

THE INFLUENCE OF SMARTPHONE ADDICTION ON ONLINE COMPULSIVE BUYING WITH MOOD REGULATION AND FLOW EXPERIENCES AS MEDIATING VARIABLES

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ABSTRACT

*This study aims to examine and analyze the influence of smartphone addiction on online compulsive buying, as well as examining how mood regulation and flow experience mediate the influence of smartphone addiction on online compulsive buying in Generation Z in Riau Province. This research uses a quantitative approach with the Structural Equation Model analysis tool using SEM-PLS. The sampling technique in the research used G*power. This research tested 354 students as representatives of generation Z in Riau province with the finding that smartphone addiction had a direct influence on online compulsive buying, mood regulation and flow experience. Mood regulation has a direct effect on flow experience. flow experience has a direct influence on online compulsive buying. Smartphone addiction affects flow experience through mood regulation. Smartphone addiction influences online compulsive buying through flow experience. Smartphone addiction influences online compulsive buying through mood regulation and flow experience simultaneously. On the other hand, the findings of this study show that mood regulation has no effect on online compulsive buying. Mood regulation cannot act as a mediator in the influence of smartphone addiction on online compulsive buying.*

Keywords: *smartphone addiction, mood regulation, flow experience, online compulsive buying*

INTRODUCTION

In the last few decades, the development of digital technology has changed the way we interact with society. One of the most influential technological innovations in the current digital era is the smartphone. Smartphones are small devices that have become an inseparable part of the daily lives of many people around the world. Smartphone use has brought a number of benefits, such as easy access to information, fast communication, portable entertainment, and enhanced productivity.

In line with the development of smartphones, the development of shopping behavior of people in the world is now starting to shift from traditional methods to digital, such as shopping via e-commerce or online shopping platforms. Based on dataStatista, (2022) Smartphone use has quite a high impact on online shopping behavior, based on this data, around 70% of all retail website visits globally come from smartphone users. By 2022, retail e-commerce sales are expected to exceed 5.7 trillion US dollars globally, and this figure is expected to reach new peaks in the next few years. The shift in global online shopping behavior is also being followed by people in Indonesia, based on publicationsCNBC Indonesia, (2023)From 2022 to 2023, as many as 178.9 million Indonesians bought

goods online, with total transactions recorded on e-commerce platforms amounting to 55.97 billion dollars or the equivalent of Rp. 849 trillion. The increasing number of transactions on e-commerce in Indonesia is also accompanied by purchasing behavior. compulsive. Compulsive buying is defined as uncontrolled buying due to repeated urges or desires to get and use what one wants.(O'Guinn and Faber 1989). Expert opinion states that compulsive buying has a negative impact both on individuals and on a country's economy. At the individual level, compulsive purchasing can have an impact on bankruptcy, while at the macroeconomic level in a country, compulsive purchasing can influence people's consumption patterns, thereby potentially influencing economic growth.(Roberts 1998). Based on the results of Indonesian Shopper Behavior research in publicationsInfobanknews, (2023)As many as 67% of Indonesian people have online shopping behavior that tends to be compulsive. According to Indonesian Shopper Behavior research, compulsive purchasing behavior is driven by ease of transactions, product prices, product diversity and good feedback on a product in the market place.

The phenomenon of compulsive buying in Indonesia is carried out by various age groups, but compulsive buying behavior is more dominated by

the younger generation or generation Z in Indonesia (Databoks 2023; DataIndonesia.id 2022). Not much different from the compulsive buying behavior of generation Z in Indonesia, impulsive buying behavior also occurs in generation Z in Riau Province. Based on observations made on students from several universities in Riau Province, several students made unplanned purchases on e-commerce repeatedly for various different reasons such as getting discounts, free shipping costs and several other reasons. Based on the results of observations made, most compulsive purchases are made for the reason that shopping online is a way to relax even though the items purchased are sometimes not needed. Several previous studies revealed that there are several reasons why the younger generation continuously makes compulsive purchases. According to several existing studies, smartphone addiction has a fairly high role in compulsive buying behavior, the ease of transactions offered by smartphones encourages compulsive behavior. (Sari, 2016). Another opinion states that compulsive buying is often triggered by negative feelings or events, and individuals who make compulsive buying are usually unable to control or overcome the urge to buy something in response to this process or event. Existing research further suggests that mood and self-esteem are the primary motivations for compulsive buying (Harnish et al. 2021; Mulyono and Rusdarti 2020; Mason et al. 2022a). According to Mason et al., (2022) Apart from having a direct effect on impulsive buying, mood regulation can also be a driver of the influence of smartphone addiction on impulsive buying. addicted to using smartphones and driven by feelings drives someone to make impulsive purchases on e-commerce.

On the other hand, the results of research findings by (Bao and Yang 2022) revealed that flow experience has an impact on impulsive buying and furthermore the results of this study explain that flow experience mediates the influence of smartphone addiction on impulsive buying. Based on a literature review of previous research, this research will explore the causes of compulsive buying among students in Riau Province. Based on the main reference in this research, namely research Mason et al., (2022) which focuses on the younger generation, namely pupils and students in Italy, the advantage of this research lies in the research sample which focuses on Riau Province students as Generation Z who have the potential to make comprehensive purchases on E-Commerce platforms in Indonesia.

