



THE INFLUENCE OF UNCERTAINTY AND PERCEIVED SCARCITY ON PANIC BUYING OF BASIC NECESSITIES: THE MEDIATING ROLE OF ANXIETY AMONG FLOOD-AFFECTED RESIDENTS IN LHOKSEUMAWE CITY

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Abstract

This study aims to analyze the influence of uncertainty and perceived scarcity on panic buying of basic necessities with anxiety as a mediating variable in flood-affected communities in Lhokseumawe City. The background of this study is based on the phenomenon of flash floods that hit Lhokseumawe City from late November to December 2025, which caused a disruption in the distribution chain of basic necessities and triggered information uncertainty, perceptions of scarcity of goods, and psychological anxiety that led to panic buying behavior among affected residents. The method used is a quantitative approach with a Structural Equation Model analysis technique based on Partial Least Square (SEM-PLS) through SmartPLS software. Data were obtained by distributing questionnaires to 120 respondents who were flood-affected communities and acted as decision makers for fulfilling household food needs in Lhokseumawe City. The results showed that uncertainty and perceived scarcity had a positive and significant effect on anxiety. In addition, uncertainty, perceived scarcity, and anxiety directly had a positive and significant effect on panic buying. Anxiety was also proven to be able to mediate the influence of uncertainty and perceived scarcity on panic buying of basic necessities. These findings indicate that uncertainty of the situation and the perception of scarcity of goods are triggers of public anxiety which ultimately encourages panic buying behavior.

Keywords: Anxiety; Panic Buying; Perceived Scarcity; Uncertainty

INTRODUCTION

Floods are one of the most frequent disasters in Indonesia and place significant pressure on people's lives, affecting safety, asset damage, and households' ability to meet basic needs. Disruptions to infrastructure and food distribution can disrupt supplies, particularly when roads, markets, and trade centers are inundated (Stefanny & Suharsono, 2025; Mahmut & Haeruddin, 2025). Aceh Province is a highly flood-prone region. From late November to December 2025, flash floods struck Aceh, with Lhokseumawe City being one of the most severely affected areas. Data from the Lhokseumawe City Regional Disaster Management Agency (BPBD) Operations Center (Pusdalops) recorded that 100,519 people or 26,122 families were directly affected, while 19,577 people or 4,063 families were displaced. Post-disaster losses were estimated to reach IDR 1.18 trillion across various sectors (Tribun-News, 2025, 2026).

During the disaster, main roads were submerged, traditional markets were unable to operate normally, and distribution of basic necessities was disrupted. Field reports indicated difficulties obtaining rice, eggs, cooking oil, and other food supplies, while some stores experienced limited supplies (RRI-Lhokseumawe, 2025a, 2025b). These conditions created a situation that was not only logistical but also psychological. People were uncertain about when the floodwaters would recede, when distribution would resume, and whether staple food supplies would still be available in the following days. In situations like this, buying in excess of normal needs emerged as a response to securing family supplies. This behavior is known as panic buying, which is the sudden and excessive purchase of products beyond reasonable needs, especially when consumers are facing a crisis, disaster, or the threat of shortages. Panic buying is not solely rooted in rational needs. This behavior is also related to fear, anxiety, uncertainty, perceived

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threats to product availability, and social responses that arise when consumers observe others making bulk purchases (Arafat et al., 2021; Lins & Aquino, 2020; Loxton et al., 2020). Two factors often associated with panic buying are uncertainty and perceived scarcity. Uncertainty describes the situation when individuals realize that their available information is insufficient to predict the development of an event. In the context of flooding, uncertainty arises from uncertainties about the duration of the disaster, the extent of inundation, safety conditions, distribution access, and the availability of basic necessities (Anderson et al., 2019). Perceived scarcity is the subjective assessment that a product will become increasingly limited or difficult to obtain. In flood-affected communities, this perception can develop when distribution channels are disrupted, store shelves begin to empty, or consumers observe large purchases by others. This perception can encourage stockpiling measures before actual shortages occur (Cao et al., 2023; Yuen et al., 2022).

