IMPACT OF SCARCITY ON PANIC BUYING: ASSESSING THE MEDIATING ROLE OF ANXIETY AND THE MODERATING ROLE OF EVENT PERCEPTION

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ARTICLE INFO	ABSTRACT
	Purpose: The main aim of this research is to explore the factors that contribute to panic buying behavior and to propose ideas for government control in such events. **Theoretical framework:** scarcity is the theoretical basis of current research in the context of COVID-19 in Quanzhou, Fujian Province, China. Collect and review previous relevant studies by theme to understand the latest literature trends of scarcity, anxiety and panic buying. **Method:** This research takes 213 customers from Quanzhou City, Fujian Province, China as a sample, and uses SPSS and AMOS questionnaires to investigate the status of panic buying. **Findings:** This research uses questionnaire data, through empirical research, to explore the important role of anxiety as a mediating variable in panic buying in the COVID-19 epidemic. **Research, Practical & Social implications:** Research has found that scarcity has a significant positive correlation with panic buying and anxiety; Scarcity has a significant impact on panic buying through the mediating effect of individual anxiety. Personal cognition has a significant moderating effect on scarcity on panic buying and anxiety on panic buying. **Originality:** The research problem addressed in this study is the phenomenon of panic buying during public crisis events such as the COVID-19 pandemic. this study proposes ideas for guiding government control in public crisis events.

IMPACTO DA ESCASSEZ NA COMPRA POR PÂNICO: AVALIANDO O PAPEL MEDIADOR DA ANSIEDADE E O PAPEL MODERADOR DA PERCEPÇÃO DO EVENTO

RESUMO

Objetivo: o principal objetivo desta pesquisa é explorar os fatores que contribuem para o comportamento de compra em pânico e propor ideias para o controle governamental em tais eventos.

Estrutura teórica: a escassez é a base teórica da pesquisa atual no contexto da COVID-19 em Quanzhou, província de Fujian, China. Coletar e revisar estudos anteriores relevantes por tema para entender as tendências mais recentes da literatura sobre escassez, ansiedade e compras em pânico.

Método: Esta pesquisa toma como amostra 213 clientes da cidade de Quanzhou, província de Fujian, China, e usa os questionários SPSS e AMOS para investigar o status da compra por pânico.

Resultados: Esta pesquisa usa dados de questionário, por meio de pesquisa empírica, para explorar o importante papel da ansiedade como variável mediadora na compra por pânico na epidemia de COVID-19.

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Implicações sociais, práticas e de pesquisa: A pesquisa constatou que a escassez tem uma correlação positiva significativa com a compra por pânico e a ansiedade; a escassez tem um impacto significativo na compra por pânico por meio do efeito mediador da ansiedade individual. A cognição pessoal tem um efeito moderador significativo sobre a escassez na compra por pânico e a ansiedade na compra por pânico.

Originalidade: O problema de pesquisa abordado neste estudo é o fenômeno da compra por pânico durante eventos de crise pública, como a pandemia da COVID-19. Este estudo propõe ideias para orientar o controle governamental em eventos de crise pública.

Palavras-chave: Papel Mediador da Ansiedade, Papel Moderador da Percepção do Evento, Escassez.

IMPACTO DE LA ESCASEZ EN LAS COMPRAS DE PÁNICO: EVALUACIÓN DEL PAPEL MEDIADOR DE LA ANSIEDAD Y DEL PAPEL MODERADOR DE LA PERCEPCIÓN DEL ACONTECIMIENTO

RESUMEN

Objetivo: el principal objetivo de esta investigación es explorar los factores que contribuyen al comportamiento de compra por pánico y proponer ideas para el control gubernamental en tales eventos.

Marco teórico: la escasez es la base teórica de la presente investigación en el contexto del COVID-19 en Quanzhou, provincia de Fujian, China. Recopilar y revisar estudios previos relevantes por temas para comprender las tendencias más recientes en la literatura sobre la escasez, la ansiedad y las compras de pánico.

Método: Esta investigación toma como muestra 213 clientes de la ciudad de Quanzhou, provincia de Fujian, China, y utiliza cuestionarios SPSS y AMOS para investigar el estado de las compras de pánico.

Resultados: Esta investigación utiliza datos de cuestionarios a través de la investigación empírica para explorar el importante papel de la ansiedad como variable mediadora en las compras de pánico en la epidemia COVID-19.

Implicaciones sociales, prácticas y de investigación: La investigación encontró que la escasez tiene una correlación positiva significativa con las compras de pánico y la ansiedad; la escasez tiene un impacto significativo en las compras de pánico a través del efecto mediador de la ansiedad individual. La cognición personal tiene un efecto moderador significativo sobre la escasez en la compra por pánico y la ansiedad en la compra por pánico.

Originalidad: El problema de investigación abordado en este estudio es el fenómeno de las compras de pánico durante acontecimientos de crisis pública como la pandemia COVID-19. Este estudio propone ideas para orientar el control gubernamental en eventos de crisis pública.

Palabras clave: Papel Mediador de la Ansiedad, Papel Moderador de la Percepción del Evento, Escasez.