Literature Review Generation Z

Generation Z, often called Gen Z, consists of individuals born between 1996 and 2009 (Sladek and Grabinger 2016). They are a generation that grew up in an era where digital technology has always been a part of their lives (Ameen et al. 2021; Ameen and Anand 2020). Gen Z is known as digital natives, has a deep understanding of technology, and grew up with high exposure to social media and mobile devices (Fister-Gale 2015). They were born into a world full of Volatility, Uncertainty, Complexity and Ambiguity (Casalegno et al. 2022). There are four distinctive trends that characterize Gen Z, namely their interest in new technology, the demand for ease of use, the desire to feel safe, and the urge to temporarily escape from the reality they face (Kang et al. 2018; Priporas et al. 2017)

Gen Z has different tendencies when it comes to shopping. They are not very loyal to physical stores and prefer products delivered to them. This puts additional pressure on retailers to find new ways to attract and retain Gen Z as customers (Priporas et al. 2017). Therefore, understanding Gen Z consumer behavior is very important in the world of marketing. Gen Z tends to be always connected to technology and prefers to communicate via messaging or social media rather than interacting in person (Poláková and Klímová 2019). However, technology not only influences the way they communicate, but also impacts various aspects of their lives, such as physical health, education, and social and professional identity. (Cesarina et al. 2022).

Smartphone use has had a huge impact on the way Generation Z shops. They actively use mobile shopping apps, and the pandemic may have reinforced this habit. Although many studies have focused on Generation Z's expectations and views towards mobile shopping (Lissitsa and Kol 2021; Goldring and Azab 2021), but research on the possible negative impacts of mobile shopping for Generation Z is limited. Some studies have shown a negative correlation between compulsive shopping behavior and age, meaning that young consumers, including Generation Z, may be more susceptible to uncontrolled shopping behavior (e.g. (G. Adamczyk et al. 2020; Dittmar 2005). Additionally, there is evidence to suggest that smartphones can increase the number of online purchases (e.g. Bozaci, 2020; Eriksson et al., 2017).

Therefore, considering that Generation Z lives in an environment that is highly dependent on smartphones and full of stimuli, it is natural to consider the possibility that smartphones may

trigger other compulsive behaviors, such as uncontrolled shopping behavior.(Eide et al. 2018; Griffiths et al. 2016). Overall, it is critical that we understand the mechanisms underlying the influence of smartphones on shopping behavior that may be problematic, especially among Generation Z individuals.

SOR (Stimulus, Organism, Response) Theory in Smartphone Use

The SOR (Stimulus, Organism, Response) theory was first developed by(Miller and Burgoon 1978)is a framework used in consumer psychology and consumer behavior to explain how people react to stimuli or stimuli provided by their environment, and how they respond to stimuli. In research(Mehrabian and Russell 1974)conveys The SOR (Stimulus-Organism-Response) model implies that a contextual stimulus (S) has the potential to influence a person's cognitive and affective state (as related to their organism, O), which then stimulates a behavioral response (R).

In recent years, several studies have developed SOR models in the context of information technology to better understand human-machine interactions(Gatautis et al. 2016; Luqman et al. 2017; Sohaib and Kang 2015). In addition, the SOR model is widely used in research that focuses on mobile phone use(CC Chen and Yao 2018; Chopdar and Balakrishnan 2020; Fang et al. 2017; Hew et al. 2018; X. Zhang et al. 2020), and online cell phone related behavior(Chan et al. 2017). In this theory, smartphone features are not only a stimulus, but also a "stimulus package"(Luqman et al. 2017). Stimuli originating from virtual environments trigger changes in feelings and thoughts in users, which ultimately influence the actions taken. Therefore, this research replicates previous research(Cesarina et al. 2022)which has revealed that individuals who are highly attached to their devices (perhaps suffering from smartphone addiction) tend to receive more intense stimulation.

According to the SOR model, the user's internal cognitive state (O) includes Mood Regulation and Flow Experience. Mood refers to "feelings that tend to be less intense than emotions and are often unrelated to contextual stimuli(Hume, 2012,p. 260). The main difference between moods and emotions is in their intensity and duration, with moods lasting longer and being less intense(Larsen 2000). Additionally, whereas emotions are reactions to external events, moods are responses to personal mental states(Morris 1992; Larsen 2000). Mood regulation involves all actions and behaviors aimed at changing subjective states(Larsen 2000).

Another cognitive state that can be triggered in highly engaged smartphone users is the experience of flow. The experience of flow is a state of mind in which a person is completely engaged in an activity, characterized by pleasant feelings and a loss of sense of time(Csikszentmihalyi 1975). In human-machine interactions, this state of flow is characterized by total focus on the activity and feelings of satisfaction(Ghani and Deshpande 1994). The experience of "flow" plays an important role in understanding individual behavior in online environments(Islam et al. 2021). Additionally, flow experiences also influence exploratory consumer behavior, which can result in increased time spent online. While most research tends to ignore the negative aspects that may be associated with flow experiences, some recent research has begun to link flow experiences with possible cell phone addiction, and suggests a possible link between the two.(WJ Lee and Shin 2016; C. ; Chen et al. 2017; Z. Wang et al. 2020).

Apart from being used as the main tool for social interaction, smartphones are also the platform most preferred by the younger generation for shopping(Bernstein 2015; Ameen and Anand 2020). Mobile shopping allows consumers to shop without using cash and without being noticed by others, this feature can trigger uncontrolled purchasing behavior(Dittmar et al. 2007). Therefore, Smartphones can be a tool used by compulsive buyers to satisfy the uncontrollable urges that often characterize their pre-purchase phase. M-commerce continues to grow, and the mobile environment has additional factors that can encourage compulsive behavior in users. For example, the urge to overshop may be triggered by the availability of easily accessible products, attractive mobile shopping platforms, and the ease with which compulsive shoppers can shop as they try to overcome negative feelings.(Cesarina et al. 2022). Therefore, it is important to understand the potential relationship between digital stimuli and cognitive responses to better understand smartphone addiction behavior and its relationship to compulsive buying online. In summary, the current research views smartphones as packages of stimuli that can trigger certain internal processes (i.e., mood regulation and flow experiences) that ultimately lead to reactive behavior (i.e., online compulsive buying).

