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### **Food Hoarding Intention saat Pandemi Covid-19 di Indonesia: Peran Peraturan Pemerintah sebagai Variabel Moderasi**

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#### **ABSTRAK**

Merebaknya Covid-19 di awal tahun 2020 telah menimbulkan kecemasan masyarakat karena ketidakpastian akan dampak dari wabah ini. Di awal wabah ini, sering kita jumpai perilaku pembelian masyarakat yang tidak seperti biasa. Salah satunya adalah dengan menimbun bahan pangan atau membeli bahan kebutuhan pokok dalam jumlah banyak sebagai antisipasi dari dampak yang mungkin terjadi selama pandemi Covid-19. Oleh karenanya, penelitian ini bertujuan untuk menganalisis pengaruh risk perception dan tiga komponen Theory of Planned Behavior (TPB), yaitu: sikap, norma subyektif, dan *perceived behavioral control* terhadap niat individu untuk menimbun bahan kebutuhan pokok guna memahami respon individu terhadap kondisi pandemi. Penelitian ini juga menambahkan peraturan pemerintah terkait dengan Pembatasan Sosial Berskala Besar (PSBB) sebagai variabel moderasi. Penelitian ini melibatkan 194 responden. Data yang diperoleh selanjutnya diolah dengan menggunakan metode PLS-SEM. Temuan penelitian ini menunjukkan bahwa *food hoarding intention* dipengaruhi oleh *risk perception* dan ketiga komponen TPB. Sedangkan PSBB tidak memoderasi hubungan ketiga komponen TPB pada *food hoarding intention*.

**Kata kunci:** food hoarding intention, Indonesia, pandemi covid-19, theory of planned behavior, PSBB

#### ***Food Hoarding Intention during Covid-19 in Indonesia: the Role of Government Regulation as Moderating Variable***

#### **ABSTRACT**

The outbreak of Covid-19 in early 2020 has raised public anxiety because of the uncertainty about the impact of this outbreak. At the beginning of this outbreak, we often encountered unusual purchasing behavior. One of them is by hoarding food or buying basic needs in large quantities in anticipation of the possible impacts during the Covid-19 pandemic. Therefore, this study aims to analyze the effect of risk perception and the three components of Theory of Planned Behavior (TPB), namely: attitudes, subjective norms, and *perceived behavioral control* on individual intentions to hoard basic needs in order to understand individual responses to pandemic conditions. This study also adds government regulations related to Large-Scale Social Restrictions

*(PSBB) as a moderating variable. This study involved 194 respondents. The data obtained were then processed using the PLS-SEM method. The findings of this study indicate that food hoarding intention is influenced by risk perception and the three TPB components. Meanwhile, PSBB did not moderate the relationship between the three TPB components on food hoarding intention.*

**Keyword:** *food hoarding intention, Indonesia, the covid-19 pandemic, theory of planned behavior, PSBB*

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## **INTRODUCTION**

The rapid spread of the corona virus and its ability to infect the entire world distinguishes it from previous outbreaks such as SARS, avian influenza, or Ebola. The Covid-19 outbreak, which began in 2019 in the Chinese city of Wuhan, has caused socioeconomic upheaval all over the world (Bae & Chang, 2021; Long & Khoi, 2020). In contrast to natural disasters such as earthquakes, hurricanes, and floods, which cause more physical/infrastructure losses, pandemics can cause long-term damage and have far-reaching consequences such as economic crises, job losses, and psychological instability (Bae & Chang, 2021; Djalante et al., 2020). According to research, recovering socially and economically from a pandemic can take more than a decade (United Nations, 2020).

Disease outbreaks are widely acknowledged to cause changes in individual behavior. People's consumption habits have shifted as a result of their concerns about the virus's impact. Some countries even demonstrated unusual consumption habits, such as stockpiling toilet paper (Baddeley, 2020; Carroll, 2020; Dexter & Sakkal, 2020). Another thing we can see at the start of the pandemic is that many people buy large quantities of food and necessities to meet the needs of themselves and their families. For example, people in Indonesia's major cities, such as Jakarta and Surabaya, rush to buy large amounts of food and medicine supplies, following the President of the Republic of Indonesia's announcement about the first two cases of Covid-19 (Loasana, 2020; Putra, 2020; Snapcart, 2020). This is understandable given that fears about the outbreak's impact can lead to overreactions in order to defend themselves (Bavel et al., 2020). Hoarding is defined as an attempt to collect goods in large quantities due to a perceived scarcity of certain goods' supply (Long & Khoi, 2020; Sterman & Dogan, 2015). Because of the uncertainty caused by the Covid-19 outbreak, this behavior is an attempt to create a sense of security. When panic spreads, people lose their ability to think rationally. They always want to buy more than they need, despite the government's assurances that food supplies will always be available to everyone (Arafat et al., 2020; Dholakia, 2020; Long & Khoi, 2020; Wilkens, 2020).

The Theory of Planned Behavior (TPB) is widely used in various disciplines to predict individual behavior. Attitude, subjective norms, and perceived behavioral control, according to this theory, are strong predictors of behavioral intentions, which can then influence a person's actual behavior. A

person's positive or negative assessment of a particular phenomenon or action is referred to as their attitude. Subjective norms are social pressures that either prevent or encourage people to do certain things. Perceived behavioral control (PBC) refers to a person's belief that he or she will be able to control the situation and manage the resources required to carry out specific actions (Ajzen, 2008). However, the Covid-19 pandemic has revealed some intriguing behaviors that are difficult to explain using conventional economic theory, challenge existing norms, and highlight the need to predict individuals' future behavioral intentions (Baddeley, 2020; Bae & Chang, 2020). As a result, understanding individual responses to pandemic conditions is critical. Researchers have attempted to include additional variables in TPB in order to increase TPB's predictive power (Bae & Chang, 2020). Given the magnitude of the pandemic's impact, we expanded the TPB in this study by including the risk perception variable to the outbreak's spread and the government regulation on Large-Scale Social Restrictions (PSBB) as moderating variables to determine whether the regulation strengthens or weakens people's intention to stockpile food (foodhoarding intentions).

