The relationship between consumer buying behavior, social aspects, and technostress on smartphone

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Abstract

The objectives of this study is to investigate the influence of social aspects including social need and social influence toward dependency, the influence of dependency toward repeat purchase intention and technostress. Respondents in this research were 200 undergraduate students from universities in Yogyakarta, Indonesia. This research has four hypotheses. The analytical technique used in this research were Confirmatory Factor Analysis (CFA) and Structural Equation Model (SEM) using LISREL 10 software. The results of this research empirically proves that social aspects including social need and social influence has significant and positive effect toward dependency, and dependency has significant and positive effect toward repeat purchase intention and technostress. Each of hypotheses were accepted and elaborated more detail in discussion section.

Introduction

In today's age of trade globalization, the corporate sector faces intense rivalry. Marketing activities are one of the most significant components that should be done by companies in order to compete, preserve its existence, and grow its business. All changes and possibilities in the business environment must always be anticipated by the organization in to deal with business competition. (Li et al., 2020). The intention to repurchase a product, both goods and services, is one indicator of business success in order to continue to compete in the global business and to achieve this success, companies must always carry out promotions (Ji & Ha, 2021).

Competitive advantage in this globalization era is very much needed so that a business can continue to compete intensely in the global market because many new businesses that have sprung up in the global market will have the potential to disrupt or even shift market leaders (Hadi, 2021; Jeon et al., 2021). To gain an advantage, one method that for the business to be able to satisfy customers is by satisfying their requests and requirements, so that customers are ready to buy the company's products, both goods and services on a regular basis in order for the company to survive (Rasmikayati et al., 2021). Because people nowadays are forced to think ahead and move quicker in the present era of globalization, the role of technology is critical. Information and communication technology (ICT) is a rising technology. Mobile phones have evolved into smartphones as a consequence of the merging of technology advancements and informatics. The device is smart because it can act like a PC computer or even a laptop because it has an operating system and can operate several tasks at once (Backer, 2010; Smith, 2013; Hadi, 2018).

According to previous studies (Falaki et al., 2010; Williams & Sawyer, 2011), smartphone is a cellular phone that has been upgraded with technology so that it becomes a sophisticated device equipped with an operating system, large storage memory, high resolution camera, and even now can be a digital payment instrument. Another previous researchers (Backer, 2010; Lian, You, Huang, & Yang, 2016; Liu, Wu, Zhou, & Wang, 2020) state that smartphones are a combination of all types of devices with advanced technology in their time, for example PDAs, GPS, and even the internet. Thus making the smartphone now is not a luxury item but as a daily necessity. This can be seen in the daily use of smartphones where users cannot be separated from their

smartphones to read news, watch/stream movies, video calls, reply to work emails, pay bills, and much more. (Ting, Lim, & Patanmacia, 2011). Smartphone was first created by the International Business Machines corporation (IBM) in 1994 which was named Simon Personal Communicator (SPC) but better known as IBM Simon. At that time, IBM Simon was equipped with touch screen features, internet, 1MB ROM, and 1MB RAM. With these complete features, IBM Simon can perform several tasks such as meeting schedule reminders, opening websites, and sending emails. However, IBM Simon was still meant for corporations at the time, and the price was too costly (Tocci, 2020).

Activities in daily life that involve the use of smartphones tend to cause dependence on someone toward their smartphone. Plus the fact that smartphones are always carried and used anytime and anywhere (Hadi, 2018). This reinforces the first research on dependency, namely Ball-Rokeach & DeFleur (1985) which found that a person will depend on a certain media because they think that the media is important in their daily lives. The theory discovered by Ball-Rokeach & DeFleur (1989) dependency can be caused by how important the role of a media. Dependency on smartphones can be influenced by social aspects including social needs and social influences which tend to have an impact on the emergence of repurchase intentions of these products (Ting et al, 2011; Hadi, 2018). Positive past experiences of buying and consuming a product, both goods and services, will lead to an intention to repeat purchase the same product. The level of consumer satisfaction is reflected in how much they intend to repurchase and consume same product in the future (Thamrin, 2003).