Compulsive Buying

Compulsive buying is a repetitive action that is difficult to stop, in which a person responds to negative events or feelings by purchasing goods

or services on an ongoing basis, resulting in harmful consequences on their finances and personal well-being (RJ Faber and Guinn 1992; O'Guinn and Faber 1989). According to (Edwards 1993) Compulsive buying is abnormal behavior in shopping and in terms of spending and financial management which can cause a person to become trapped, out of control, shopping repeatedly and spending money beyond their means as a way to reduce negative feelings of stress and anxiety that arise within themselves. Several existing explanations explain compulsive buying conventionally, while online compulsive buying is defined as the consumer's tendency to engage in online purchasing without impulse control. (He et al. 2018). According to (Workman and David 2010) There are several factors that influence individuals to carry out compulsive buying, namely: 1). Personality, here what is meant by personality includes compulsivity, feeling low self-esteem, negative feelings or depression, feeling lonely, seeking passion, and fantasizing. 2). Demographic Factors Demographic factors here include income, age and gender. 3). Intensity of Feelings Compulsive consumers tend to have strong emotional responses to certain stimuli compared to other consumers. 4). Normative evaluation and impulse control Lack of impulse control has been associated with people being unable to resist or delay gratification when a stimulus to purchase arises. 5). Compulsive use of credit cards Consumers who show very high levels of credit card use or misuse of credit cards compared to other consumers. 6). Short-term and long-term consequences of compulsive shopping The short-term consequences of compulsive buying are positive such as reduced stress and pressure.

Smartphone Addiction

Smartphones are an important tool for many people, especially the younger generation (Brito et al. 2021). They are used to maintain social relationships, organize work and study schedules, and to regulate mood (C. Chen et al. 2017). In addition, smartphones are used to shop online. Shopping via smartphone has its own advantages. It allows compulsive shoppers to shop without having to worry about social stigma, and all transactions are done digitally, without cash (Kukar-kinney et al. 2009; Dittmar et al. 2007). Previously, research on smartphone addiction showed that the higher the level of addiction, the more often a person uses a smartphone (Veronika et al. 2016). In fact, research by (Chopdar and Balakrishnan 2020) found that

smartphone addiction had a positive and strong effect on the frequency of shopping via mobile applications. In other words, users who are addicted to smartphones are more likely to shop more frequently via mobile apps.

Therefore, smartphones could be a factor that drives compulsive buyer tendencies when shopping online. In a broader context, dependence on smartphones can also contribute to maladaptive behavior, such as compulsive shopping, which is triggered by the constant accessibility of smartphones. (Choi et al. 2019). (Chopdar, Paul, and Prodanova 2022) found a strong positive impact of smartphone addiction on shopping frequency via mobile apps. Therefore, individuals who are addicted to mobile phones are more likely to shop more frequently via mobile shopping apps. Considering the advantages of mobile shopping for compulsive buyers and the relationship between mobile shopping and smartphone addiction, it can be stated that smartphones may increase the compulsive buying tendencies of some individuals when shopping and making purchases online via their mobile phones. Furthermore, (Choi et al. 2019) suggests that some unhealthy online behaviors, such as compulsive gaming, social media abuse, and shopping, can be triggered by constant access via smartphones and other mobile device technologies.

H1: Smartphone addiction influences online compulsive buying

H2: Smartphone addiction affects mood regulation

H3: Smartphone addiction affects flow experience

H4: Smartphone addiction influences flow experience with mood regulation as a mediator

H5: Smartphone addiction influences online compulsive buying with mood regulation as a mediator

H6: Smartphone addiction influences online compulsive buying with flow experience as a mediator

H7: Smartphone addiction influences online compulsive buying with mood fluctuation and flow experience as mediators

Mood Regulation

Mood regulation is the process by which a person manages and regulates their feelings or emotions. It includes the way a person responds, copes, or changes their mood in various situations. Mood regulation can mean trying to increase positive moods or reduce negative moods (Parrott 1993). In various studies, it has been found that

dysfunctional and repetitive technology use is often related to individuals' attempts to overcome their negative feelings (S.E. Caplan 2010; S. Caplan et al. 2009; LaRose 2003). Several studies state that technology can provide sensation and comfort, and can change a person's mood (Turel et al. 2011). Therefore, individuals tend to use technology, such as smartphones, to relieve negative feelings such as loneliness, anxiety, stress, and depression (LaRose 2003). Smartphones, as one of the most commonly used forms of technology, provide instant access to a variety of digital content, including information, entertainment, and shopping platforms. Several studies have highlighted the link between smartphone use and mood swings (Fu et al. 2020; C. Chen et al. 2019; C. ; Chen et al. 2017). The virtual world available on smartphones can be a digital space where individuals try to change negative feelings into more positive ones (Yen et al. 2009).