The relationship between these two factors and panic buying also involves anxiety. Anxiety is an emotional state characterized by tension, worry, unease, and recurring thoughts about negative future possibilities. In disaster situations, uncertainty and perceived scarcity can increase anxiety because individuals feel unable to control the situation and are uncertain about how to meet their family's needs. Omar et al. (2021) found that uncertainty and perceived scarcity positively influence anxiety, while anxiety drives panic buying and acts as a mediator. However, other studies have shown that perceived scarcity can also directly influence panic buying, so the mediation pattern is not always the same in every context (Cao et al., 2023; Lianjie et al., 2023).

These discrepancies in findings suggest room for further examination, especially since the majority of previous studies have focused on the COVID-19 pandemic or commodity shortages. Flood conditions have distinct characteristics. The threat is physical and directly observable, market access can be significantly disrupted, and distribution disruptions occur simultaneously with pressures on family safety and food needs. For example, research by Meuthia et al. (2023) examined panic buying of cooking oil in West Sumatra, not flood disaster situations. Research on flood preparedness in Lhokseumawe has also not focused on consumption behavior during disasters. Therefore, there is no adequate empirical explanation of how uncertainty and perceived scarcity influence panic buying of basic necessities through anxiety among flood-affected communities in Lhokseumawe City.

This study aims to analyze seven key relationships: the influence of uncertainty on anxiety, perceived scarcity on anxiety, uncertainty on panic buying, perceived scarcity on panic buying, anxiety on panic buying, and the role of anxiety in mediating the influence of uncertainty and perceived scarcity on panic buying. The results are expected to provide an empirical basis for BPBD (Regional Disaster Mitigation Agency), local governments, trade agencies, distributors, and retailers to strengthen risk communication, maintain transparency of information on the availability of basic necessities, and reduce excessive purchasing responses when flooding occurs again.

LITERATURE REVIEW

Consumer Behavior and Panic Buying

Consumer behavior encompasses the processes by which individuals or households recognize needs, seek information, make choices, purchase, use, and evaluate products. In a crisis, these processes can shift due to situational and emotional pressures. Consumers who typically make decisions based on information and actual needs may act more quickly, defensively, and impulsively when faced with threats to safety or the supply of basic necessities. Panic buying studies have identified excessive buying behavior as a form of consumer response to a crisis influenced by psychological and environmental factors (Billore & Anisimova, 2021; Arafat et al., 2021).

Panic buying is an unusually large amount of buying that occurs before, during, or after an emergency. This behavior can include buying more than daily needs, hoarding, making rash decisions due to fear of running out of stock, and buying influenced by other consumers. Loxton et al. (2020) explain that panic buying can be understood as consumers' attempt to restore a sense of security and control when the situation is out of control. Cham et al. (2023) also emphasize that panic buying is characterized by excessive and unusual buying, strongly influenced by risk, scarcity, and negative emotions.

Uncertainty

Uncertainty is a mental state where individuals recognize limited knowledge and difficulty predicting the outcome of an event. Anderson et al. (2019) assert that uncertainty influences thoughts, feelings, and actions because individuals must make decisions without adequate information. In the context of flooding, uncertainty is reflected in a lack of information about flood developments, uncertainty about when the floodwaters will recede, uncertainty about future conditions, difficulty predicting the availability of basic necessities, and unpreparedness for prolonged

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flooding. Carleton (2016) explains that humans tend to avoid uncertainty, so unpredictable conditions can trigger an emotional response in the form of anxiety. Thus, uncertainty is thought to influence anxiety and panic buying.

Perceived Scarcity

Perceived scarcity is the subjective belief that needed goods are in limited quantities or potentially difficult to obtain. This perception is not always identical to objective stock conditions, as it can be influenced by distribution disruptions, information, the behavior of other shoppers, and observations of empty store shelves. Sterman and Dogan (2015) showed that perceived scarcity can create behavioral feedback in the form of additional purchases that actually accelerate stock depletion. Cao *et al.* (2023) positioned perceived scarcity as a key trigger of anxiety, uncertainty, and panic buying. In this study, perceived scarcity is understood through the expectation of running out of basic necessities, concerns about not being able to obtain family necessities, anticipation of empty shelves, suspicion of supply disruptions, and limited inventory around the residence.