When certain media play an important role in a person's life, it will tend to create dependency on the media and will lead to an intention in buying the same product again in the future. Previous researchers also stated that smartphones are an important medium at this time for daily life and therefore users experience dependency on smartphones and tend to have the intention to make repeat purchases (Mafe & Blas, 2006; Ting et al. 2011; Hadi, 2020). The dependency experienced by smartphone users has a positive impact on them, including being able to long distances communication instantaneously and intensely as well as access to wide and varied virtual entertainment (Mayasari, 2010). In Figure 1 it can be seen that starting in 2015, the use of smartphones continues to increase, from almost 30% of the total population to almost 80% in 2021 in Indonesia (Pusparisa, 2020). In addition to the positive impacts mentioned above, excessive duration of using smartphones triggers dependency on smartphones which have negative impacts including irregular and disturbed sleep hours, reduced social contact significantly because too comfortable with the virtual world, anxiety when not with smartphones, the tendency of consumptive life because shopping can be facilitated by smartphones easily (Rice-Lincoln, 2011).
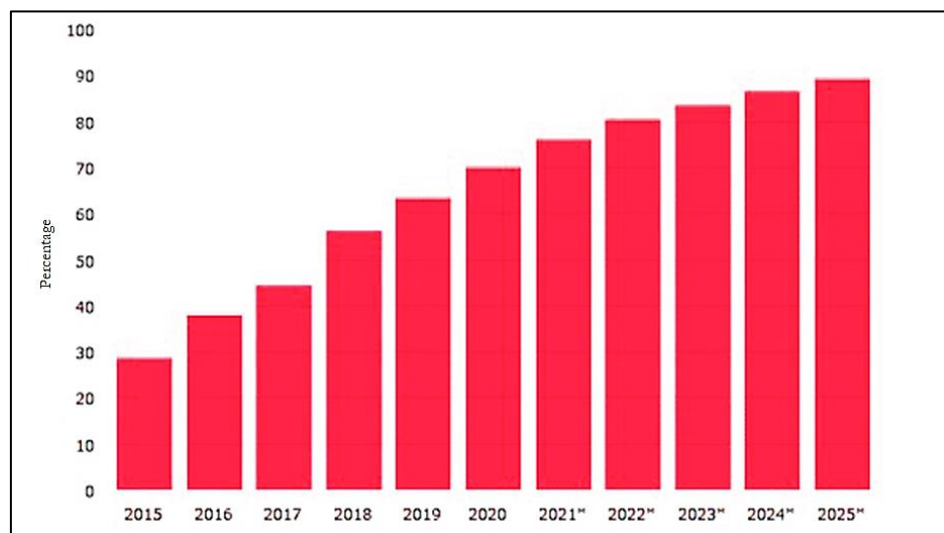

Figure 1. Total Number of Indonesian Smartphone Users

In addition to the negative impacts previously mentioned, another negative impact that arises due to dependency on smartphone technology is technostress, which means that stress caused by technology (Shu et al., 2008; Ayyagari et al., 2011). This is in line with previous researches by Lee et al. (2014) and Hadi (2020) which stated that compulsive use is represented as excessive dependency on smartphones which has a positive influence toward technostress. The majority of previous research has related to dependency toward radio (Ball-Rockeach, 1998; Loges, 1994; Towner & Lego, 2016), TV (Ball-Rockeach, 1985; 1989; Loges, 1994; Ho et al., 2015; Jang & Baek, 2019), and the internet (Goulet, 2002; Patwardhan & Yang, 2003; Guillén & Suárez, 2005; Mafe & Blas, 2006; Riffe et al., 2008; Alcañiz et al., 2008; Nawi et al., 2020) where there are gaps in research, namely that there are still very few studies that take the context of smartphone dependency (Hadi, 2021), so that the context in this research is focused on dependency toward smartphones. Underpinning theory in this research uses Theory of Media Dependency which states that a person will depend on a media if it fulfills their information needs (Ball-Rokeach, 1998). The theoretical contribution in this research is to strengthen the theory of individual media dependency. The practical contribution in this study is to add references to the theory of individual media dependency that carried out in Indonesia. The methodological contribution in this study is to add cross-country validation because the instrument testing was carried out in different countries from previous studies. The contextual contribution in this study is to add references to the theory of individual media dependency on smartphones.

Literature Review and Hypotheses Development

Theory of Individual Media Dependency

The theory of media dependency was first created by Ball-Rokeach (1985) which was later strengthened by several subsequent studies which stated that to meet needs and achieve certain goals, a person will definitely depend on certain media sources of information (Jung, 2017; Akarika et al., 2020; Lau et al., 2021). The behavior of using and consuming products (goods and services) continuously and excessively can be said as dependence. This can be interpreted that a person is difficult to separate from the product he uses. So in relation to smartphones, someone will tend to ignore work activities or social relationships in the real world because they are dependent on smartphones which bring users to spend more time in cyberspace (Park, 2013).