Hoarding is frequently motivated by a desire to reduce the risk of losing access to certain products that may no longer be available as a result of rising demand or rising prices (Power, Doherty, Pybus, & Pickett, 2020; Serman & Dogan, 2015). When the Covid-19 pandemic struck, health products and commodities became extremely scarce due to an unexpected increase in demand, while raw materials and labor were restricted due to activity restrictions imposed to prevent disease spread (Long & Khoi, 2020). Hoarding can be explained in two ways: operation and behavior (Serman & Dogan, 2015). The operational aspect is concerned with resources to overcome material and labor shortages, as well as logistics system overloads (Choi, Chiu, & Chan, 2016). Whereas behavioral factors explain consumer hoarding based on personal experience and sentiment decisions, these decisions are frequently driven by psychological factors such as concerns about the scarcity of goods; anxiety about an individual's economic capacity not being able to meet a shortage situation; or panic caused by herd behavior (Deng, Wang, & Yousefpour, 2017; Long & Khoi, 2020).

As we all know, the Covid-19 pandemic has forced many people to stock up on necessities such as food. This is done to protect themselves from the consequences or risks associated with the Covid-19 outbreak. Concerns about government policies related to efforts to mitigate Covid-19 through Large-Scale Social Restrictions (PSBB), which can limit their activities outside the home, drive the intention to stockpile food in addition to concerns about scarcity of goods (Humas Kemenkes, 2020; Serman & Dogan, 2015). Anxiety or concern about a person's potential risks is a strong predictor of human behavior (Bae & Chang, 2021; Johnson & Tversky, 1983; Williams & Noyes, 2007). This risk perception is determined by a person's assessment of the severity of an event and the potential negative consequences (Bourassa, Doraty, Berdahl, Fried, & Bell, 2016; Sheu & Kuo, 2020; Sjöberg, Moen, & Rundmo, 2004). Previous research has demonstrated that perceived risk can influence attitudes, which in turn can

influence behavioral intentions (Ajzen, 1991; Quintal, Lee, & Soutar, 2010). In addition, perceived risk was discovered to be a significant predictor of subjective norms and perceived behavioral control (Lee, 2009). In general, a low perceived risk level will result in a positive attitude toward a behavior, increased belief that their family or friends will support the behavior (subjective norm), and increased perception of their own ability to perform the desired action (perceived behavioral control) (Bae & Chang, 2021; Jarvenpaa, Tractinsky, & Saarinen, 1999). However, because this study discusses the purchase of large quantities of food in anticipation of the impact of the Covid-19 outbreak, it formulates the following hypothesis:

H<sub>1</sub>: Risk perception (RP) has a positive effect on attitude (AT)

H<sub>2</sub>: Risk perception (RP) has a positive effect on subjective norms (SN)

H<sub>3</sub>: Risk perception (RP) has a positive effect on perceived behavioral control (PBC)

Behavior intention, which is influenced by attitudes, subjective norms, and perceived behavioral control, can predict a person's actual behavior (Ajzen, 2008). Hoyer, MacInnis, and Pieters (2013, p. 128) defined attitude as an overall evaluation that expresses a person's likes or dislikes toward an object, problem, person, or action. Kristiningsih, Hartini, and Usman (2020) described consumer attitude as a combination of three elements: cognitive information, affective information, and information about consumers' past behavior and future intentions. In other words, attitudes are composed of thoughts or beliefs, feelings, and behaviors or intentions toward specific things, which are typically goods or services. Consumers have an opinion about what they like and dislike. Consumers' attitudes toward objects are learned tendencies to evaluate objects by consistently supporting or opposing them. A person's attitude toward hoarding groceries may be motivated by a desire to reduce risk. According to the literature on self-interest orientation, humans are born with an innate tendency to be selfish, which motivates them to pursue self-interest while avoiding risk. In unusual events such as the Covid-19 outbreak, these characteristics encourage a person to rationalize hoarding behavior (Dreu & Nauta, 2009; Sheu & Kuo, 2020).

Subjective norm (SN) refers to the belief that a person's decision is influenced by social norms, i.e. that the behavior is approved and supported by another person or group of people (Bavel et al., 2020; Ham, Jeger, & Ivković, 2015). The purchase of food in large quantities has both positive and negative consequences in society. On the one hand, this is understandable for a variety of reasons, such as reducing activities outside the home so that they can buy in large quantities directly, or there is uncertainty about the long-term availability of these foodstuffs because many people do the same thing. As a result, there is a scarcity of supplies everywhere, causing harm to others.

Furthermore, perceived behavioral control (PBC) refers to an individual's perception of his ability to control certain behaviors (Ajzen, 1991). PBC is based

on beliefs about having access to the resources and opportunities needed to successfully perform specific behaviors (eg, I have the funds and the opportunity to buy large quantities of groceries) (Conner, 2001). The Covid-19 outbreak has infected the entire country, causing widespread panic. This causes them to behave erratically and possibly purchase more than they require. If they have the ability to do so, this is a possibility.

Individuals are more likely to engage in food hoarding if they believe that it will result in certain outcomes that they believe will benefit them, if they believe that other people think they should do food hoarding, and if they believe they have the resources and opportunities required for food hoarding. Based on the preceding discussion, this study proposes the following hypothesis:

H<sub>4</sub>: Attitude (AT) has a positive effect on food hoarding intention (FHI)

H<sub>5</sub>: Subjective norms (SN) have a positive effect on food hoarding intention (FHI)