Anxiety and the Mediation Mechanism

In this study, anxiety is defined as a negative emotional response characterized by restlessness, tension, worry, and recurring thoughts about the family's ability to meet food needs during a flood. Uncertainty can increase anxiety because individuals don't know when conditions will improve and can't predict the availability of goods. Perceived scarcity can exacerbate anxiety when consumers perceive that access to basic necessities is increasingly limited. When anxiety increases, excessive buying can be seen as a quick measure to reduce emotional distress and regain a sense of security.

Empirically, Omar *et al.* (2021) found that uncertainty and perceptions of scarcity positively influence anxiety, while anxiety positively influences panic buying. The study also demonstrated anxiety's mediation in the relationship between uncertainty and scarcity and panic buying. Lianjie *et al.* (2023) found that scarcity positively influences anxiety and panic buying, and that anxiety acts as a mediator. Ma and Liao (2022), using cognition-affect theory, explain that scarcity can reduce perceived control cognitively, increase panic/anxiety affectively, and then encourage panic buying. In the Indonesian context, Putri *et al.* (2021) also demonstrated the role of consumer anxiety in bridging situational pressures leading to panic buying. These findings support anxiety's role as a psychological mechanism linking external conditions to purchasing decisions.

However, the direct influence of uncertainty and perceived scarcity on panic buying is inconsistent. Omar *et al.* (2021) reported that uncertainty and perceptions of scarcity had no significant direct influence on panic buying, with anxiety acting as a full mediator. Conversely, Cao *et al.* (2023), Yuen *et al.* (2022), and Atwah and Azila (2025) found a significant direct relationship in some pathways. Differences in context, type of crisis, severity, available information, and visibility of supply disruptions may explain these differences. Because the flooding in Lhokseumawe was accompanied by directly observable distribution disruptions, this study re-examines the direct and indirect effects simultaneously.

H1: Uncertainty has a positive and significant effect on anxiety.

H2: Perceived Scarcity has a positive and significant effect on Anxiety.

H3: Uncertainty has a positive and significant effect on Panic Buying.

H4: Perceived Scarcity has a positive and significant effect on Panic Buying.

H5: Anxiety has a positive and significant effect on Panic Buying.

H6: Anxiety mediates the influence of Uncertainty on Panic Buying.

H7: Anxiety mediates the influence of Perceived Scarcity on Panic Buying.

The research framework places Uncertainty (X1) and Perceived Scarcity (X2) as exogenous variables, Anxiety (Z) as a mediating variable, and Panic Buying (Y) as an endogenous variable. With this arrangement, the model tests five direct and two indirect pathways of influence through Anxiety.

METHOD

This study used a quantitative approach and was conducted in Lhokseumawe City, Aceh Province. The subjects were residents directly affected by the November-December 2025 floods and who purchased basic necessities during or immediately after the floods. Based on the 2025 Lhokseumawe Statistics Agency (BPS), the population of Lhokseumawe City was recorded at 200,876 people spread across the districts of Banda Sakti, Muara Dua, Muara Satu, and Blang Mangat. The sample size was determined at 120 respondents. This number refers to the SEM sample size guidelines which consider 20 indicators with a ratio of six observations per indicator and meet the minimum limit of 100 respondents (Hair *et al.*, 2019) Respondents met five criteria: at least 18 years old and the primary decision maker regarding their family's food needs; residing in Lhokseumawe City in November-December

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2025; experiencing direct impacts of flooding such as submerged homes, cut off road access, or evacuation; purchasing basic necessities during flooding or when the water began to recede; and purchasing excess food due to concerns about shortages. Sample distribution was determined using disproportionate stratified random sampling based on flood severity, while field collection was assisted by accidental sampling of communities meeting these criteria.

Table 1. Sample Distribution by District

Region	Severity	Weight	Sample
Muara Satu	Very serious	50%	60
Muara Dua	Parah	30%	36
Blang Mangat	Cukup parah	15%	18
Banda Sakti	Ringan	5%	6
Total		100%	120

The data used are primary data obtained through a questionnaire. Distribution was carried out through face-to-face meetings in affected areas and combined with Google Forms after respondents passed a screening questionnaire. A five-point Likert scale was used, ranging from 1 = Strongly Disagree to 5 = Strongly Agree. Each construct is measured using five indicators, resulting in a total of 20 indicators in the overall model. The indicators were developed from references used in this thesis, particularly Omar *et al.* (2021), Cao *et al.* (2023), Matta *et al.* (2022), and Atwah and Azila (2025).