INTRODUCTION

Since the outbreak of the new coronary pneumonia, consumer demand for masks has been growing steadily. In the early stages of the epidemic, the rapid spread, urgency, and unpredictability of sudden crisis events, coupled with the rapid evolution of the crisis situation, led to the spread of social panic, which in turn forced consumers to overreact to the crisis event. Impulsive buying behaviour of goods related to crisis events. Such irrational consumption behaviour can lead to short-term conflicts between supply and demand in local markets due to extreme shortages of goods, surges in demand and high product prices, and can have adverse effects on consumer psychology, business production, economic development, and social stability. The pandemic has disrupted these processes, triggering various fears among consumers, and altering patterns of buying habits. Current consumer behavior is a dynamic mix of old and new habits and buying location patterns. （Kusz，2023）In this regard, we

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empirically analyse the factors influencing individual participation in the snapping behaviour under crisis events, and provide suggestions and measures for the government and enterprises to cope with and handle the snapping behaviour of emergency goods under crisis situations.

LITERATURE REVIEW AND RESEARCH HYPOTHESIS

Scarcity

Scarcity is a common economic phenomenon in modern society. In the field of economics, scarcity has different research focuses on different aspects, not only on the scarcity of means, which will affect the consumer budget line, but also on the scarcity of goods, which in turn is represented by the theory of supply and demand of goods for interpretation. The discussion of scarcity in this study refers primarily to the scarcity of commodities. According to traditional microeconomic theories of price and demand, a reduction in the supply of a commodity will lead to higher market prices.

Commodity theory (Rosendo-Rios, 2023) argues that the degree to which a consumer values information will effectively change his attitudes and behaviour, where unavailable information includes scarcity, delay, and exchange restrictions, which in turn increases the value of the goods judged by the consumer, i.e. as the scarcity (unavailability) of a good increases, the more valuable the consumer perceives the good to be. The unavailability associated with the scarcity of a good includes the following four aspects: 1. limited availability, or a small number of suppliers and the goods themselves; 2. There are costs associated with obtaining or providing the goods; 3. restrictions on owning the goods; and 4. delays in providing the goods. The theory is also supported by Lynn's empirical research that scarcity increases the perceived value of a good to consumers, and it has been suggested to be extended for use in the field of merchandising, where marketing activities such as advertising the scarcity of a product, producing limited edition products and limiting the number of products sold will increase the perceived value of a good (Arango& Septianto, 2023). The response theory (Brehm, 1991). Reaction theory (Collette, 2022) states that when consumers are deprived of choices they could have made, they perceive this as a threat to their freedom of choice. This threat response is reflected in a corresponding increase in the perceived value of the deprived option to the consumer. In the case of the commodity biscuit, for example, this threat to consumers' freedom of decision making is most evident when a large number of biscuits become scarce due to their great popularity. Based on reaction theory, the consumer will then assign the highest value.

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Although the scarcity of goods leads consumers to place a higher value on the good, the different reasons that lead to the scarcity of the good seem to produce different value judgements. According to frustration-aggression theory (Arif,2022), the triggers of frustration cause people to devalue unavailable options. Contrary to Brehm's response theory, then, it is possible that frustration caused by the scarcity of goods also leads to a devaluation of the perceived value of scarce goods by consumers. Based on this, scholars such as Rahma& Ridanasti further distinguish between two causes of commodity scarcity, one being unavailability caused by nature or the environment, and the other being unavailability caused by man-made constraints. The former, based on reaction theory, causes consumers to place a higher value on the good, while the latter, based on frustration theory, causes consumers to place a lower value on the scarce good (Rahma& Ridanasti, 2023).

Panic Buying

Previous researchers classifies the causes of panic buying as exogenous, caused by an imbalance between the supply and demand of goods due to a sudden disaster, and psychological, such as individual anxiety, combined with market herding endogenous causes (Bailu, 2022). Hunter ' analysis of consumer behaviour in the aftermath of the 2011 Christchurch earthquake using commodity UPC scan data concluded that consumers increased their consumption of survival products in the immediate aftermath of the disaster and in the weeks that followed, and that the aftershocks, which lasted for several months, led to panic buying and stockpiling of essential goods (Hunter et al., 2023). More research will cause panic buying. More research has focused on the psychological causes of panic buying, with psychological factors such as perception of threat, perception of scarcity, fear of the unknown, coping behaviour, social influence and social trust all being associated with panic buying behaviour (Yuen, Wang, Ma, & Li, 2020).Using an online survey, Nicomedes et al.(2020) used anxiety scales and open-ended questions to analyse people's feelings, thoughts and actions in community isolation during a pandemic and constructed a panic mapping from negative to positive, with panic egoism manifested in the widely reported phenomenon of panic buying (Nicomedes & Avila, 2020). Scholars such as Jeżewska-Zychowicz, Plichta, & Królak (2020) conclude that fear of scarcity, loss of control over the environment, insecurity (which further leads to fear), social learning, heightened anxiety and primitive human instinctive responses are all central factors that lead to the phenomenon of panic buying. The concept of panic buying In terms of food panic buying, scholars have found that during the COVID-19 pandemic, the

likelihood of panic buying increased due to a lack of trust in information disseminated by the mass media and increased stress caused by the fear of not being able to buy food (Jeżewska-Zychowicz, Plichta, & Królak, 2020). The potential for panic buying is also increasing (Jeżewska-Zychowicz, Plichta, & Królak, 2020).