Additionally, there are interesting similarities between compulsive buying behavior and smartphone addiction. Both can be viewed as attempts to avoid internal negative feelings and seek positive experiences from external stimuli. In other words, people may use certain content, such as online shopping, as a way to regulate their mood, relieve negative feelings, and achieve optimal levels of satisfaction (Hoffner and Lee 2015). These mood regulation behaviors can be thought of as steps taken by individuals to reduce unpleasant moods (Turel et al. 2011). The behavior usually consists of escapism from real-life problems and may also be carried out via digital devices. Moods are less intense than emotions, and therefore they tend not to interfere with ongoing activities (Kraiger et al. 1989), previous research has linked mood regulation mechanisms to the experience of flow. As an example, (Hu et al. 2019; K. Zhang et al. 2014) suggested that mood mechanisms may be involved in the experience of flow when using digital devices. Through mood-regulating actions, individuals engage in pleasurable activities, encouraging a flow state of accomplishment (Li and Browne 2006). Thus the hypothesis put forward is as follows:

H8: Mood hesitation influences online compulsive buying

H9: Mood hesitation influences flow experience

H10: Mood hesitation influences online compulsive buying with flow experience as a mediator

Flow Experiences

Flow Experiences are described as a state of complete involvement in an activity, characterized by a balance between the challenges presented by the activity and the individual's skills. This state is often accompanied by focused attention, loss of self-awareness, clear feedback on one's actions, feelings control over actions and environments, as well as the temporary disappearance of anxieties and constraints, leading to enjoyment or pleasure (Novak and Hoffman 1997). A number of studies have investigated the relationship between Flow state experiences and smartphone use (Chou and Ting 2003; Leung 2020; Ameen and Anand 2020; Z. Wang et al. 2020). The researchers do not rule out the possibility that individuals can still experience states of Flow through the use of mobile devices (Duke and Montag 2017). In line with this last view, (Leung 2020) reported that when engaging in "hedonic" activities such as playing video games, watching videos, or shopping online, as well as "eudemonic" activities such as socializing, reading the news, and surfing the internet, smartphone users tend to reach a state of flow. In addition, the various functions and applications available on smartphones can easily spark a person's interest, and as the level of involvement and interest in an activity increases, an individual can feel immersed in that activity and ignore other activities, thereby reaching a state of Flow. (Z. Wang et al. 2020). Furthermore, based on research (Khang et al. 2013) reported that the amount of time spent on a device was significantly associated with a higher likelihood of achieving a state of Flow for mobile users. Especially for users who tend to be addicted to smartphones - those who spend most of their time looking at their phones - there is a greater chance of reaching a state of flow. In other words, there is a potential increase in the likelihood of achieving a state of Flow for them.

The aforementioned studies show that flow experiences play an important role in influencing users' online behavior, especially in the context of online shopping sites. According to (Ettis 2017), there is a positive relationship between flow experience and consumer purchase intentions and return visits to online shopping sites. Other studies, such as those conducted by (YJ Kim and Han 2014; MJ Kim et al. 2017; Zhou et al. 2010), also supports these findings. Higher levels of flow have been found to be associated with several positive aspects of online consumer behavior, including increased number of purchases, levels of satisfaction, loyalty to the site, and longer time spent on the internet. (Herrando et al. 2019; YJ Lee

et al. 2019; Niu and Chang 2014). Additionally, when someone is in a state of flow, their decisions tend to be less well thought out (Barta et al. 2021). This can facilitate impulse buying, where consumers may tend to purchase products without deep consideration, even items unrelated to their needs. An online environment that provides freedom to browse without pressure from staff or other consumers can also increase the likelihood of impulse purchases (Dittmar et al. 2007). All of this suggests that the experience of flow can have a significant impact on online consumer behavior, including in terms of purchasing decisions and compulsive buying behavior. In this context, understanding and applying the concept of flow becomes important for online businesses that want to increase their customer interaction and satisfaction.

In the context of web platform use, the role of flow experience has been the subject of significant research. Previous studies, as suggested by (Dhir et al. 2020; Ozkara et al. 2017), proposes gamification strategies as a solution to increase user engagement on web platforms and facilitate

the achievement of a smoother flow experience. Today, mobile digital environments are designed with the aim of making it easier for users to achieve these flow experiences, with efforts to capture users' attention and stimulate their purchase intent (Ali 2016). The importance of creating flow experiences is that they are often associated with positive feelings that encourage individuals to repeat the experience. As has been highlighted in research by (Niu and Chang 2014), this flow experience can have a positive impact on consumer behavior, reinforcing purchasing behavior. Additionally, some evidence suggests that flow experiences are significantly associated with compulsive buying tendencies (Horvath and Ad 2018). Therefore, it can be assumed that creating flow conditions through mobile devices, especially smartphones, can be a significant driver in driving compulsive buying behavior online. However, it should be noted that the potential consequences for broader consumer attitudes and behavior still require further research.