Table 2. Constructs and Measurement Indicators

Construct	Measurement Indicators
Uncertainty	Lack of information; uncertainty about flood duration; uncertainty about future conditions; difficulty predicting the availability of basic necessities; unpreparedness to face prolonged flooding.
Perceived Scarcity	Expected shortages of essential goods; concerns about not being able to meet family needs; anticipated shelf shortages; suspected supply disruptions; limited supplies around the residence.
Anxiety	Anxiety about providing for the family; recurring thoughts about the availability of staple foods; feelings of restlessness and anxiety; tension due to flooding; emotional discomfort due to scarcity.
Panic Buying	Purchasing far in excess of normal needs; rushing to the store; continuing to buy even though the house has sufficient stock; buying in large quantities for fear of running out of stock; being influenced by other people's purchases.

Data analysis was performed using SmartPLS 4 with the PLS-SEM approach. Outer model evaluation included convergent validity through outer loading and Average Variance Extracted (AVE), discriminant validity through cross loading, Fornell-Larcker, and Heterotrait-Monotrait Ratio (HTMT), and reliability through Cronbach's Alpha and Composite Reliability. Outer loading was considered adequate at values ≥ 0.70 , AVE > 0.50 , and reliability > 0.70 . Inner model evaluation used R-square (R²), effect size (f²), model fit, and predictive relevance. Hypothesis testing was conducted through bootstrapping 5,000 subsamples with criteria of t-statistic > 1.96 and p-value < 0.05 (Hair *et al.*, 2019, 2021; Henseler *et al.*, 2015).

RESULTS AND DISCUSSION

Respondent Characteristics and Descriptive Statistics

A total of 120 questionnaires were declared valid. Most respondents came from Muara Satu District, namely 60 people (50%), followed by Muara Dua 36 people (30%), Blang Mangat 18 people (15%), and Banda Sakti 6 people (5%). The 26-40 age group was the largest group with 56 respondents, followed by 41-55 years old with 31 respondents, 18-25 years old with 26 respondents, and 7 respondents over 55 years old. Women dominated the sample with 85 people (70.8%), while men 35 people (29.2%). In terms of education, 88 respondents had a high school/vocational school/high school background. Based on employment status, the largest group was housewives with 57 respondents, followed by students with 27 respondents.

Table 3. Summary Profile of Respondents

Characteristics	Dominant Category	n	%
Subdistrict	Muara Satu	60	50.0
Age	26-40 years	56	46.7
Gender	Woman	85	70.8
Education	High School/Vocational School/Senior High School	88	73.3
Status	Housewife	57	47.5

Descriptively, all constructs had mean scores above the scale midpoint. Perceived Scarcity had the highest mean at 3.78, followed by Uncertainty at 3.69, Panic Buying at 3.62, and Anxiety at 3.57. This pattern indicates that respondents generally felt high levels of scarcity and uncertainty, accompanied by anxiety and a marked tendency to panic buy during the flood situation.

Table 4. Descriptive Statistics and Construct Quality

Construct	Mean	AVE	Cronbach Alpha	Composite Reliability
Uncertainty	3.69	0.729	0.907	0.931
Perceived Scarcity	3.78	0.686	0.886	0.916
Anxiety	3.57	0.725	0.905	0.929
Panic Buying	3.62	0.687	0.886	0.917

Measurement Model

All indicators showed outer loadings above 0.70. For the Uncertainty construct, loadings ranged from 0.836 to 0.889; for Perceived Scarcity from 0.812 to 0.853; for Anxiety from 0.815 to 0.884; and for Panic Buying from 0.778 to 0.858. The AVE values for all constructs were above 0.50, thus meeting convergent validity. Cross-loadings indicated that each indicator had the highest loading on its own construct. The Fornell-Larcker criterion was also met because the AVE root on the diagonal was higher than the correlation between constructs. HTMT values ranged from 0.180 to 0.741, all below the conservative threshold of 0.85. Thus, discriminant validity was met. Cronbach's Alpha and Composite Reliability values were also all greater than 0.70, thus the instrument was declared reliable.