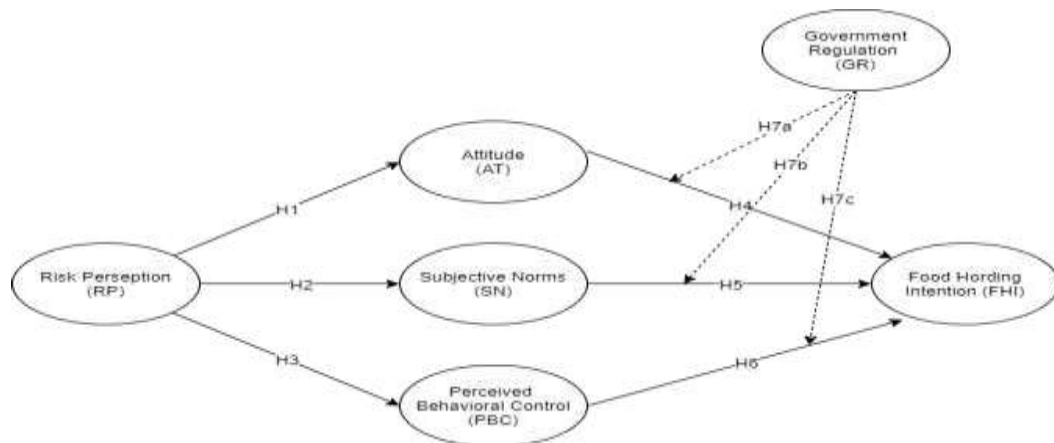
H<sub>6</sub>: Perceived behavioral control (PBC) has a positive effect on food hoarding intention (FHI)

The spread of the Covid-19 pandemic in Indonesia has prompted the government to enact policies restricting residents' activities in affected areas. This policy is known as Large-Scale Social Restrictions (PSBB), and it is governed by Minister of Health Regulation No. 9 of 2020. The goal of this policy is to break the chain of transmission of Covid-19. Although supermarkets, markets, food needs, basic needs, and so on are still permitted, there are activity restrictions and health protocols that must be followed (Humas Kemenkes, 2020). However, the implementation of PSBB has some unintended consequences. On the one hand, entrepreneurs and the community expressed concern that the PSBB would stifle a variety of industries and livelihoods (Sari, 2020). On the other hand, the use of shopping apps, particularly those selling daily necessities, increased by 300% (Lubis, 2020). As a result, the following hypothesis is proposed in this study:

H<sub>7a</sub>: Government regulation (GR) moderates the relationship between attitude (AT) and food hoarding intention (FHI)

H<sub>7b</sub>: Government regulation (GR) moderates the relationship between subjective norms (SN) and food hoarding intention (FHI)

H<sub>7c</sub>: Government regulation (GR) moderates the relationship between perceived behavioral control (PBC) and food hoarding intention (FHI)



**Figure 1. Conceptual Framework**

## RESEARCH METHODS

This study's population consisted of all consumers who went grocery shopping during the Covid-19 pandemic. Food shopping activities are limited to purchasing necessities that can be stored for an extended period. The shopping period was from April to July 2020, when the PSBB was implemented. The areas chosen as samples were PSBB-implemented areas. Purposive sampling was used to select the sample, which has the following characteristics: respondents are decision makers for purchasing staple products in the family, aged 17 and up, and live in areas where the PSBB policy is implemented. To avoid direct contact with respondents, data was collected online using a Google form. 194 of the 200 respondents who completed the questionnaire were eligible to proceed to the next stage. The questionnaire results were then processed and analyzed using the PLS-SEM method. The questionnaire is divided into two sections. The first section contains the respondent profile, and the second section contains the questionnaire questions related to the constructs studied.

In this study, risk perception (RP) is defined as a consumer's assessment of the likelihood and severity of a COVID-19 pandemic outbreak with potentially negative consequences (Bourassa et al., 2016; Sjöberg et al., 2004). This construct is measured using three Sheu and Kuo indicators Sheu and Kuo (2020). Furthermore, attitude (AT) refers to consumers' proclivity to respond positively or negatively to basic needs shopping activities (Ajzen, 2008). Attitude indicators are made up of three parts: affective, cognitive, and conative (Grimm, 2005; Rosenberg & Hovland, 1960). Subjective norm (SN) refers to the belief that a person or group of people will approve and support consumer behavior in purchasing basic necessities during the Covid-19 pandemic (Ajzen, 2008). The three indicators used to assess SN are based on Ham et al. (2015). Perceived behavior control (PBC) refers to the consumer's perception of their ability to control their shopping behavior for basic needs during the Covid-19 pandemic (Ajzen, 1991). PBC indicators were adapted from Albert Bandura's self-efficacy model (Ajzen, 1991). Consumer perception of the government's policy of Large-Scale Social Restrictions (PSBB) to limit certain activities to residents of an area

affected by the Covid-19 pandemic is referred to as government regulation (GR). This variable is measured using categorical measurements, namely strict PSBB rules for limiting basic needs shopping activities and loose PSBB rules for limiting basic needs shopping activities. Food hoarding intention (FHI) is a consumer behavior that is motivated by the desire to stockpile these materials during the COVID-19 pandemic (Power et al., 2020). Food hoarding intention indicators were adapted from several studies, including Deng et al. (2017), Long and Khoi (2020), and Power et al. (2020)

## **RESULTS AND DISCUSSION**

The quality of research instruments must be standardized, and they must meet the criteria of validity and reliability testing techniques. The validity test is used to ensure that the respondents understand the question items used in this study. In testing indicators with data analysis techniques using partial least squares (PLS), the validity of an indicator is determined by the outer loading score. In general, the outer model or measurement model tests indicators against latent variables, or measures how well the indicator can explain the latent variables. In testing the validity of a research instrument using data analysis techniques from partial least squares (PLS), we need to measure convergent validity and the average variance extracted (AVE) value.

According to Table 1, all indicators have met the requirements of convergent validity, namely a loading factor greater than 0.50 and all indicators are significant with a p value less than 0.05. As a result, the indicators used to measure all research variables have been declared valid and can be used for further investigation. Furthermore, for a research indicator to be valid, the Average Variance Extracted (AVE) value must be greater than 0.50. Table 2 shows that the six constructs met the criteria, namely above 0.5 with the highest value of 0.795, indicating that all indicators in this study are valid.