The Relationship Between Scarcity and Panic Buying

The relationship between scarcity and panic buying has also been explored by scholars. Visible shelf scarcity significantly affects consumers' purchase preferences, with relatively empty shelves making consumers perceive the item as more desirable and therefore more likely to buy it (Rajavi & Steenkamp, 2023). The theory is based on Malika's theory. Based on this theory, Malika's empirical analysis demonstrates that consumers' purchase preferences for scarce goods are influenced by inferences about others' purchase preferences and by the selection of useful information (Malika & Maheswaran, 2023). In the case of marketing strategies, manufacturers use a variety of methods. In terms of marketing strategy, manufacturers use scarcity strategies to signal the quality of goods to consumers, and their strategy of not raising prices or increasing supply when goods are scarce makes scarcity strategies more effective and thus promotes consumer purchases. The strategy of scarcity is more effective when producers do not increase the price or the quantity supplied, thus promoting consumer purchases (Calvo & Wagner, 2023). Other studies have investigated multi-country data and empirically demonstrated that scarcity of quantity and scarcity of time significantly increase consumers' perceived arousal, further leading to more panic buying (Islam et al., 2020). (Islam et al., 2020). The research is also based on a review of scholarship from various periods. Reviewing the research of scholars across time, it is easy to see that the scarcity of goods overlaid with external influences, such as natural disasters or epidemic crises, often result in panic buying by consumers. Empty supermarket shelves of toilet paper and hand sanitizer exacerbated the panic buying that erupted in the early 2020s as a result of the COVID-19 epidemic that swept the world (Taylor, 2021). The study was also conducted by a number of scholars. However, there are also studies by scholars that do not support the previous theories, and Omar's structural equation modelling results do not support a positive relationship between the perceived scarcity of the desired product and consumers' panic buying behaviour (Omar, Nazri, Ali, & Alam, 2021).

Based on scholarly research on scarcity and panic buying, our study suggests that during the COVID-19 pandemic, the scarcity of goods may have led consumers to engage in panic

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buying in response to their deprived freedom of choice. Based on the above arguments and theories, we propose the following hypothesis.

H1: Scarcity has a significant positive effect on panic buying.

The Relationship Between Scarcity and Anxiety

Anxiety is generated by the perception of personal danger or threat to these situations as well as stress (Tan, 2023). Prati & Mancini proposed a neuropsychological model of anxiety and defined it as a state of the central nervous system characterized by a behavioral inhibition system (BIS) that responds to new stimuli or stimuli associated with punishment or unreward, inhibits ongoing behaviour, increasing arousal and attention to the environment (Prati& Mancini, 2023). This system responds to new stimuli or stimuli associated with punishment or unreward, inhibits ongoing behaviour and increases arousal and attention to the environment (Prati& Mancini, 2023). Current developments in cognitive and emotional theory suggest that anxiety plays a central role in negative emotions (Sarallahi,2021). Anxiety plays a central role in negative emotions (Sarallahi, 2021). Unlike the emotion of fear, anxiety is likely to be objectless, or the intensity of negative feelings generated by anxiety may not correspond to objective facts (Tan, 2023).

Based on the scarcity principle, crowd psychology and contagion theory, some scholars have studied the antecedents and consequences of panic buying and have concluded through empirical analysis that government measures, media and peer influence significantly affect panic buying and that panic buying often leads to strong feelings of guilt (Prentice, Quach, & Thaichon, 2020). The study also found that panic buying can lead to strong feelings of guilt. Stress caused by scarcity can also cause anxiety and trigger consumers to hoard or panic buy (Singhn et al., 2023). Scarcity-induced anxiety is not only reflected in the fact that scarcity is a major cause of anxiety. Scarcity-induced anxiety is not only reflected in the supply of commodities, but also in the global supply of naturally non-renewable resources. For example, anxiety about the scarcity of phosphate ore, which is about to be depleted, has led researchers and global government agencies at the international level to focus on the efficient use of phosphorus, reducing waste and loss and recycling (Boccoli & Corso, 2023). The use of phosphate ore is a key component of the global economy.

During the COVID-19 pandemic, the objective fact that consumers can clearly perceive the scarcity of goods through the reduced number of items available on the shelves not only affects the perceived value of scarce goods, but also the uncertainty about the future availability

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of sufficient goods is likely to cause anxiety among consumers. Based on the above arguments and theories, we propose the following hypothesis.

H2: Scarcity has a significant positive effect with anxiety.

The Relationship Between Anxiety and Panic Buying

It has been argued that when faced with supply disruptions, i.e. uncertainty about future supply scarcity, consumers typically hoard large quantities of goods to mitigate the risk of future shortages, and that this consumer behaviour of panic buying is frequently observed (Zheng, Shou, & Yang, 2020). This panic buying behaviour is often observed (Zheng, Shou, & Yang, 2020). For example, in the aftermath of Hurricane Katrina, empirical research has demonstrated that perceived loss of control can directly lead to stress, and that these stresses in turn influence people's purchasing behaviour, with impulsive and compulsive buying behaviour occurring (Liang, & Lin, 2023). These impulse and compulsive buying behaviours occur in response to uncontrollable events. These contingent behaviours, triggered by uncontrollable events, are reflected in consumers' aberrant purchasing behaviour, which Troy considers as an effort to act in response to a threat (Troy et al., 2023). On this basis, Troy argues that emotion-centred coping strategies are more helpful when the stressor causing the threat is uncontrollable (Troy et al., 2023). The study also suggests that the threat of stress can be addressed through the use of emotion-centred coping strategies.