H11: Flow experience influences online compulsive buying

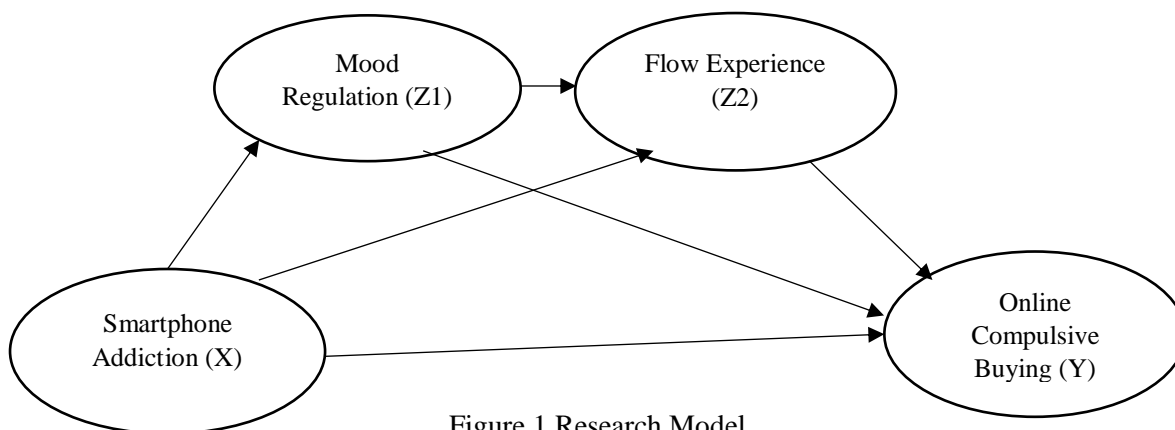


Figure 1 Research Model

RESEARCH METHODS

This type of research is quantitative descriptive research which aims to find out how much influence smartphone addiction has on compulsive buying with mood regulation and flow experience as mediator variables in Riau Province. Primary data was obtained by distributing questionnaires to respondents. The analysis tool uses Partial Least Square using SEMPLS. The population of this study was Riau students, totaling 1,141,668 people. The sampling technique in this research used G*power with a recommended sample of 390. After distributing the questionnaire, it was found that only 354 samples met the criteria of this research.

RESEARCH RESULT

The results of data collection were carried out by data entry and the feasibility of indicators was tested using the SmartPLS version 3 application before an Evaluation of Measurement Model was carried out. The first step is for researchers to evaluate the value produced by each statement item to measure reflective indicators. Limits of acceptable values according to (Hair et al 2018; Hair et al. 2021; Sarstedt et al. 2021) loading above 0.71 (excellent), loading 0.63 (very good), loading 0.5 (good), loading 0.45 (fair) and loading 0.32 (poor).

Evaluation of Measurement Models

Validity test

An indicator is declared valid according to Hair et al (2018) loading is above 0.7 (excellent) for the variable construct being tested, but for confirmatory research, a value of 0.6 - 0.7 is still acceptable for exploratory research. Meanwhile, for the construct development stage and measurement scale or research instrument development, according to (Hair et al 2018) a loading factor value of 0.4 – 0.5 is sufficient (Latan and Ghazali 2017). This research can be categorized into developing constructs and measurement scales or developing research

instruments, so the loading factor value will be at least 0.4 to meet convergent validity. Discriminant Validity Test to test that there is no high correlation between different indicators/items to measure different constructs. The rule of thumb used to determine Discriminant Validity is the value of the Average Variance Extracted (AVE) square root > correlation between latent constructs. The recommended AVE value must be greater than 0.5 (Ghozali and Latan 2015). The output of the validity test processing results using SmartPLS Version 3 loading factor in the outer loading table gives the following results:

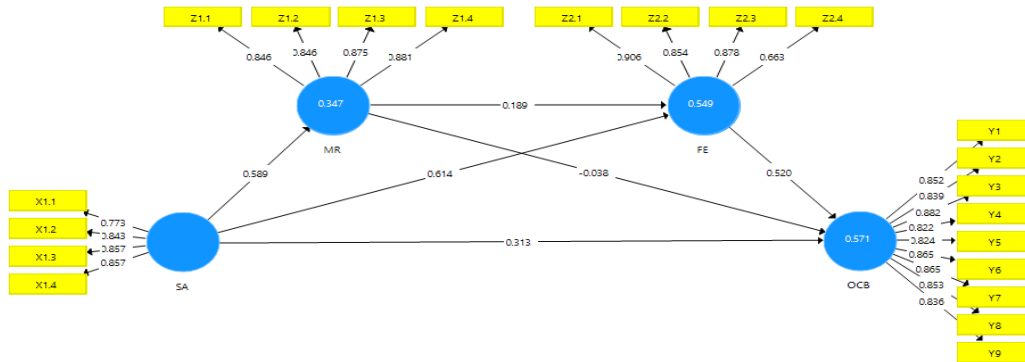


Figure 2. PLS Algorithm Path Diagram

Table 2 Loading factors				
	F.E	MR	OCB	S.A
X1.1				0.773
X1.2				0.843
X1.3				0.857
X1.4				0.857
Y1			0.852	
Y2			0.839	
Y3			0.882	
Y4			0.822	
Y5			0.824	
Y6			0.865	
Y7			0.865	
Y8			0.853	
Y9			0.836	
Z1.1		0.846		
Z1.2		0.846		
Z1.3		0.875		
Z1.4		0.881		
Z2.1	0.906			
Z2.2	0.854			
Z2.3	0.878			
Z2.4	0.663			

Source: SEMPLS 2023 processed results

After testing the loading factor values in this study, there were no values below 0.4. According to (Sarstedt et al. 2021; Hair et al. 2021) This value

is suitable for further testing. The next test is to assess the Average Variance Extracted (AVE) as follows:

Table 3 Construct Reliability and Validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
F.E	0.845	0.862	0.898	0.690
MR	0.886	0.896	0.920	0.743
OCB	0.951	0.953	0.959	0.721
S.A	0.853	0.859	0.901	0.694

Source: SEMPLS 2023 processed results

Analysis of the validity test results in table 3 above shows the Average Variance Extracted (AVE) value above >0.5 for all constructs contained in the research model. The results of the AVE construct on the four variables above meet the requirements for convergent validity. Another approach method is that researchers assess

discriminant validity using the Fornell Larcker Criterion to compare the square root value of the Average Variance Extracted (AVE) for each construct which is greater than the correlation value between the constructs.