Table 5. Outer Loading Summary

Construct	Indicator	Loading Range	Information
Uncertainty	U1-U5	0,836-0,889	Valid
Perceived Scarcity	PS1-PS5	0,812-0,853	Valid
Anxiety	A1-A5	0,815-0,884	Valid
Panic Buying	PB1-PB5	0,778-0,858	Valid

Structural Model and Hypothesis Testing

The R² value for Anxiety is 0.576 with an adjusted R² of 0.569 indicating that 57.6% of the variation in Anxiety can be explained by Uncertainty and Perceived Scarcity. The R² value for Panic Buying is 0.595 with an adjusted R² of 0.585 indicating that 59.5% of the variation in Panic Buying can be explained by the constructs in the model. Both values are in the moderate category. The evaluation of the model fit yields an SRMR of 0.059, d_{ULS} of 0.739, d_G of 0.292, Chi-square of 196.459, NFI of 0.883, and GoF of 0.643. The Q² value is recorded at 0.560 for Anxiety and 0.544 for Panic Buying, which this study interprets as having strong predictive relevance.

Table 6. Summary of Inner Model

Parameter	Anxiety	Panic Buying	Interpretation
R2	0.576	0.595	Moderate
R2 adjusted	0,569	0,585	Moderat
Q2	0,560	0,544	Predictive relevance kuat
SRMR	-	0,059	Memenuhi model fit
NFI	-	0,883	Mendekati 1
GoF	-	0,643	Kuat

The effect size (f^2) shows a value of 0.067 for Anxiety on Panic Buying, 0.350 for Perceived Scarcity on Anxiety, 0.279 for Perceived Scarcity on Panic Buying, 0.789 for Uncertainty on Anxiety, and 0.156 for Uncertainty on Panic Buying. These results indicate that the largest relative contribution to Anxiety comes from Uncertainty, while Perceived Scarcity also makes a strong contribution to Anxiety and a moderate contribution to Panic Buying.

Table 7. Direct Effect Test

Hypot thesis	Track	Coefficient	t-statistic	p-value	Decision
H1	Uncertainty -> Anxiety	0.587	11,142	0,000	Accepted
H2	Perceived Scarcity -> Anxiety	0,391	6,948	0,000	Diterima
H3	Uncertainty -> Panic Buying	0,490	7,424	0,000	Diterima
H4	Perceived Scarcity -> Panic Buying	0,495	7,986	0,000	Diterima
H5	Anxiety -> Panic Buying	0,252	2,501	0,012	Diterima

Uncertainty terhadap Anxiety

The test results show that uncertainty has a positive and significant effect on anxiety, with a path coefficient of 0.587, a t-statistic of 11.142, and a p-value of 0.000. The higher the uncertainty regarding flood duration, safety conditions, and logistical access, the higher the community's anxiety in meeting basic needs. This finding aligns with Carleton (2016), who explains that humans tend to avoid uncertainty and can experience emotional responses when uncertainty cannot be controlled. This finding is also consistent with Omar et al. (2021), who showed a positive relationship between uncertainty and anxiety.

Perceived Scarcity on Anxiety

Perceived scarcity has a positive and significant effect on anxiety with a coefficient of 0.391, a t-statistic of 6.948, and a p-value of 0.000. The perception that stocks of basic necessities will run out, store shelves will be empty, and supply will be disrupted makes people feel threatened in meeting their family's basic needs. These results support Sterman and Dogan (2015) and Atwah and Azila (2025), who showed that perceived scarcity can increase emotional stress and encourage defensive purchasing responses.