Anxiety sensitivity is closely related to fearfulness and there is some initial support for the hypothesis that anxiety sensitivity is a risk factor for panic disorder (Alam et al., 2023). Epidemics are associated with a wide range of uncertainty, and for people who cannot tolerate uncertainty and feel fearful, they are more likely to become highly anxious during periods of epidemic disease rampage (Taylor, 2019). The study of the pandemic is a very important one. In terms of existing research, people have been shown to consciously cope with emotional distress through certain purchasing behaviours. For example, Liang et al. (2023) finds that depression positively and significantly influences impulsive and compulsive buying behaviour.

During epidemics, governments adopt different levels of control measures, dividing areas into containment, control and precautionary zones and requiring residents to comply with home quarantine and limited people and time out purchasing policies. With the uncertainty of future purchases and the uncontrollable development of the epidemic combined with the news of the market rush released by the internet media, people are more likely to feel fearful and anxious. Based on the theory of causal behaviour, it can be argued that panic buying can

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alleviate the anxiety and stress caused by uncontrollable events of future supply scarcity, and that panic buying is one of the ways people can cope with negative emotions such as anxiety. Therefore, we propose the following hypothesis.

H3: Anxiety has a significant positive effect with panic buying.

The Mediating Role of Anxiety

Panic buying can lead to disruptions in the supply of certain categories of products, but business experts and academics point out that panic buying is not caused by supply shortages per se, but by high levels of consumer anxiety and fear (Kim et al., 2023). At its root, this anxiety and fear can be traced back to perceived scarcity in time and quantity. It is also a self-fulfilling process: the more impulsively and obsessively customers buy, the more anxious people feel about scarcity and the faster the product is sold out. Past research has proposed that panic buyers are mostly caused by disruptions in the supply of goods and services (natural disasters, pandemics, and prolonged strikes) (Wu et al., 2020). These stimuli create panic or fear due to the scarcity of time and quantity of citizens, which leads to impulsive and compulsive buying.

Feelings of anxiety are generated by stress coupled with the perception of a personal danger or threatening situation (Blanco-González et al., 2023). Anxiety/uncertainty management theory (AUM) aims to explain effective interpersonal and intergroup communication (Yu & Leung, 2023). AUM theory suggests that managing uncertainty and anxiety is central to the effectiveness of our communication with others. That is, individuals are able to communicate effectively based on their ability to manage their anxiety and accurately predict and interpret the attitudes, feelings and behaviours of others Yu & Leung, 2023). The Integrated Threat Theory of Bias (ITT) The Integrated Threat Theory of Prejudice (ITT) is an offshoot of the study of intergroup anxiety, with scholars such as Stephan suggesting that when levels of intergroup anxiety are high, people display exaggerated reactions, often negative reactions that rely on limited cognition, and that they may become careful to be overly agreeable to others or may behave awkwardly (Stephan et al., 1999). Locklear 's empirical research suggests that people in anxious and fearful states make relatively pessimistic risk assessments (Locklear et al., 2023). In the context of pandemics, it is important to note that the pessimism of people who are anxious and fearful is not a factor. In the context of a pandemic, uncertainty and fear can influence people to make negative risk assessments of future situations,

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prompting overreactions such as panic buying, while abnormal buying behaviour, conscious or unconscious, can alleviate negative emotions such as anxiety.

H4: The mediating role of anxiety is signification.

The Moderating Role of Personal Recognition

The concept of emotion regulation is currently inconclusive. Most scholars have defined the concept of emotion regulation in terms of its role, degree of adaptation and psychological characteristics. Thompson, a foreign scholar, defines emotion regulation in terms of its function, which is the internal and external processes by which individuals assess their emotions and adjust and changes in order to achieve their goals. According to the adaptive situation of emotion regulation, he believes that emotion regulation can facilitate individuals to produce adaptive behaviour in situations, which is achieved through the opening and arousal of emotions, after the process of control and regulation, and finally implementing from a new organisation (Pointet Perizzolo et al., 2022). Domestic experts have defined it in terms of psychological characteristics, with emotion regulation reflecting the ability to manage emotions and being a necessary psychological condition for individuals to carry out emotional and affective activities (Ma, Xiangzhen, & Wang, 2012). The concept of cognitive emotion regulation emphasises the cognitive approach to managing emotions from a cognitive perspective, managing the extraction of emotional information in a cognitive way that is closely related to cognition (Salazar Kämpf et al., 2023). Salazar Kämpf (2023) proposes that cognitive emotion regulation is the cognitive changes that individuals make in response to internal and external environments that create emotional difficulties for individuals. For example, in general situations, people who use negative regulation strategies such as fear and self-blame are more likely to develop emotional problems, while those who use positive adjustment strategies are less likely to have problems. Chen cognitive emotion regulation is the individual's feedback to external environmental stimuli when the individual is in the situation, and emotion regulation strategies are divided into two parts: emotion-centred and problem-centred. The former involves individuals using new cognitive emotion regulation strategies to reduce the discomfort caused by the stimulus when faced with the stressor, and the latter uses a variety of strategies to solve problems (Chen, 2023), although people mostly use cognitive emotion regulation, however, individual differences in the way people manage their emotions have been found to exist. Conceptually, Chen defines cognitive subjectivity and objectivity, while Salazar Kämpf emphasises purely cognitive agency. Although different scholars disagree on this concept, they

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also agree that there are commonalities and that the core function of emotion regulation is to change the individual's own cognition and thus improve mood. Salazar Kämpf 's concept of cognitive emotion regulation has been used by scholars in many studies, both nationally and internationally, and this study also uses Salazar Kämpf 's concept.