Table 4 Fornell Larcker Criterion

	F.E	MR	OCB	S.A
F.E	0.831			
MR	0.550	0.862		
OCB	0.727	0.433	0.849	
S.A	0.725	0.589	0.668	0.833

Source: SEMPLS 2023 processed results

Based on table 4 using Fornell's and Lacker's criterion methods show that the value of each variable construct is acceptable where the AVE root of each dimension (in the diagonal axis) is greater than the correlation with the other dimensions.

is >0.6, meaning that this research has met the reliability criteria.

Reliability Test

Next, the reliability test can be seen from the results of the composite reliability values in table 3. Composite reliability values above > 0.7 mean that the construct can explain more than 50% of the variance of the indicators. All constructs in the estimated model meet the discriminant validity criteria. The lowest composite reliability value is 0.898 for the flow experience variable. Based on table 3, the Conbrach alpha value for each variable

Evaluation of Structural Models

The first step in evaluating a structural model is to analyze and check for collinearity between constructs and the predictive ability of the model. Then proceed with measuring the predictive ability of the model using five criteria, namely coefficient of determination (R²), path coefficients, cross-validated redundancy (Q²), and path coefficients. (Sarstedt 2019) The coefficient of determination (R-square) to see the test value that only exogenous variables have, evaluation through testing the significance of the influence of the exogenous (free) variable on the endogenous (dependent) variable.

Table 5 Determination Coefficient Test Results

	R Square	R Square Adjusted
MR	0.347	0.345
F.E	0.549	0.546
OCB	0.571	0.567

Source: SEMPLS 2023 processed results

Based on table 5, it is known that the R2 value for the mood regulation variable is 0.347, meaning that the increase in the value for the mood regulation variable can be explained by the independent variable, namely smartphone addiction, which is 34.7%, this category is at a weak level. Furthermore, the R2 value for the flow experience variable is 0.549, meaning that the increase in the value for the flow experience variable can be explained by the independent variable, namely smartphone addiction, and the mediating variable, namely mood regulation, which is 54.9% at a moderate level. This is in accordance with (Sarstedt 2019) which defines that the coefficient of determination value is expected

to be between 0 and 1, the R2 value is 0.60 (strong), 0.50 (moderate), and 0.25 (weak).

**Hypothesis testing
Direct Influence**

Based on data processing that has been carried out to answer the hypothesis. Hypothesis testing in this research was carried out using a bootstrapping procedure. This research uses a confidence level of 95% so that the level of precision or inaccuracy limit is 5% (0.05) while the t-table value is 1.967. If the t-table value is > 1.967 then the hypothesis is accepted, while the results of the bootstrapping analysis for direct effects are as follows:

Table 6 Bootstrap Test Results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
SA -> OCB	0.313	0.314	0.065	4,813	0,000
SA -> MR	0.589	0.592	0.048	12,380	0,000
SA -> FE	0.614	0.614	0.052	11,833	0,000
MR -> FE	0.189	0.190	0.056	3,369	0,001
MR -> OCB	-0.038	-0.040	0.054	0.695	0,487
FE -> OCB	0.520	0.523	0.055	9,536	0,000

Source: SEMPLS 2023 processed results

Hypothesis Testing (H1), Table 6 answers the first hypothesis that there is an influence between smartphone addiction and online compulsive buying with a calculated t value of 4.813 > 1.967 with a P value of 0.000.

Hypothesis Testing (H2), Table 6 answers the second hypothesis that there is an influence between smartphone addiction and mood swings with a calculated t value of 12.380 > 1.967 with a P value of 0.000.

Hypothesis Testing (H3), Table 6 answers the third hypothesis that there is an influence between smartphones on flow experience with a calculated t value of 11.833 > 1.967 with a P value of 0.000.

Hypothesis Testing (H8), Table 6 answers the eighth hypothesis that there is no influence

between mood regulation on online compulsive buying with a calculated t value of 0.695 < 1.967 with a P value of 0.487.

Hypothesis Testing (H9), Table 6 answers the ninth hypothesis that there is an influence between mood regulation on flow experience with a calculated t value of 3.369 > 1.967 with a P value of 0.001.

Hypothesis Testing (H11), Table 6 answers the eleventh hypothesis that there is an influence between flow experience on online compulsive buying with a calculated t value of 9.536 > 1.967 with a P value of 0.000.

Indirect Influence

Table 7 Specific Indirect Effects

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
SA -> MR -> FE	0.111	0.113	0.036	3,063	0.002
SA -> MR -> OCB	-0.022	-0.024	0.033	0.681	0.496
SA -> FE -> OCB	0.319	0.321	0.044	7,206	0,000
SA -> MR -> FE -> OCB	0.058	0.059	0.020	2,912	0.004
MR -> FE -> OCB	0.098	0.099	0.031	3,204	0.001

Source: SEMPLS 2023 processed results

Hypothesis Testing (H4), Table 7 answers the hypothesis that there is an influence between smartphone addiction on flow experience through mood fluctuation with a calculated t value of $3.063 > 1.967$ with a P value of 0.002.

Hypothesis Testing (H5), Table 7 answers the fifth hypothesis that there is no influence between smartphone addiction and online compulsive buying through mood fluctuation with a calculated t value of $0.681 > 1.967$ with a P value of 0.496.

Hypothesis Testing (H6), Table 7 answers the sixth hypothesis that there is an influence between smartphone addiction and online compulsive buying through flow experience with a calculated t value of $7.206 > 1.967$ with a P value of 0.000.