The next test is reliability testing, which demonstrates the consistency and stability of measuring instruments or research instruments when measuring a concept or construct. Reliability testing is always conducted concurrently with construct validity testing. A valid construct is unquestionably reliable; however, a reliable construct is not always valid. The reliability of research instruments can be measured using two methods: composite reliability and Cronbach's alpha (Sholihin & Ratmono, 2013). A research instrument is considered reliable if it has a composite reliability value greater than 0.70 (Wiyono, 2011) and Cronbach's alpha greater than 0.60 (Abdillah & Hartono, 2015). Table 3 shows that the six constructs have a composite reliability value greater than 0.6, with the Perceived behavioral control construct having the lowest value of 0.771. Furthermore, the Cronbach's alpha values for the six constructs measured in this study are all greater than 0.6, with the exception of government regulation and perceived behavioral control, which have moderate reliability (0.5). As a result, it is possible to conclude that all construct indicators in this study are reliable.

**Table 1. Output of Combined Loading and Cross Loading**

	riskper	attitud	Sub norm	PBC	govreg	FHI	gov* att	gov*sn	gov* pbc	Type as define	SE	p-value
Rp1	0.667	0.088	-0.080	-0.031	-0.046	-0.102	0.082	-0.340	0.370	Reflect	0,050	<0.001
Rp2	0.822	-0.221	0.147	0.012	-0.057	-0.012	-0.181	0.097	-0.100	Reflect	0,049	<0.001
Rp3	0.770	0.160	-0.087	0.014	0.100	0.101	0.121	0.192	-0.214	Reflect	0,049	0.001
Att1	0.187	0.843	0.224	0.029	-0.087	-0.090	-0.022	0.309	-0.353	Reflect	0,049	<0.001
Att2	-0.099	0.910	-0.107	-0.028	0.082	-0.040	-0.074	-0.099	0.144	Reflect	0,050	<0.001
Att3	-0.073	0.921	-0.100	0.001	-0.002	0.122	0.094	-0.184	0.181	Reflect	0,050	<0.001
Sn1	-0.025	0.230	0.876	-0.085	0.020	0.001	-0.031	-0.182	0.139	Reflect	0,050	<0.001
Sn2	-0.043	0.136	0.918	-0.071	0.100	0.005	-0.015	0.178	-0.186	Reflect	0,049	<0.001
Sn3	0.080	-0.425	0.769	0.182	-0.142	-0.007	0.053	-0.005	0.064	Reflect	0,049	<0.001
Pbc1	-0.207	0.202	-0.067	0.784	-0.195	0.021	0.291	-0.323	0.386	Reflect	0,050	<0.001
Pbc2	0.043	0.163	-0.000	0.738	0.143	0.138	-0.269	0.495	-0.689	Reflect	0,049	<0.001
Pbc3	0.199	-0.424	0.080	0.657	0.072	-0.179	-0.045	-0.170	0.314	Reflect	0,049	<0.001
Gov1	0.120	0.231	-0.131	0.088	0.833	-0.262	0.186	-0.666	0.713	Reflect	0,049	<0.001
Gov2	-0.120	-0.231	0.131	-0.088	0.833	0.262	-0.186	0.666	-0.713	Reflect	0,049	<0.001
Fhi1	0.005	-0.498	0.058	-0.049	-0.082	0.689	0.039	0.086	-0.146	Reflect	0,048	<0.001
Fhi2	-0.074	0.260	-0.167	-0.061	0.161	0.863	0.009	0.361	-0.426	Reflect	0,049	<0.001
Fhi3	-0.028	0.148	-0.013	0.140	0.014	0.870	0.044	-0.255	0.364	Reflect	0,049	<0.001
Fhi4	0.099	-0.012	0.135	-0.042	-0.111	0.856	-0.086	-0.175	0.177	Reflect	0,048	<0.001
GOV *att	-0.000	-0.000	0.000	-0.000	0.000	-0.000	1.000	0.000	-0.000	Reflect	0,048	<0.001
GOV *sn	-0.000	-0.000	0.000	0.000	-0.000	0.000	-0.000	1.000	-0.000	Reflect	0,048	<0.001
GOV *Pbc	-0.000	-0.000	0.000	-0.000	-0.000	0.000	-0.000	0.000	1.000	Reflect	0,048	<0.001

Source: Data processed

**Table 2. Average Variance Extracted (AVE)**

RISKPER	ATTITUD	SUBNORM	PBC	GOVREG	FHI	GOVREG*	GOVREG*	GOVREG*
0.571	0.795	0.734	0.530	0.694	0.677	1.000	1.000	1.000

Sumber: Data diolah

**Table 3. Output Laten Variable Coefficients for Composite Reliability and Cronbach's Alpha**

	RISKPER	ATTITUD	SUBNORM	PBC	GOVREG	FHI	GOVREG*	GOVREG*	GOVREG*
Composite reliability	0.799	0.921	0.892	0.771	0.820	0.893	1.000	1.000	1.000
Cronbach's alpha	0.621	0.870	0.816	0.554	0.560	0.838	1.000	1.000	1.000
Avg. Var. extract	0.571	0.795	0.734	0.530	0.694	0.677	1.000	1.000	1.000
Full collin VIF	1.410	2.957	2.986	1.268	1.414	1.875	1.413	3.415	3.656
Q-squared		0.116	0.088	0.088		0.486			

Source: Data processed

The next step is to test the goodness of the model. This test is used to determine the goodness of the research model (model fit). Table 4 shows the results of the model fit and quality indices test results.