H5: The moderating role of Personal Recognition is significant.

Theoretical Models

Combining the above hypotheses, a theoretical model of scarcity and panic buying mediated by anxiety is constructed using event perception as the moderating variable.

Figure 1 Conceptual framewrok
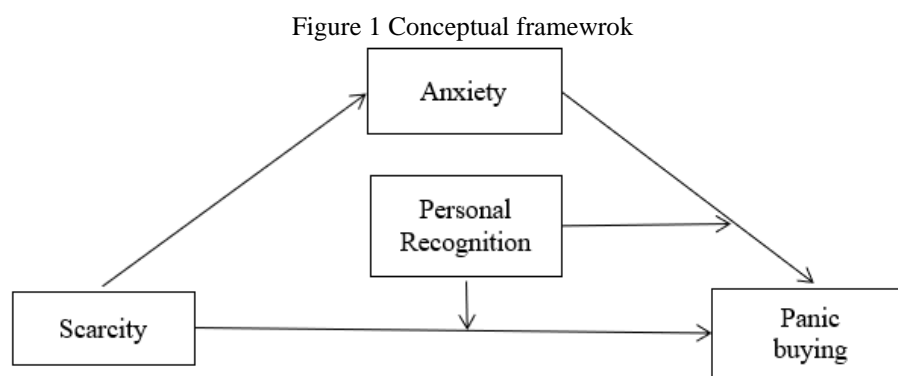
Source: Chlan et al. (2003), Marteau and Bekker (1992), Zsido et al. (2020), Frost et al. (2004), Van et al. (2010); Omar, 2021)

RESEARCH METHODOLOGY

The study data was collected from Quanzhou City, Fujian Province. Since March 2022, the current round of Omicron virus has hit the city, and different levels of control areas have been set up across the city according to the development of the epidemic, and closed-loop management has been implemented within the control areas to reduce unnecessary movement of people. A total of 213 valid samples were collected and collated from corporate employees, residents of the community and school teachers and students through the distribution of an online questionnaire, with a valid return rate of 97.87%. There were 139 females (65.3%) and 74 males (34.7%). 80 (37.6%) were aged 24 and below; 72 (33.8%) were aged 25-34; 43 (20.2%) were aged 35-44; 12 (5.6%) were aged 45-55; and 6 (2.8%) were aged 56 and above. 103 (48.4%) were unmarried and 104 (48.8%) were married. Income level, 85 people (39.9%) were 3,000 yuan and below; 35 people (16.4%) were 3,001-5,000 yuan; 39 people (18.3%) were 5,001-7,000 yuan; and 54 people (25.4%) were 7,000 yuan and above. At the level of education, 16 people (7.5%) were in high school or below; 21 people (9.9%) were in college;

136 people (63.8%) were in undergraduate programs; and 40 people (18.8%) were in master's programs or above.

Demographic Variables

The basic profile of the survey respondents included basic information on gender, age, marital status, income level, and education of the subjects in five topics. The demographic results of the survey are shown in Table 1.

Table 1 Summary of the composition of the valid sample for the survey (N=213)

	Category	Frequency	Percentage (%)
Gender	Male	74	34.7
	Female	139	65.3
Age	24 years and under	80	37.6
	25-34 years	72	33.8
	35-44 years	43	20.2
	45-55 years	12	5.6
	56 years and over	6	2.8
Education	High School and below	16	7.5
	University specialist	21	9.9
	Undergraduate	136	63.8
	Master's degree and above	40	18.8
Income	3000 and below	85	39.9
	3001-5000	35	16.4
	5001-7000	39	18.3
	7,000 and above	54	25.4
Marital status	Unmarried	103	48.4
	Married	104	48.8
	Other	6	2.8

Source: Authors

Measurement of Variables

The independent variable in this study is scarcity (SC). The dependent variable is panic buying (PB). The mediating variable is anxiety (AN). The moderating variable was event perception (PR). All of the above variables, with the exception of the demographic structure, were classified on a seven-point Likert scale, with 1-7 indicating "strongly disagree" to "completely agree". The AN scale of personal anxiety, developed by Chlan et.al (2003), Marteau and Bekker (1992), and Zsido et.al (2020), was used for this study, with four (4) questions. Panic buying PB scale, using the scale developed by Frost et.al (2004) and Van et.al (2010), with three (3) questions. Scarcity SC scale, using the scale developed by Byun and Sternquist (2011), with four (4) questions. Event Perception PR scale, using the scale developed by Qing Wen et.al (2021), with six (6) questions.

This study first used SPSS 26.0 for reliability analysis and convergent and discriminant validity tests; then AMOS 26.0 for validated factor analysis of each variable; the PROCESS function of SPSS 26.0 was used to conduct regression analysis tests to determine the causal relationship between the independent and dependent variables; and finally the PROCESS 3.4 plug-in was used to examine the role of anxiety in the relationship between scarcity and panic buying; the mediating effect of event perceptions in the direct relationship between scarcity and panic buying and the moderating effect of indirect effects via the mediating variable anxiety.