Hypothesis Testing (H7), Table 7 answers the seventh hypothesis that there is an influence between smartphone addiction and online compulsive buying through mood fluctuation and flow experience with a calculated t value of $2.912 > 1.967$ with a P value of 0.004.

Hypothesis Testing (H10), Table 7 answers the tenth hypothesis that there is an influence between mood hesitation on online compulsive buying through flow experience with a calculated t value of $3.204 > 1.967$ with a P value of 0.001.

DISCUSSION

Smartphone addiction influences online compulsive buying

From table 6 it is known that smartphone addiction has an effect on online compulsive buying. These results confirm the expert's opinion which states that Smartphone addiction causes increased impulsivity which makes it easier for a person to make purchasing decisions without deep thought. Smartphones provide easy access to online shopping platforms, fueling impulse purchases (Eide et al. 2018), a similar opinion was also expressed by Gatersleben et al., (2002) smartphones facilitate continuous exposure to advertising and promotions, which increases the likelihood of compulsive buying. According to him, interaction between consumers and digital

media via smartphones is changing traditional shopping patterns. This expert opinion is also proven by several previous studies which reveal that the younger generation spends more time on smartphones using various features, one of which is social media. Currently, social media has become a means for E-commerce platforms to market products, many young generations are interested in doing so. purchasing without planning through social media repeatedly with various backgrounds underlying the purchase (Grzegorz Adamczyk 2021; Saura et al. 2020; Chopdar, Paul, Korfiatis, et al. 2022). The findings in this study can be explained from the demographics of the respondents, 61% of whom are female and have an age range of 19-24 years, and the demographics in this study show that 77% of the total sample uses Shopee as their E-commerce choice. According to research in publications Kontan.co.id (2020) Women dominate Shopee users in Indonesia and furthermore, the majority of Shopee users of the female gender make repeated purchases without planning to be attracted to the benefits offered by the E-commerce platform.

Smartphone addiction affects Mood Regulation

The findings of this study support the opinion of experts who state that excessive smartphone use has an impact on higher levels of stress and anxiety, as well as a significant decrease in mood. (Maurya et al. 2022). Furthermore, several studies have proven that excessive smartphone use has an impact on a person's mood and also has an impact on overall physical and mental health (Candussi et al. 2023; Rahmillah et al. 2023). Based on the answers from this research sample, it is known that of all the question items related to mood regulation, the majority of respondents felt that when they felt that their mood was not good, they used a smartphone and felt that a smartphone could relieve their worries and felt carried away or complacent in using the smartphone. On the other hand, the findings from this research are not in line with research conducted by (Hitcham et al. 2023;

Maurya et al. 2022) which states that there is no influence between smartphone addiction on mood regulation, the researchers' findings reveal that smartphone addiction does not always have a negative impact on mood, and in some cases, smartphone use can be an effective way to manage stress and emotions.

Smartphone addiction affects Flow Experience

Based on the findings seen in table 6, it is known that Smartphone addiction has an effect on Flow Experience. These findings are in line with the opinion of experts who reveal that Flow Experiences are defined as a condition where a person is fully involved in an activity. It is characterized by a balance between the difficulty offered by the activity and the individual's abilities. In this state, a person often experiences intense focus, loses self-awareness, receives direct and clear feedback on actions taken, feels in control of actions and the surrounding environment, and temporarily loses feelings of anxiety and inhibition, which leads to a feeling of joy or satisfaction (Novak and Hoffman 1997). In the context of the influence of smartphone addiction on flow experiences, when someone uses a smartphone excessively, the smartphone user often feels pleasure and enjoyment and is dissolved to the point of losing self-awareness of the surrounding environment (Nabi and Green 2015). The findings from this research are in line with previous research which stated that addiction to using smartphones affects the Flow Experience of the younger generation (Dwivedi et al. 2021; A. Faber et al. 2022; Chacko et al. 2023). The findings of this research can be explained by the respondents of this study who are generation z who have never been separated from smartphones. Based on published data Babeinsight.id (2023) The younger generation in Indonesia is at the peak of smartphone addiction, with the average Indonesian spending 5 to 7 hours a day using a smartphone.

Smartphone addiction influences flow experience with mood regulation as a mediator

Further findings from this research show that smartphone addiction has an indirect effect on flow experience through mood regulation. These results are in line with expert opinion which states that smartphone use will provide short-term satisfaction. This indirectly has an impact on flow experience (Twenge and Campbell 2018). The findings of this research are in line with the findings of research conducted by (Dwivedi et al. 2021; Chacko et al. 2023; A. Faber et al. 2022) with findings stating that Smartphone addiction has an

indirect effect on flow experience through encouraging mood regulation. The findings of this research can be explained based on the answers of respondents in this research who stated that when using a smartphone they feel concentrated on it and feel happy.

Smartphone addiction has no effect on online compulsive buying with mood regulation as a mediator

Based on the results of this research findings shown in table 7, it explains that smartphone addiction has no effect on online compulsive buying with mood regulation as a mediator. This result is not in line with expert opinion which states that smartphone addiction will have an impact on a person's mood regulation and also have an impact on the tendency to commit online compulsive buying with the aim of relieving stress (Huang 2016; Darrat et al. 2016). The findings of this research are in line with research conducted by (Rancati et al. 2023) which suggests that smartphone addiction and the urge to regulate mood do not always have an impact on compulsive buying behavior. On the other hand, the results of this research are not in line with research conducted by Rodríguez-Brito et al. (2022) which states that the younger generation who spend a lot of time using smartphones has a tendency towards compulsive purchases that are driven by various things. Furthermore, research conducted by Mason et al. (2022) states that Generation Z has compulsive buying behavior which is driven by addiction to smartphone use and encouragement from mood regulation.