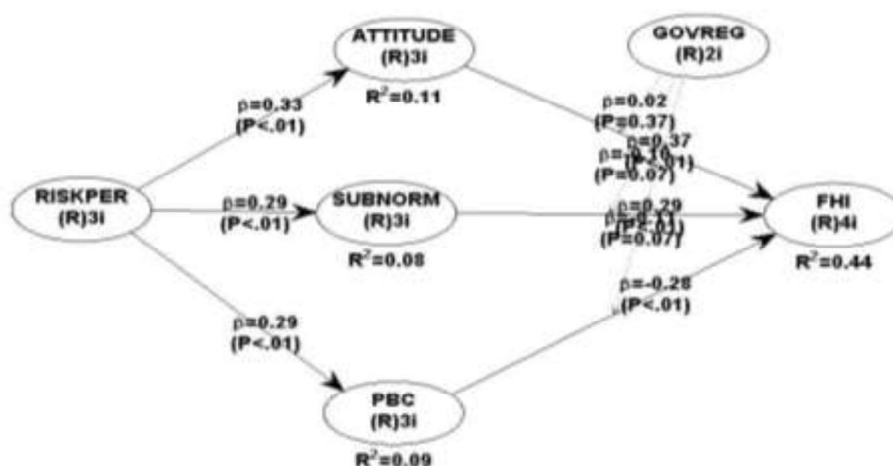
**Table 4. Model Fit and Quality Indices**

Measurement	Value	Criteria
Average path coefficient (APC)	0.232, P<0.001	Accept if p value <0.05
Average R squared (ARS)	0.179, P=0.003	Accept if p value <0.05
Average adjusted R squared (AARS)	0.171, P=0.004	Accept if <0.05
Average bolck VIF (AVIF)	1.940	Accept if p value <5
Average full colinearity VIF	2.266	Accept if <5
Tenenhaus GOF	0.373	Low>0.1, med>0,25, high>0.36
Symson's paradox ratio (SPR)	0.778	Accept if>0,7
R squared contribution ratio (RSSR)	0.960	Accept if>0,9
Statistical supresion ratio (SSR)	1.000	Accept if >0.7
Rsquared contribuition ratio (RSCR)	0.978	Accept if > 0.7
Non linier bivariat causality direction ratio	0.667	Accept if>=0.7

Source: Data processed

Except for non-linear bivariate causality ( $= 0.667$ ), all criteria in Table 4 are met. However, the results are still close to the acceptance criteria, so it is considered quite good. As a result, the test of the model developed in this study yielded results that satisfied the goodness of fit requirements. This means that the model is capable of predicting actual field conditions.

The following step is hypothesis testing, which aims to test the relationship between latent variables in the research model, with the results visible from the estimated path coefficients and level of significance (p-value). The output image of the estimation results is shown below to demonstrate the relationship between latent variables.



**Figure 2. Estimated Output**

Source: Data processed

The p-value can be used to determine whether the hypothesis test is supported or rejected. If the p-value is less than 0.05, then the proposed hypothesis can be supported. The following table shows the estimation results of path coefficients to test the strength of the influence between variables and explain the relationship between variables:

**Table 5. Path Coefficients Estimation Results**

Hipotesis	Path coefficients	p-value	Decision
<i>Riskperception – attitude</i>	0.332	<0.001	significant
<i>Riskperception – subjectivenorm</i>	0.289	<0.001	significant
<i>risk perception - perceived behavioral control</i>	0.293	<0.001	significant
<i>attitude – FHI</i>	0.374	<0.001	significant
<i>Subjective norms – FHI</i>	0.285	<0.001	significant
<i>Perceived behavioral control – FHI</i>	-0.282	<0.001	significant
<i>govreg*attitude</i>	-0.106	0.068	not significant
<i>govreg*subjective norm</i>	-0.103	0.072	not significant
<i>govreg*PBC</i>	0.024	0.366	not significant

Source: Data processed

The results of this study indicate that all hypotheses are supported except for the hypothesis related to the moderating role of government regulations (PSBB). The following is a detailed discussion of the study's findings. First, with a path coefficient of 0.332 and a positive sign, the results show that risk perception has a significant effect on attitude. This can be explained by the fact that during a health crisis, people develop a risk perception of the situation. A person's perception of risk is determined by his assessment of the threat of an outbreak (Wen, Sun, Li, He, & Tsai, 2019). As a result, the higher their perceptions of the risks that this pandemic may pose, the more favorable their attitude toward the intention in hoarding food as a form of self-protection behavior in an effort to minimize risk and provide a sense of security (Sheu & Kuo, 2020). By stockpiling necessities, one can reduce visits to stores that limit contact with other people in order to avoid disease transmission or product shortages due to rising demand for staple foods (Yuen, Wang, Ma, & Li, 2020).

Second, the study's findings show that the p-value of risk perception on subjective norm has a significance value <0.001 or less than 0.05. Based on these findings, it is possible to conclude that risk perception has a significant effect on subjective norms, with a path coefficient value of 0.289 (positive), implying that the second hypothesis that risk perception has a positive effect on subjective norms is supported. This finding suggests that the higher the perceived risk, the higher the assessment of the prevailing subjective norms, or in other words, the higher the belief that their family or friends will support the behavior.

Individuals are constituents of society. As a result, their decisions may be influenced by the larger group's attitudes, opinions, and beliefs (Wang, Liu, & Zhang, 2019). Although purchasing necessities in large quantities can reduce market supply (Kennett-Hensel, Sneath, & Lacey, 2012), misinformation and the spread of rumors such as out of stock situations can affect individuals during

times of anxiety and panic (Yuen et al., 2020). Seeing that others are doing the same thing can lead to individuals imitating this behavior and believing that hoarding necessities is acceptable (Frank & Schvaneveldt, 2016; Yangui & Hajtaïeb El Aoud, 2015; Zheng, Shou, & Yang, 2020).

Third, the path coefficient value of risk perception on perceived behavioral control is 0.293 (positive), indicating that the third hypothesis, which explains how risk perception affects perceived behavioral control, is acceptable. According to these findings, the greater consumers' perceptions of the risks posed by the Covid-19 pandemic, the greater their perceptions of their ability to control situations and perform certain behaviors.