A person can be said to be dependent on smartphones when they cannot be physically separated from their smartphones which are always carried anytime and anywhere, even the last thing they do before they sleep is look at their smartphone (Harun et al., 2015). A person's psychological condition will be affected if a person cannot overcome the dependence, for example anxious, sad, or even angry when their smartphone is left behind or damaged.

Dependency theory says that a person will depend on the media with the aim of meeting his needs (Ho et al., 2015; Jung, 2017; Zhang & Zhong, 2020). The media will become more important to the individual, if the media can fulfill most or more of the needs and desires of its users. The media will also have more influence on individuals, so that individuals are controlled by the media. This theory also stated that users as determinants of media and shows that a person depend on media to fulfill their needs or to achieve their goals, but individuals do not depend on many media with the same percentage. Individuals can still choose which media will be used to fulfill their wants or needs. Chen (2013), and Lee and Choi (2018) also share the same opinion about the dependency theory that has been described previously. In their research, they found that someone will consider a media important if the media can fulfill all the needs and information needed by the user. This then triggers the emergence of behavior dependency on the media.

Social Needs and Dependency

The behavior of a person that reflects very much dependency on his smartphone is that the smartphone cannot be physically separated from them which are always carried anytime and anywhere, even the last thing they do before they sleep is look at their smartphone (Harun et al., 2015). A person's psychological condition will be affected if a person cannot overcome the

dependency, for example anxious, sad, or even angry when their smartphone is left behind or damaged. This statement is reinforced by the results of researches by Lee and Choi (2018) and Zhang and Zhong (2020) which shows that someone will consider a media important if the media can fulfill all the needs and information needed by the user. This then triggers the emergence of behavior dependency on the media.

The desire to be with other people, to make friends, accepted by others, and the desire to be loved are part of social needs (Schiffman et al., 2009; Kreuter et al, 2021). Smartphones have grown considerably more adaptable, allowing customers to enhance their usage of communication while also maintaining interpersonal interactions (Lippincott, 2010). The social needs of consumers can be met through the features available on smartphones (Raskin, 2006; Ting et al., 2011; Elhai et al., 2020). A person's level of dependency will be higher because the social needs felt by consumers are also getting higher (Wei & Lo, 2006; Suki & Suki, 2013). This means that an individual's level of dependency toward smartphones is influenced by the level of social needs experienced by consumers. The higher the social need, the higher the dependency. And vice versa, if the perceived social needs of consumers are low, the dependence on smartphones will also be low. Therefore, the first hypothesis is:

H_1: Social needs have a positive effect on smartphone dependency

Social Influence and Dependency

Social influence means that other people may impact ideas, feelings and behaviours, such that attitudes or conduct change due to encounters with others (Mason et al., 2007; Qiu et al., 2018). Social influence can be said to be a strong influence toward smartphones by observing, perceiving or anticipating decision making by others (Auter, 2007; Suki & Suki, 2013; Busch et al., 2021). Friends, colleagues, and family are viewed as social factors that are crucial for customers to make their cellphones more dependent. This demonstrates that other parties that affect a human being very socially till he or she has a smartphone dependence are generally those who have a profound knowledge of the character of relatives, close friends, parents, and siblings. The stronger the social impact of other parties, the larger the potential for smartphone reliance. Conversely, if other parties' demand for social influence is reduced, smartphone reliance tends to decrease (Klobas & Clyde, 2001; Ting et al., 2011). Thus the second hypothesis is:

H_2: Social influence has a positive effect on smartphone dependency

Dependency and Repurchase Intention

Dependency is a state characterized by extremely strong habits, such that addictive behavior manifests itself in anything (Wulandari, 2015). According to this definition, dependency is a state in which people feel attached to something they like on a regular basis, resulting in a loss of control over one's own activity. Users tend to not want to be separated and continue to be tied to their smartphone because it supports their daily needs and activities (Tian et al., 2009; Busch et al., 2021). Consumers actually have knowledge about the quality of smartphones obtained from advertising, word-of-mouth, and positive personal experiences about how smartphones can meet their needs. (Keaveney & Parthasarathy, 2001; Chang & Lee, 2010; Soomro et al., 2019). Oliver (1999), Chen (2012), and Febriani and Ardani (2021) states that responses caused by positive experiences in the past received to make repeated purchases are called repeat purchase intentions. Customers who are pleased with a product will buy it again and tell others about it. Smart businesses are not just interested in making a profit; they also want to deliver the expected results. Consumers choose a product based on the benefits they would receive after using it rather than the physical form itself (Hadi, 2021).