RESEARCH FINDINGS

Test of Reliability and Validity

Reliability and convergent validity tests

In this study, data were obtained by means of a questionnaire and reliability analysis was conducted by SPSS 26.0. The results of the Cronbach coefficient reliability tests were conducted on a total of four measurement scales, six sub-dimensions of event perception, four sub-dimensions of scarcity, four sub-dimensions of anxiety and three sub-dimensions of event perception, as shown in Table 2. The Cronbach coefficients for all of the constructs were greater than 0.80, indicating that the results used to measure each construct were reasonable and reliable, and that the questions had measurement reliability and were ready for the next step of empirical analysis. The average variance extracted (AVE) was then calculated from the factor loading coefficients extracted for each of the constructs for convergent validity analysis. As shown in Table 2, the AVE values for all the constructs were greater than 0.50, indicating that the constructs had good convergent validity.

Table 2 Table of convergent and discriminant validity

Structure	Convergent validity		Average value	Standard deviation	Differential validity			
	Cronbach's α	AVE			PR	SC	AN	PB
PR	.908	.703	6.273	.969	**.838**			
SC	.925	.817	5.385	1.551	.388	**.904**		
AN	.980	.944	4.042	2.124	.093	.443	**.972**	
PB	.855	.776	4.682	1.741	.155	.451	.711	**.881**

Source: Authors

The diagonal bold text is the open root value of AVE and the lower triangle is the Pearson correlation.

Differential validity test

In order to examine the validity of this study's scale, the differential validity of the variables was examined in two ways: first, by comparing the square root of the average variance extracted (AVE) of the constructs (see Table 2 for the results) and the magnitude of the Pearson correlation coefficient between the construct and the other variables, if the former is greater than the latter, then the construct has differential validity with the other constructs. The results in Table 2 indicate that all the constructs passed the discriminant validity test. Secondly, AMOS 26.0 was used to conduct validated factor analysis for each variable. The results of the comparison between the four-factor model, the three-factor model, the two-factor model, and the one-factor model (see Table 3) demonstrate that the four-factor model has significantly better fit indicators than the three-factor, two-factor, and one-factor models, indicating that the four main constructs of this study scale have good discriminant validity. Further tests of correlation and regression analysis were appropriate.

Table 3 Validated factor analysis for each variable

Models	λ^2	df	λ^2/df	NFI	CFI	TLI	RMSEA
M1:PR,SC,AN,PB	281.38	113.00	2.49	.92	.95	.94	.08
M2:PR+SC,AN,PB	926.59	116.00	7.99	.75	.77	.73	.18
M3:PR+SC,AN+PB	1044.55	118.00	8.85	.72	.74	.70	.19
M4:PR+SC+AN+PB	1794.35	119.00	15.08	.51	.53	.46	.26

Note: PR = event perception, SC = scarcity, AN = anxiety, PB = panic buying
Source: Authors

Descriptive Statistics and Correlation Analysis

Descriptive statistics and correlations for the variables in this study are presented in Table 4. correlation tests for the variables also met expectations, with event perception, scarcity, and anxiety all significantly and positively correlated with panic buying ($r = 0.155$, $p < 0.05$; $r = 0.451$, $p < 0.01$; $r = 0.711$, $p < 0.01$); event perception was significantly and positively correlated with scarcity ($r = 0.388$, $p < 0.01$); and scarcity was significantly positively correlated with anxiety ($r = 0.443$, $p < 0.01$). In summary, all variables showed high strength correlations with each other, tentatively validating the theoretical hypothesis of this study.

Table 4 Descriptive statistics and correlation analysis

Variables	Average value	Standard deviation	1	2	3	4
Event Awareness	6.27	.97	1			
Scarcity	5.39	1.55	.388**	1		
Anxiety	4.04	2.12	.09	.443**	1	
Panic buying	4.68	1.74	.155*	.451**	.711**	1

Note:1) * Significant correlation at 0.05 level; ** Significant correlation at 0.01 level; *** Significant correlation at 0.001 level
Source: Authors

Analysis of the Mediating Role of the Moderating Effect Anxiety and the Moderating Role of Event Perception

Table 5 Analysis of mediating effects with moderation

Resulting variables	Regression equation / Predictive variables	Overall fit index		Significance of regression coefficients			
		R^2	F	β	Bootstrap lower limit	Bootstrap cap	t
Anxiety		0.20	51.56**				
	Scarcity			0.61	0.44	0.77	7.18***
Panic buying		0.56	53.06***				
	Scarcity			-1.61	-2.53	-0.69	-3.46***
	Anxiety			1.39	0.65	2.14	3.68***
	Event Awareness			-0.73	-1.27	-0.19	-2.65**
	Scarcity Event Awareness			0.28	0.14	0.43	3.88***
	Anxiety Event awareness			-0.13	-0.25	-0.02	-2.31*

Source: Authors

In order to better investigate the effect of scarcity on panic buying in the relationship and its mechanisms of action, the mediating role of anxiety in the above relationship and the moderating effect of event perception, a moderated mediating model was constructed for this study. The moderating effect was examined using the process3.4 program for the direct influence path of the dependent variable propensity to leave. Where the variables scarcity, anxiety and event cognition were centralised prior to doing the moderating test, the output is shown in Table 5.

