,168	2,362	0,020*
AI→ Addict	0,137	1,920	0,057
CG→ *Addict*	0,634	9,329	0,000**

The influence of "not being able to communicate" anxiety on smartphone addiction

Anxiety about being unable to communicate refers to feeling uncomfortable when somebody cannot be contacted or contacted via cell phone. The hypothesis of this study is that the perception of not being able to communicate can increase the level of addiction to smartphones. To analyze this hypothesis, multiple linear regression analysis was conducted. The analysis results show that there is not enough evidence to say that there is an influence of nomophobia in the dimension of perceptions of being unable to communicate with the level of smartphone addiction. Perceptions of feeling lonely for not using a smartphone and feeling unable to send messages or open social media do not cause an increase in addiction among students. This finding is known from the value of t (122)= -1.704; p>0.05.

The effect of fear of losing connectedness on smartphone addiction

One of the objectives of this study is to determine how the fear of losing connectedness affects the level of smartphone addiction among students. The hypothesis of this study is that the perception of losing connectedness can increase the level of addiction to smartphones. The analysis results show a significant effect of fear of losing connectedness on the level of addiction to smartphones, t (122)=2.362; β = 0.168; p < 0.05. An increase of one unit of perception of losing connectedness can increase addiction by 0.168 units.

This finding shows that concern or fear of losing connectedness will increase smartphone addiction among students. The findings suggest that worry or fear of losing convenience will increase smartphone addiction among university students. The higher the feeling that you can't do things without your smartphone, the higher the smartphone compulsion among college students.

Students' heavy use of smartphones is driven by their fear of losing connection with friends. Previous researchers used the concept of social anxiety as a determinant that affects smartphone addiction (Meena et al., 2021). The results of this study show that concerns about needing help to contact social systems such as friends, family or closest people cause students to use smartphones longer.

The effect of fear of not being able to access information (AI) on smartphone addiction

The third hypothesis of this study is that the fear of being unable to access information can increase smartphone addiction. The analysis results show no significant effect of fear of being unable to access information on the level of smartphone addiction, t (122) = 1.920; β = 0.137; p>0.05. These results show that an increase in the fear of being unable to access information does not lead to an increase in smartphone addiction.

This finding shows that the fear of being unable to find information does not affect the desire to use excessive smartphones. This condition is more because students use excessive smartphones to dominate in fulfilling entertainment needs and fill their spare time. Several studies support this finding that individuals tend not to worry about the accessibility of information for smartphone use.

Influence of (giving up convenience) on smartphone addiction

Giving up covinience relates to feelings of discomfort when unable to be near a cell phone. One of the objectives of this study is to determine how the fear of losing convenience affects the level of smartphone addiction among students. The hypothesis of this study is that the perception of losing connectedness can increase the level of addiction to smartphones. The results of the analysis show that there is a significant effect of fear of losing connectedness on the level of addiction to smartphones, t (122)=2.362; β = 0.168; p < 0.05. An increase of one unit of perception of losing connectedness can lead to an increase in addiction by 0.168 units. The findings suggest that worry or fear of losing convenience will increase smartphone addiction among university students. The higher the feeling that you can't do things without your smartphone, the higher the smartphone compulsion among college students.

4. CONCLUSION

Based on the results and discussion, it can be concluded that, in general, nomophobia influences smartphone addiction among students. Increased fear of the absence of a smartphone can encourage smartphone addiction, and specifically can be described as follows; (a). Fear of not being able to communicate among students does not affect addiction to smartphones.(b). Fear of losing connectedness can positively affect smartphone addiction. (c) .Fear or worry of not being able to access information has no effect on smartphone addiction among college students. And (d). Fear of losing convenience has a positive influence on increasing smartphone addiction among college students.

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