Smartphone addiction influences online compulsive buying with flow experience as a mediator

The next findings that can be put forward are that Smartphone addiction influences online compulsive buying with flow experience as a mediator. These results are in line with expert opinion which states that addiction to smartphone use can influence compulsive buying when shopping online and is driven by the increasing frequency and duration of flow experience (Pera 2020). The findings of this research are in line with previous research which states that the flow experience experienced by smartphone users when shopping online can strengthen compulsive buying behavior, especially among the younger generation (Mason et al. 2022a; Abdelsalam et al. 2020).

Smartphone addiction influences online compulsive buying with mood fluctuation and flow experience as mediators

Based on table 7, the next findings that can be stated are that smartphone addiction influences online compulsive buying with mood fluctuation and flow experience as mediators. The results of these findings indicate that the influence of smartphone addiction is also strengthened by the encouragement of mood fluctuation and flow experience as mediators. This supports the research findings, which is conducted by Mason et al. (2022) with findings stating that mood regulation behavior and flow experiences act as reinforcing factors in the influence of smartphone addiction on compulsive purchasing behavior in generation Z consumers. Almost similar findings were also revealed by Petcharat and Leelasantitham (2021) with findings stating that flow experience can be a driver for someone to make repeat purchases on the E-commerce platform.

Mood Regulation has no effect on online compulsive buying

The next finding that can be stated is that Mood Regulation has no effect on online compulsive buying. This result is not in line with the opinion of experts who state that the younger generation who have low mood regulation tend to like to spend their time making repeated unplanned online purchases which are facilitated by convenience. Shopping on digital media encourages compulsive purchasing behavior in today's young generation (Rohani 2012), this is in line with the findings of this research, where the sample in this study is the younger generation or generation Z who carry out compulsive purchasing behavior on e-commerce in Indonesia. The findings of this research are in line with research conducted by (Yi et al. 2023; Cohen et al. 2018) which suggests that the influence of a person's mood regulation can influence their consumption behavior, in the context of online compulsive purchasing behavior, mood regulation is one of the drivers of this behavior.

Mood Regulation influences the flow experience

Based on the bootstrapping results shown in table 6, it is known that mood regulation has an effect on flow experience. According to the opinion of Madrigano (2008) Positive feelings such as happiness, joy, and compassion can increase creativity and engagement in activities. This means that the ability to regulate and maintain positive feelings can impact the flow experience. The same thing

was also stated by Waterman et al. (2003) A person who has the ability to manage negative feelings, such as stress or anxiety, is more likely to achieve high levels of engagement in the activities they do. The findings of this research support previous research with findings which reveal that mood regulation has an effect on flow experience (Mason et al. 2022)

Mood fluctuation influences online compulsive buying with flow experience as a mediator

The next findings that can be found based on table 7 show that flow experience mediates the influence of mood fluctuation on online compulsive buying. This is in line with the opinion of experts who reveal that someone who has had a flow experience tends to feel more involved in the activity and is less able to control impulses. To shop compulsively (Maharani et al. 2022). The findings of this research are in line with the findings of research conducted by K. Zhang et al. (2014) which suggests that flow experience can encourage a person's mood fluctuation to carry out compulsive online buying behavior.

Flow Experience influences online compulsive buying

The results of this research findings shown in table 6 explain that Flow Experience has an effect on online compulsive buying. Expert opinion states that flow experiences, which are characterized by total involvement in activities, often reduce a person's awareness of rational decision making, which can increase online compulsive buying behavior. (L. Wang and Wang 2020; Hsu et al. 2012). The findings of this study support research by the flow experience when shopping online with an increase in compulsive buying tendencies, especially among users who often seek instant gratification (Jiang 2022)

CONCLUSION

Smartphone addiction among Generation Z in Riau Province has a complex impact on online compulsive buying, mood fluctuation, and flow experience. First, regarding online compulsive buying, smartphone addiction increases access to online shopping platforms, encouraging impulse buying. This is reinforced by the finding that the majority of Shopee users in Indonesia, especially women, tend to make repeated unplanned purchases. Second, in the aspect of mood fluctuation, smartphone addiction affects stress and anxiety levels, with some respondents feeling that smartphones help reduce their worries, although there is research which states that there is not

always a negative influence between smartphone addiction and mood regulation. Third, regarding flow experience, smartphone addiction causes individuals to become fully involved in smartphone use, often experiencing intense focus and loss of self-awareness. This is especially true for Generation Z who spend a long time using smartphones. Fourth, there is an indirect relationship between smartphone addiction and flow experience through mood regulation, where smartphone use provides short-term satisfaction and influences flow experience. Finally, research shows that mood regulation influences compulsive online buying, with young people who have poor mood regulation tending to make repeated online purchases. Mood regulation also influences flow experience, where the ability to manage positive and negative feelings can increase involvement in activities. In this context, flow experience mediates the influence of mood regulation on online compulsive buying. Overall these findings highlight the interrelated relationship between smartphone addiction, mood regulation, flow experience, and online compulsive buying among Generation Z in Riau Province.

Limitations

This research only focuses on generation Z who are registered as students at several universities in Riau Province so the results of this research cannot describe the compulsive purchasing behavior of all generation Z in Riau Province. Furthermore, this research only focuses on online compulsive purchasing behavior on several e-commerce platforms only so these results cannot be used as a general reference for comprehensive online purchasing behavior on all E-commerce platforms.

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