Humans have an innate desire to control their environment in order to survive (Kemp, Kennett-Hensel, & Williams, 2014). The spread of the Covid-19 outbreak causes public anxiety and reduces individual perceptions of their ability to cope with potential risks. This can cause behavior to be triggered in order to overcome problems or obstacles encountered during the pandemic (coping behavior) (Sneath, Lacey, & Kennett-Hensel, 2009). When sources of discomfort (such as disease outbreaks) are uncontrollable, people tend to exert more control over other domains (Yuen et al., 2020). In this case, the behavioral tendency to hoard groceries can be viewed as a way out of the situation in order to regain control (Ballantine, Zafar, & Parsons, 2014).

Fourth, the three TPB components (attitudes, subjective norms, and perceived behavioral control) all have a positive effect on a person's intention to hoard necessities (food hoarding intention). This is consistent with many previous TPB findings, despite the fact that they were applied in different contexts (e.g., Bae and Chang (2021), Long and Khoi (2020), Soebandhi, Hartini, and Gunawan (2020)). The evaluation of the behavior influences the individual's intention to engage in food hoarding. The greater a person's positive attitude, the greater the desire to stockpile necessities. FHI is also influenced by their social group's recognition. In the sense that the greater a person's belief that FHI's behavior will be tolerated by the community, the greater the desire to stockpile necessities. Furthermore, the perception of being able to control the situation during a pandemic (such as access to basic supplies, financial availability, etc) can increase the proclivity to engage in food hoarding.

Fifth, our findings indicate that the Indonesian government's regulation (PSBB) does not moderate the relationship between attitudes, subjective norms, and perceived behavioral control on FHI. As a result,  $H_{7a-c}$  is not supported. The rapid spread of the Covid-19 outbreak, which has affected the entire world, has caused concern in the community. Although the government has implemented PSBB in a number of regions to prevent the spread of the Covid-19 outbreak and urges people not to make panic purchases (Puspita, 2020), this has no effect on the relationship between the three components of the TPB and FHI. This result can be motivated by an assessment of the impact of the epidemic on themselves and their families, encouraging people to purchase necessities in greater quantities than usual. Concerns about the scarcity of food due to increased

demand at the start of the pandemic are another reason why someone might consider food hoarding. Furthermore, even though the PSBB is being implemented, the growing number of online buying and selling platforms makes it easier for individuals to purchase basic commodities online (Meodia, 2020).

## CONCLUSION

This study employs an expanded TPB to improve the TPB's predictive power by including risk perceptions of the Covid-19 outbreak as well as government regulations (PSBB). According to the findings, PSBB does not moderate the relationship between the three components of TPB on food hoarding intention, whereas the other hypotheses are supported.

The managerial implication of this study is that government regulation has shown no effect on food hoarding intentions; therefore, the government must implement strong and accurate communication about the Covid-19 outbreak, food sources, and other important commodities in order to reduce anxiety and excessive purchasing of goods.

This study supports the Theory of Planned Behavior, which states that attitudes accompanied by subjective norms and perceived behavioral control influence behavioral intention to do food hoarding; the presence of risk perception variables supports the expansion of this model.

There are several limitations to this study as well. First, this study was conducted at the beginning of the pandemic. The intention to do food hoarding during a pandemic may differ when the pandemic is still in its early stages versus current situation, when people have begun to become accustomed to and adapt to pandemic conditions. Subsequent research can collect additional data over multiple time periods to compare intention in food hoarding at the start of the pandemic to the end of 2021. Second, because the study's findings are based on research populations in Indonesia's major cities, the research model needs to be validated in a variety of contexts.

## REFERENCE

- Abdillah, W., & Hartono, J. (2015). *Partial Least Square (PLS): Alternatif Structural Equation Modeling (SEM) dalam Penelitian Bisnis*. Yogyakarta: Penerbit Andi.
- Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- Ajzen, I. (2008). Consumer Attitudes and Behavior. In C. P. Haugtvedt, P. Herr, & F. Kardes (Eds.), *Handbook of Consumer Psychology* (pp. 525–548). New York: Lawrence Erlbaum Associates.
- Arafat, S. M. Y., Kar, S. K., Marthoenis, M., Sharma, P., Hoque Apu, E., & Kabir, R. (2020). Psychological Underpinning of Panic Buying During

- Pandemic (COVID-19). *Psychiatry research*, 289(May 2020), 1-2. doi:10.1016/j.psychres.2020.113061
- Baddeley, M. (2020). Hoarding in The Age of COVID-19. *Journal of Behavioral Economics for Policy*, 4(S), 69-75.
- Bae, S. Y., & Chang, P.-J. (2021). The Effect of Coronavirus Disease-19 (Covid-19) Risk Perception on Behavioural Intention towards 'Untact' Tourism in South Korea during the First Wave of the Pandemic (March 2020). *Current Issues in Tourism*, 24(7), 1017-1035. doi:10.1080/13683500.2020.1798895
- Ballantine, P. W., Zafar, S., & Parsons, A. G. (2014). Changes in Retail Shopping Behaviour in the Aftermath of an Earthquake. *The International Review of Retail, Distribution and Consumer Research*, 24(1), 1-13. doi:10.1080/09593969.2013.821419
- Bavel, J. J. V., Baicker, K., Boggio, P. S., Capraro, V., Cichocka, A., Cikara, M., . . . Willer, R. (2020). Using Social and Behavioural Science to Support COVID-19 Pandemic Response. *Nature Human Behaviour*, 4(5), 460-471. doi:10.1038/s41562-020-0884-z
- Bourassa, M., Doraty, K., Berdahl, L., Fried, J., & Bell, S. (2016). Support, Opposition, Emotion and Contentious Issue Risk Perception. *International Journal of Public Sector Management*, 29(2), 201-216. doi:10.1108/IJPSM-10-2015-0172
- Carroll, L. (2020). Who Bought All The Toilet Paper? Study Suggests Who Was Most Likely To Stockpile During COVID-19. Retrieved from <https://www.nbcnews.com/health/health-news/who-bought-all-toilet-paper-study-suggests-who-was-most-n1230586>
- Choi, T.-M., Chiu, C.-H., & Chan, H.-K. (2016). Risk Management of Logistics Systems. *Transportation Research Part E: Logistics and Transportation Review*, 90(June 2016), 1-6. doi:https://doi.org/10.1016/j.tre.2016.03.007
- Conner, M. (2001). Health Behaviors. In N. J. Smelser & P. B. Baltes (Eds.), *International Encyclopedia of the Social & Behavioral Sciences* (pp. 6506-6512). Oxford: Pergamon.
- Deng, Y., Wang, M., & Yousefpour, R. (2017). How do People's Perceptions and Climatic Disaster Experiences Influence Their Daily Behaviors Regarding Adaptation to Climate Change? — A Case Study Among Young Generations. *Science of The Total Environment*, 581-582(C), 840-847. doi:https://doi.org/10.1016/j.scitotenv.2017.01.022
- Dexter, R., & Sakkal, P. (2020). 'Chaos': South Australia Lockdown Sparks Panic Buying with Toilet Paper Stripped from Shelves. Retrieved from <https://www.smh.com.au/national/chaos-south-australia-lockdown-sparks-panic-buying-with-toilet-paper-stripped-from-shelves-20201118-p56fqg.html>