Previous researchers have stated that the intention to repeat purchase the same product in the future is a consumer behavior tendency resulting from a positive response to the previous experience of consuming the same product (Handoko, 2017; Muhammad et al., 2019; Ji & Ha 2021). Several previous studies have also found that dependency toward smartphones has an

influence on repeat purchase intentions (Ting et al., 2011; Suki & Suki, 2013; Vahabzadeh, et al., 2014). Therefoe the third hypothesis is:

H₃: Dependency on smartphones has a positive effect on repurchase intentions

Dependency and Technostress

The term technostress was originally presented by a clinical psychologist named Brod (1984) who later defined it as a modern disease caused by the inability to cope or handle information and communication technology in a healthy manner (Ayyagari et al., 2011). Brod's definition of technostress was further developed by Rosen and Weil (1997) who revealed that technostress is a negative effect on thoughts, attitudes, physiology, or behavior caused by technology either directly or indirectly.

One of the studies on the use of smartphones that can directly cause technostress is the research of Charles et al. (2013), Lee et al. (2014), and Salo et al. (2018) stated that since smartphones have become the main information technology devices, people feel it is necessary or important to adapt to these smartphones technology in order to stay on a line of digitalization, but compulsive use toward smartphones can causes technostress. This statement is supported by previous researches from Lee et al. (2014) and Hadi (2018) who found that compulsive use or behavior that represents excessive dependence on smartphones has an influence toward technostress. This means that technostress will be higher if individual's compulsive use or dependency toward smartphone is higher and vice versa. Thus the fourth hypothesis is:

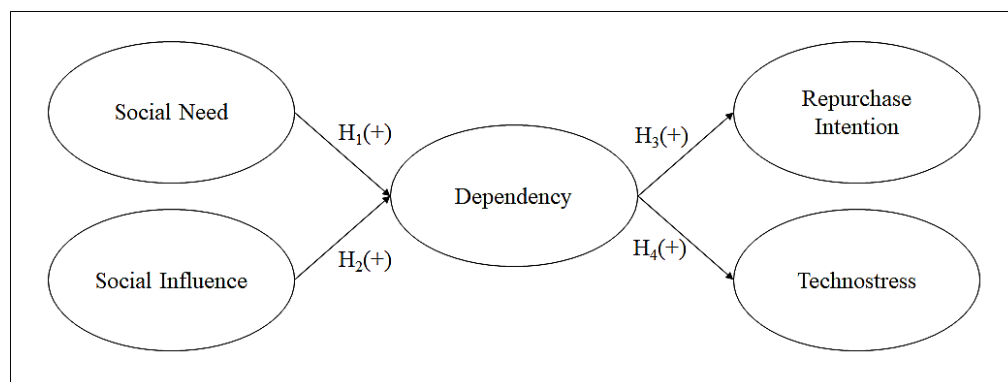H4: Dependency on smartphone has a positive effect on technostress

Figure 1. Conceptual Framework

Research Methods

The research design used in this study is quantitative research that uses survey techniques in data collection to test hypotheses (Neuman, 2011). Sekaran (2016) stated that quantitative research is causal which means that research is conducted to examine causal relationships between variables, test hypotheses and then provide conclusions about new phenomena based on existing theories. The number of respondents in this research were 200 students in Yogyakarta, Indonesia. By considering the number of students who already have smartphones today, the sample technique uses non-probability - convenience sampling.

Questionnaires were used as a tool to collect data in this study. Data was measured using a Likert scale 1 to 5 point which from strongly disagree to strongly agree. This research questionnaire was adapted and modified from previous research. Social needs from Ting et al. (2011) with 4 questions, social influence from Ting et al. (2011) with 4 questions, dependency from Ting et al. (2011) with 4 questions, purchase intention from Suki & Suki (2013) with 5 questions, and technostress from Lee et al. (2014).