The results showed that scarcity was a significant positive predictor of anxiety (β = 0.61, p < 0.001), hypothesis 2 held; scarcity and event perception were significant negative predictors of panic buying (β = -1.61, p < 0.001; β = -0.73, p < 0.01), hypothesis 1 held; anxiety was a significant positive predictor of panic buying (β = 1.39, p < 0.001), hypothesis 3 holds; the interaction terms of scarcity and event perception and the interaction term of anxiety and event

perception are significant predictors of panic buying ($\beta = 0.28$, $p < 0.001$; $\beta = -0.13$, $p < 0.05$). Taken together, the moderated mediation model proposed in this study is supported by the fact that anxiety mediates the effect of scarcity on panic buying significantly, and that both the direct effect of scarcity on panic buying and the second half of the pathway through the mediated effect of anxiety are moderated by event perception. The values of the direct and anxiety-mediated effects of scarcity on panic buying and their 95% Bootstrap confidence intervals are shown in Table 6 at both the one standard deviation below and one standard deviation above mean levels of event awareness scores. The indirect effect values for anxiety at low and high event perception levels were 0.42 and 0.28, with 95% Bootstrap confidence intervals of [0.25,0.58] and [0.19,0.39], respectively, neither of which passed 0, indicating the presence of a mediating effect of anxiety in the relationship between the effects of scarcity on panic buying and the validity of Hypothesis 4.

Table 6 Direct and mediating effects of scarcity affecting panic buying and anxiety at different event perceptions.

Event Awareness	Effect size	Effect value	Boot standard error	Bootstrap lower limit	Bootstrap cap
M-1SD	Indirect effects	0.42	0.09	0.25	0.58
	Direct effects	-0.11	0.10	-0.31	0.08
M+1SD	Indirect effects	0.28	0.05	0.19	0.39
	Direct effects	0.37	0.08	0.21	0.52

Source: Authors

To demonstrate the moderating effect of event perception more visually, the mean of event perception plus or minus one standard deviation was selected and the sample was divided into a high event perception group and a low event perception group to compare the relationship between scarcity and panic buying in the two groups, and the results are shown in Figure 2. In the high event awareness group, the relationship between scarcity and panic buying was a high positive correlation ($y=1.135x+3.027$, $p<0.001$); in the low event awareness group, the relationship between scarcity and panic buying was a low negative correlation ($y=-0.351x+4.823$, $p<0.001$). Therefore, hypothesis H_6 passed the test. To further determine the extent of the effect of event perception, the Johnson-Neyman method was used to detect it. The results show that when event perception < 4.805, its 95% Bootstrap Confidence Interval (CI) does not contain 0. The moderating effect of scarcity on panic buying is significantly negative, i.e., the moderating effect decreases as event perception increases; when event perception >

6.613, its 95% Bootstrap The moderating effect of scarcity on panic buying is significantly positive, i.e., the moderating effect increases as event perception increases.

Figure 2 Event perception between scarcity and panic buying
Results of the simple slope test for moderating effects
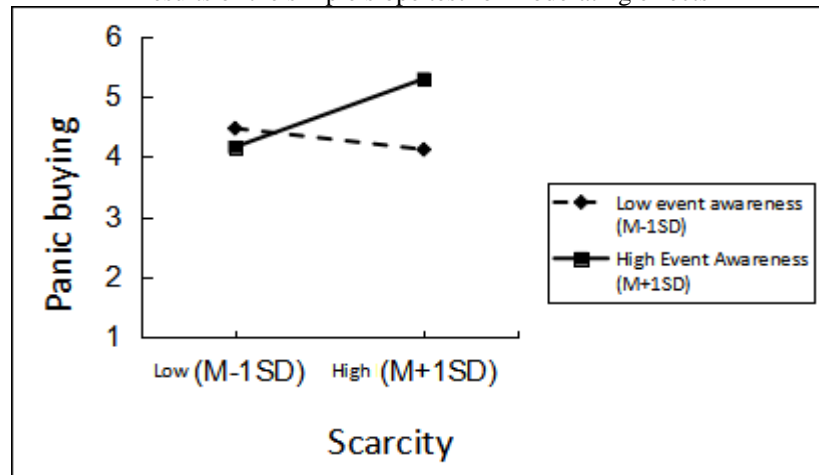
Source: Authors

Again, to demonstrate more clearly the moderating role of event cognition in the relationship between anxiety and panic buying, the same approach as above was used to compare the relationship between anxiety and panic buying at different levels of event cognition in the two groups, and the results are shown in Figure 3. In the low event perception group, the relationship between anxiety and panic buying was high and positive ($y=2.917x-0.079$, $p<0.001$); in the high event perception group, the relationship between anxiety and panic buying was relatively low ($y=1.96x+1.79$, $p<0.001$). Therefore, hypothesis H_5 passed the test. When probed using the Johnson-Neyman method, event cognition was found to have a 95% Bootstrap confidence interval (CI) that did not contain 0 across all ranges, i.e., the moderating effect of event cognition on the relationship between anxiety and panic buying was significant throughout, and the moderating effect increased as event cognition increased.