- Dholakia, U. (2020). Why Are We Panic Buying During the Coronavirus Pandemic? Retrieved from <https://www.psychologytoday.com/sg/blog/the-science-behind-behavior/202003/why-are-we-panic-buying-during-the-coronavirus-pandemic>
- Djalante, R., Lassa, J., Setiamarga, D., Sudjatma, A., Indrawan, M., Haryanto, B., . . . Warsilah, H. (2020). Review and Analysis of Current Responses to Covid-19 in Indonesia: Period of January To March 2020. *Progress in Disaster Science*, 6(April 2020), 1-9. doi:10.1016/j.pdisas.2020.100091
- Dreu, C. K. W. D., & Nauta, A. (2009). Self-Interest and Other-Orientation in Organizational Behavior: Implications for Job Performance, Prosocial Behavior, and Personal Initiative. *Journal of Applied Psychology*, 94(4), 913–926. doi:10.1037/a0014494
- Frank, B., & Schvaneveldt, S. J. (2016). Understanding Consumer Reactions to Product Contamination Risks After National Disasters: The Roles of Knowledge, Experience, and Information Sources. *Journal of Retailing and Consumer Services*, 28(January 2016), 199-208. doi:<https://doi.org/10.1016/j.jretconser.2015.08.005>
- Grimm, P. E. (2005). Ab Components' Impact on Brand Preference. *Journal of Business Research*, 58(2005), 508-517. doi:10.1016/S0148-2963(03)00141-3
- Ham, M., Jeger, M., & Ivković, A. F. (2015). The Role of Subjective Norms in Forming the Intention TO Purchase Green Food. *Economic Research-Ekonomska Istraživanja*, 28(1), 738-748. doi:10.1080/1331677X.2015.1083875
- Hoyer, W. D., MacInnis, D. J., & Pieters, R. (2013). *Consumer Behavior* (6th ed.). South-Western: Cengage Learning.
- Humas Kemenkes. (2020). Menkes Teken Permenkes Nomor 9 Tahun 2020 Soal Tata Cara Usulan PSBB. Retrieved from <https://setkab.go.id/menkes-teken-permenkes-nomor-9-tahun-2020-soal-tata-cara-usulan-psbb/>
- Jarvenpaa, S. L., Tractinsky, N., & Saarinen, L. (1999). Consumer Trust in an Internet Store: A Cross-Cultural Validation. *Journal of Computer-Mediated Communication*, 5(2), 0-0. doi:<https://doi.org/10.1111/j.1083-6101.1999.tb00337.x>
- Johnson, E. J., & Tversky, A. (1983). Affect, Generalization, and the Perception of Risk. *Journal of Personality and Social Psychology*, 45(1), , 20-31.
- Kemp, E., Kennett-Hensel, P. A., & Williams, K. H. (2014). The Calm before the Storm: Examining Emotion Regulation Consumption in the Face of an Impending Disaster. 31(11), 933-945. doi:<https://doi.org/10.1002/mar.20744>

- Kennett-Hensel, P. A., Sneath, J. Z., & Lacey, R. (2012). Liminality and Consumption in the Aftermath of a Natural Disaster. *Journal of Consumer Marketing*, 29(1), 52 - 63. doi:10.1108/07363761211193046
- Kristiningsih, K., Hartini, S., & Usman, I. (2020). The Role of Supply Chain Management on Consumer Service Innovativeness and Consumer Attitude. *International Journal of Supply Chain Management*, 9(1), 732-739.
- Lee, M.-C. (2009). Factors Influencing the Adoption of Internet Banking: An integration of TAM and TPB with Perceived Risk and Perceived Benefit. *Electronic Commerce Research and Applications*, 8(3), 130-141. doi:https://doi.org/10.1016/j.elerap.2008.11.006
- Loasana, N. (2020). Panic Buying Hits Jakarta Supermarkets as Govt Announces First Covid-19 Cases. Retrieved from <https://www.thejakartapost.com/news/2020/03/03/panic-buying-hits-jakarta-supermarkets-as-govt-announces-first-covid-19-cases.html>
- Long, N. N., & Khoi, B. H. (2020). An Empirical Study about the Intention to Hoard Food during COVID-19 Pandemic. *EURASIA Journal of Mathematics, Science and Technology Education*, 16(7), 1-12. doi:10.29333/ejmste/8207
- Lubis, M. S. W. (2020). Dampak PSBB: Makin Efisien, Belanja Balas Dendam Bantu Pemulihan. Retrieved from <https://ekonomi.bisnis.com/read/20200430/12/1235182/dampak-psbb-makin-efisien-belanja-balas-dendam-bantu-pemulihan>
- Meodia, A. (2020). PSBB Jakarta jilid II Dinilai Tak Ubah Pola Belanja Daring Masyarakat. Retrieved from <https://www.antaraneews.com/berita/1721106/psbb-jakarta-jilid-ii-dinilai-tak-ubah-pola-belanja-daring-masyarakat>
- Power, M., Doherty, B., Pybus, K., & Pickett, K. (2020). How COVID-19 Has Exposed Inequalities in the UK Food System: The Case of UK Food and Poverty. *Emerald Open Research*, 2(11), 1-22. doi:10.35241/emeraldopenres.13539.2
- Puspita, R. (2020). Wamendes: Jangan Timbun Makanan Gara-Gara Corona. Retrieved from <https://republika.co.id/berita/q6nma8428/wamendes-jangan-timbun-makanan-garagara-corona>
- Putra, N. P. (2020). HEADLINE: Virus Corona Picu Panic Buying Makanan, Masker, Hand Sanitizer, Bagaimana Meredamnya? Retrieved from <https://www.liputan6.com/news/read/4193886/headline-virus-corona-picu-panic-buying-makanan-masker-hand-sanitizer-bagaimana-meredamnya>
- Quintal, V. A., Lee, J. A., & Soutar, G. N. (2010). Risk, Uncertainty and the Theory of Planned Behavior: A Tourism Example. *Tourism Management*, 31(6), 797-805. doi:https://doi.org/10.1016/j.tourman.2009.08.006