As explained above, the respondents in this study were undergraduate students in Yogyakarta, Indonesia who have smartphones and included in the category of younger adult age, which ranges between 18-24 years old (Auter, 2007), because several previous studies have also

suggested using respondents in it category (Ting, et al., 2011; Lin, et al., 2014; Al-Barashdi, et al., 2015). The questionnaires were then distributed online to the respondents using a google form. After the research data were collected, it was continued to pilot test, validity test, reliability test, and hypotheses test.

First, the pilot test was carried out using 30 samples of respondents, then validity test was carried out using varimax rotation. An instrument in the form of a statement item is declared to be valid if the loading factor ≥ 0.30 which means that no cross loading. (Hair et al., 2010). Reliability testing for this pilot test uses Cronbach's Alpha. The instrument was said to be reliable if the total correlation value of the corrected items was ≥ 0.4 and the Cronbach's Alpha value was > 0.70 (Nunnaly & Bernstein, 1995; Hair et al., 2010). The results of the pilot test show that all items are valid and reliable. Validity and reliability testing for this pilot test is carried out with the help of the SPSS software.

Table 1. Test of Construct Reliability and Validity

Variable	Construct Validity					
	Convergent Validity				Discriminant Validity	
	Standardized Loading Factor ≥ 0,50	AVE ≥ 0,5	Construct Reliability		Rotated Component Matrix	AVE > R²
			Standardized Cronbach's Alpha ≥ 0,7	Composite Reliability (CR) ≥ 0,7		
Social Needs	≥ 0.50	0.8	0.95	0.81	no cross loading	Yes
Social Influences	≥ 0.50	0.7	0.76	0.82	no cross loading	Yes
Dependency	≥ 0.50	0.6	0.88	0.79	no cross loading	Yes
Repurchase Intention	≥ 0.50	0.8	0.93	0.92	no cross loading	Yes
Technostress	≥ 0.50	0.7	0.83	0.91	no cross loading	Yes
Result	GOOD				GOOD	
	GOOD					
				GOOD		

Second, to strengthen the results of reliability and convergent validity for a large sample of 170 respondent, a validity and reliability test is carried out of each item using confirmatory analysis with the help of LISREL 10 software. Confirmatory Analysis criteria in LISREL 10 are items declared to have good validity if they have a standardized factor loading value ≥ 0.50, t-value > 1.96, and average variance extracted (AVE) ≥ 0.50, while the statement item is declared to have good reliability if the composite reliability (CR) ≥ 0.70. The summary results of the pilot test, discriminant validity, and construct reliability tests using confirmatory analysis with LISREL 10 are presented in Table 1. Finally, hypotheses testing is carried out using Structural Equation Modeling with the help of LISREL software which is supported by the goodness of fit index.

Results and Discussion

Total number of questionnaires was 200 questionnaires which 30 sample data used for pilot test purpose. Based summary results of the pilot test, discriminant validity, and construct reliability tests using confirmatory analysis on Table 1, it can be seen that the validity and reliability test can be said to be good because the AVE value is more than or equal to 0.5 and the CR value is more than 0.7 for each variable.

Hypothesis testing in this study was preceded by a prerequisite test, namely the test of the suitability of the research model (goodness of fit). If the results of the suitability test of the research model are declared good, then hypothesis testing can be carried out, otherwise if the suitability test for the research model is declared poor, then hypothesis testing cannot be carried out. The results of the model fit test in this research can be seen in Table 2.

Table 2. Goodness of Fit Test Results

Full Model	IFI (>0.90)	NNFI (>0.9)	(0.08≥ RMSEA ≤0.05)	CFI (≥0.90)	GFI (≥0.90)	Goodness of Fit
	0.94	0.94	0.042	0.94	0.91	GOOD

Table 2 above shows that the full model in this research has IFI value ≥ 0.90, NNFI value ≥ 0.90, CFI value ≥ 0.90, GFI value ≥ 0.90 and RMSEA 0.042. This indicates that the model has a good goodness of fit. This means that the overall research model with the data has a good level of fit (Civelek, 2018).

Table 3 shows that the path coefficient H1 has a positive relationship direction of 0.33 and is significant because t-value = 3.15 is greater than 1.96 so it can be concluded that social needs significantly and positively influences smartphone dependency. The results of this research are consistent with previous findings (Wei & Lo, 2006; Sundar & Limperos, 2013; Hadi, 2018; Durak, 2019) which found that social needs are related significantly and positively with smartphone dependency. This suggests that the more a person's social needs, the greater the dependency on smartphones. Conversely, if a person's social needs are low, the dependency on smartphones is likewise low.