Uncertainty about Panic Buying

Uncertainty has a positive and significant effect on panic buying, with a coefficient of 0.490, a t-statistic of 7.424, and a p-value of 0.000. In flood conditions, the difficulty in predicting the availability of basic necessities and the duration of distribution disruptions encourage people to hoard goods as a form of anticipation. This finding supports the views of Yuen et al. (2020) and Loxton et al. (2020) that excessive buying can function as a coping mechanism to regain a sense of security and control when the situation is unpredictable. These results differ from those of Omar et al. (2021), who found no direct effect of uncertainty on panic buying in the context of the pandemic, suggesting that the flood context in Lhokseumawe shows a stronger pattern of direct influence.

Perceived Scarcity towards Panic Buying

Perceived scarcity has a positive and significant effect on panic buying with a coefficient of 0.495, a t-statistic of 7.986, and a p-value of 0.000. When people perceive supplies around their homes as increasingly limited, they are encouraged to buy faster and in greater quantities before items run out. This finding aligns with Cham et al. (2023), Cao et al. (2023), and Yuen et al. (2022), who position scarcity as a significant trigger for panic buying decisions because consumers respond to the threat of unavailability before scarcity actually occurs.

Anxiety about Panic Buying

Anxiety has a positive and significant effect on panic buying, with a coefficient of 0.252, a t-statistic of 2.501, and a p-value of 0.012. Anxiety, restlessness, and constant thoughts about food availability exacerbate the urge to overbuy as a means of reducing emotional distress. These results support Sobaih and Moustafa (2022), Lins and Aquino (2020), and Lianjie et al. (2023), who demonstrated that anxiety is a significant predictor of panic buying in crisis situations.

Mediating Role of Anxiety

Table 8. Indirect Effect Test

Hypot hesis	Mediation Path	Coefficient	t-statistic	p-value	Mediation
H6	Uncertainty -> Anxiety -> Panic Buying	0.148	2,339	0.019	Partial
H7	Perceived Scarcity -> Anxiety -> Panic Buying	0.099	2,223	0.026	Partial

The indirect effect of uncertainty on panic buying through anxiety is significant with a coefficient of 0.148, a t-statistic of 2.339, and a p-value of 0.019. Since the direct effect of uncertainty on panic buying is also significant, anxiety acts as a partial mediator. This means that uncertainty can directly drive panic buying, but its effect partially operates through increased anxiety. This pattern supports the role of psychological mechanisms described by Omar et al. (2021) and the cognition-affect framework of Ma and Liao (2022), although the level of mediation in the flood context differs from the full mediation found by Omar et al. (2021).

The indirect effect of Perceived Scarcity on Panic Buying through Anxiety was also significant with a coefficient of 0.099, a t-statistic of 2.223, and a p-value of 0.026. Since the direct path of Perceived Scarcity on Panic Buying remained significant, Anxiety also acted as a partial mediator. These findings suggest that perceived scarcity operates through two pathways. First, consumers respond directly by accelerating and enlarging purchases. Second, perceived scarcity increases anxiety, which then strengthens panic buying decisions. These results align with Lianjie et al. (2023), Cao et al. (2023), and Atwah and Azila (2025).

CONCLUSION

This study concludes that all tested relationships are empirically supported. Uncertainty significantly influences anxiety and panic buying. Perceived scarcity significantly influences anxiety and panic buying. Anxiety significantly influences panic buying. In addition, anxiety partially mediates the influence of uncertainty and perceived scarcity on panic buying. Thus, panic buying behavior among flood-affected communities in Lhokseumawe City is formed through a combination of situational and psychological pressures. The uncertainty of the situation and the perception that basic necessities are increasingly difficult to obtain not only directly encourage purchases but also increase anxiety that reinforces excessive buying behavior.

The practical implications of this research are directed at strengthening crisis communications and supply chain stability. The Regional Disaster Management Agency (BPBD) and local governments need to provide fast, transparent, centralized, and regularly updated information on flood developments, estimated access restoration, and the availability of basic necessities. Trade offices, along with distributors, retailers, and market managers, need to strengthen stock information and maintain distribution to prevent unfounded perceptions of scarcity. Psychosocial support and stress management education are also crucial to reduce public anxiety, while smart shopping campaigns need to be conducted before, during, and after a disaster. Future research is recommended to expand the area and number of respondents and consider trust in government, social support, risk perception, and disaster preparedness as additional variables, as directed in this thesis.

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