- Rosenberg, M. J., & Hovland, C. I. (1960). Cognitive, Affective and Behavioral Components of Attitudes. In M. J. Rosenberg, C. I. Hovland, W. J. McGuire, R. P. Abelson, & J. W. Brehm (Eds.), *Attitude Organization and Change: An Analysis of Consistency among Attitude Components* (pp. 1–14). New Haven, CT: Yale University Press.
- Sari, D. N. (2020). Efek Samping PSBB Terhadap Masyarakat. Retrieved from <https://www.suara.com/yoursay/2020/04/16/171009/efek-samping-psbb-terhadap-masyarakat>
- Sheu, J.-B., & Kuo, H.-T. (2020). Dual Speculative Hoarding: A Wholesaler-Retailer Channel Behavioral Phenomenon Behind Potential Natural Hazard Threats. *International Journal of Disaster Risk Reduction*, 44(April 2020), 1-10. doi:<https://doi.org/10.1016/j.ijdr.2019.101430>
- Sholihin, M., & Ratmono, D. (2013). *Analisis SEM-PLS dengan WarpPLS 3.0*. Yogyakarta: Penerbit Andi.
- Sjöberg, L., Moen, B.-E., & Rundmo, T. (2004). *Explaining Risk Perception. An Evaluation of the Psychometric Paradigm in Risk Perception Research*. Trondheim: Rotunde.
- Snapcart. (2020). COVID-19 Impact on Indonesian Shopper Habits. Retrieved from <https://snapcart.global/covid-19-impact-on-indonesian-shopper-habits/>
- Sneath, J. Z., Lacey, R., & Kennett-Hensel, P. A. (2009). Coping with a Natural Disaster: Losses, Emotions, and Impulsive and Compulsive Buying. *Marketing Letters*, 20(1), 45-60. doi:10.1007/s11002-008-9049-y
- Soebandhi, S., Hartini, S., & Gunawan, S. (2020). Engaging Young Consumers with Advergaming: The effect of Presence and Flow Experience. In R. Hurriyati, B. Tjahjono, I. Yamamoto, A. Rahayu, A. G. Abdullah, & A. A. Danuwijaya (Eds.), *Advances in Business, Management and Entrepreneurship* (pp. 97-101). London: Taylor & Francis Group.
- Sterman, J. D., & Dogan, G. (2015). “I’m not hoarding, I’m just stocking up before the hoarders get here.”: Behavioral causes of phantom ordering in supply chains. *Journal of Operations Management*, 39-40(November 2015), 6-22. doi:<https://doi.org/10.1016/j.jom.2015.07.002>
- United Nations. (2020). Launch of Global Humanitarian Response Plan for COVID-19 [Press release]. Retrieved from <https://www.un.org/sg/en/content/sg/press-encounter/2020-03-25/launch-of-global-humanitarian-response-plan-for-covid-19>
- Wang, Z., Liu, X., & Zhang, S. (2019). A New Decision Method for Public Opinion Crisis with the Intervention of Risk Perception of the Public. *Complexity*, 2019, 1-14. doi:10.1155/2019/9527218
- Wen, X., Sun, S., Li, L., He, Q., & Tsai, F. S. (2019). Avian Influenza-Factors Affecting Consumers' Purchase Intentions toward Poultry Products.



*International journal of environmental research and public health*, 16(21), 1-13. doi:10.3390/ijerph16214139

- Wilkins, J. (2020). Why We Hoard: Fear at Root of Panic-Buying, Psychologists Say. Retrieved from <https://www.sandiegouniontribune.com/news/health/story/2020-03-22/hoard-fear-panic-buying-psychology>
- Williams, D. J., & Noyes, J. M. (2007). How Does Our Perception of Risk Influence Decision-Making? Implications for the Design of Risk Information. *Theoretical Issues in Ergonomics Science*, 8(1), 1-35. doi:10.1080/14639220500484419
- Wiyono, G. (2011). *Merancang Penelitian Bisnis dengan Alat Analisis SPSS 17.0 & SmartPls 2.0*. Yogyakarta: UPP STIM YKPN.
- Yangui, W., & Hajtaïeb El Aoud, N. (2015). Consumer Behavior and the Anticipation of a Total Stockout for a Food Product: Proposing and Validating A Theoretical Model. *The International Review of Retail, Distribution and Consumer Research*, 25(2), 181-203. doi:10.1080/09593969.2014.951675
- Yuen, K. F., Wang, X., Ma, F., & Li, K. X. (2020). The Psychological Causes of Panic Buying Following a Health Crisis. *International journal of environmental research and public health*, 17(10), 1-14. doi:10.3390/ijerph17103513
- Zheng, R., Shou, B., & Yang, J. (2020). Supply Disruption Management under Consumer Panic Buying and Social Learning Effects. *Omega*, 101(June 2021), 1-14. doi:<https://doi.org/10.1016/j.omega.2020.102238>