The H2 path coefficient has a positive direction of 0.26 and is significant because t-value = 2.38 is greater than 1.96 so it can be concluded that social influence significantly and positively influences smartphone dependency. The results of this research of the second hypothesis show that social influence has a positive and significant effect on consumer dependency toward smartphone. This finding support the previous researches (Klobas & Clyde, 2001; Tripathi et al., 2016; Shokouhyar et al., 2018) who discovered that social influence had a positive and significant effect toward smartphone dependency.

The H3 path coefficient has a positive direction of 0.53 and is significant because t-value = 4.52 is greater than 1.96 so it can be concluded that smartphone dependency significantly and positively influences repurchase intention. This result confirm research findings by Suki and Suki (2013), Ting et al. (2011), and Vahabzadeh et al. (2014) who discovered that dependency on smartphone had a significant and positive influence on repeat purchase intentions.

The H4 path coefficient has a positive direction of 0.58 and is significant because t-value = 4.53 is greater than 1.96 so it can be concluded that smartphone dependency significantly and positively influences technostress. This finding is consistent with previous research by Charles et al. (2013) and Hadi (2020) who discovered that compulsive use of smartphones is caused by the need for information and technology developments so that it will indirectly trigger stress caused by smartphone technology which called technostess.

Table 3. Hypothesis Testing Result

Hypothesis	Effect	Path Coefficient	Direction of Relationships	T-Value (> 1,96)	Results
H1	KS-KP	0.33	(+)	3.15	Supported
H2	PS-KP	0.26	(+)	2.38	Supported
H3	KP-NP	0.53	(+)	4.52	Supported
H4	KP-TS	0.58	(+)	4.53	Supported

Remark:
KS = Social Needs　　　　　　KP = Dependency　　　　　　TS = Technostress
PS = Social Influences　　　　NP = Repurchase Intention

Implication and Conclusion

This study seeks to prove the argument empirically, namely by examining the effect of social needs and social influence on smartphone dependency and the effect of smartphone dependency on repurchase intentions and technostress. Based on the results of research and the results of data analysis that has been done, it can be concluded that all the hypotheses in this study are accepted.

The first hypothesis proves that social needs are significantly and positively related to smartphone dependency. This suggests that the more a person's social needs, the greater the dependency on smartphones. Conversely, if a person's social needs are low, the dependency on smartphones is likewise low. The second hypothesis proves that social influence has a positive and significant effect on consumer dependency toward smartphones. This shows that the greater the social influence received by a person on a particular media, then someone will be more dependent on that media. The third hypothesis proves that smartphone dependency has a significant and positive influence toward repurchase intention. Someone who is already depend toward a smartphone will have the intention to repeat purchase a smartphone in the future. The fourth hypothesis proves that smartphone dependency has a significant and positive influence toward technostress. Consumers will feel stress caused by technology (technostress) because of their dependence on smartphones. Therefore, this study supports previous researches (Vahabzadeh et al., 2014; Hadi, 2018; Shokouhyar et al., 2018; Durak, 2019; Hadi, 2020).

The results of this study provide a theoretical contribution that in this study provides additional variables into the application of Media Dependency Theory and in previous researches, the application of Media Dependency Theory is still few who apply it to smartphone. Empirical contribution of this study provide that a person's dependency on smartphones is caused by demands to satisfy social needs and the social influence of the surrounding environment, which in turn drives an increase in dependency on smartphones. Furthermore, one good effect of smartphone dependence is the intention to buy in the future. This makes the results of this study a practical contribution, specifically that smartphone producers and marketers have the opportunity to acquire as many new and potential smartphone customers as possible by capitalizing on social features or circumstances that lead to dependency.

Based on this research, there are several suggestions for further research. First, because this research was done just once due to restricted research resources, the future study can employ a longitudinal study. Second, future study is predicted to undertake a larger and more complete test by establishing a qualitative research technique or adding numerous additional dependent behavior factors such as illness or mental instability. Third, further research can replace research objects that are no longer researching smartphones, such as watches, laptops and non-electronic items such as motor vehicles, shoes, and others. Fourth, if further researchers maintain technostress to be re-examined, it is recommended to use a technostress theory approach which is reviewed based on aspects of information and communication technology.

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