Figure 3 Event perception between anxiety and panic buying
Results of the simple slope test for moderating effects
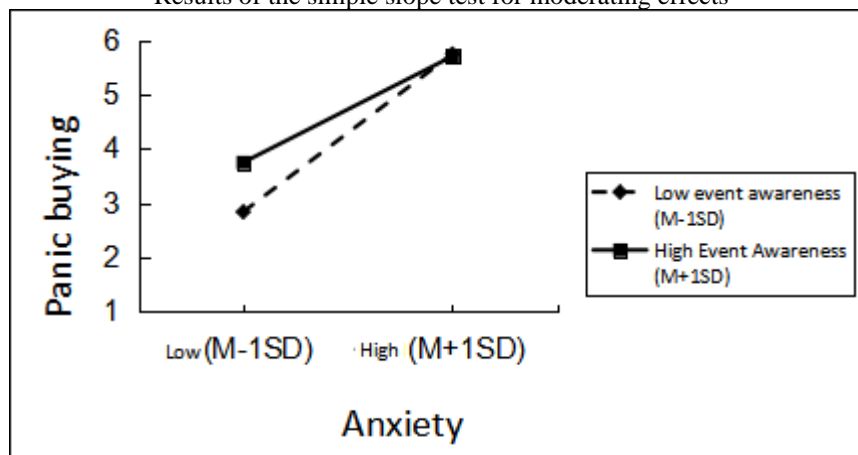
Source: Authors

DISCUSSION

Hypothesis 1 holds, and scarcity has a significant positive impact on panic buying. This means that supply conditions in the market can affect panic buying. Therefore, solving the supply problem is one of the ways to deal with panic buying.

Hypothesis 2 holds, and scarcity has a significant positive impact on anxiety. This means that supply conditions in the market can affect anxiety. Scarcity can affect anxiety.

Hypothesis 3 holds, and anxiety has a significant positive impact on panic buying. This means that anxiety can affect panic buying. You can reduce panic buying by reducing anxiety.

Hypothesis 4 suggests that the mediating effect of anxiety is meaningful. This means that the mediating effect of anxiety exists. The government can alleviate anxiety through propaganda.

Hypothesis 5 holds, and the regulatory effect of personal cognition is significant. This means that there is a significant moderating effect of personal cognition on scarcity and anxiety on panic buying. So, governments can reduce panic buying by influencing individual perceptions.

There are several mechanisms that the governments and enterprises respond to emergency material purchases in a crisis situation.

First, the establishment of government enterprise partnership. The complexity of the operational environment of the emergency supplies supply chain formally restricts the government from adopting simple and conventional contractual relationships to cooperate with enterprises. Therefore, what kind of contract is the most effective for establishing a

government-enterprise partnership is the primary issue that needs to be addressed in bilateral cooperation.

The second is the choice of cooperative reserve mode. In the emergency material reserve under the cooperation between government and enterprise, enterprises are not only the direct suppliers of materials, but also need to further participate in the management of materials. Therefore, how the government establishes appropriate cooperative reserve models with enterprises based on the characteristics of materials, and what roles the two sides respectively assume in each model are important issues that need to be addressed in the cooperation between government and enterprise.

Third, decision-making and interest coordination in cooperation. In the process of government enterprise cooperation, how to formulate their own optimal procurement and reserve strategies, and how to design a reasonable interest coordination mechanism to ensure the maximization of overall cooperation benefits are the core issues to achieve effective government enterprise cooperation.

With the development of the Internet, people communicate more closely, and the spread of sudden events is greatly accelerated, while the incitement of emotions plays a role in the spread of information. In the context of the New Coronary Pneumonia epidemic, public panic has risen and panic buying events have erupted across countries, bringing greater impact and influence on social stability and people's safety. Therefore, this paper aims to provide scientific knowledge of the rules and reasonable coping strategies for mass panic buying events by studying the emergence principles and intervention mechanisms of mass panic buying behaviour in the context of public health emergencies. Firstly, this paper constructs a model for the spread of online public opinion considering individual emotions, and discovers the prominent role of panic emotions in group behaviour through simulation experiments; secondly, it constructs a model for the spread of panic buying behaviour under sudden epidemics, and analyses the formation and spread of panic buying behaviour by integrating internal and external factors in online and offline environments; finally, it integrates the aforementioned studies and existing social interventions, and constructs a comprehensive social intervention model of panic buying behaviour is constructed, and the effectiveness of various intervention measures in curbing panic buying behaviour is analysed and the validity and practicality of the model is verified through case studies.

CONCLUSION

In conclusion, the study of mass panic buying behaviour in the context of public health emergencies is of great significance to social stability and people's safety. Through the construction of models and analysis of internal and external factors, this paper has provided a scientific understanding of the emergence and spread of panic buying behaviour. Moreover, the study has proposed a comprehensive social intervention model for panic buying behaviour, which can effectively curb panic buying behaviour through various measures. In the face of sudden epidemics, it is important for governments and enterprises to establish effective partnerships, choose appropriate cooperative reserve modes, and coordinate interests to achieve effective cooperation. Additionally, the government can alleviate anxiety through propaganda and influence individual perceptions to reduce panic buying behaviour. Overall, this study provides valuable insights for governments, enterprises, and individuals to effectively respond to emergency material purchases in a crisis situation.

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