

Ms. Nimmy Lovely George, Dr. Rakesh Krishnan M

Turkish Online Journal of Qualitative Inquiry (TOJQI)  
Volume 12, Issue 7, July 2021: 8827 - 8837

Research Article

## **Covid-19 Panic Buying Behaviour Of Tightwad Spendthrift Consumers: A Longitudinal Study**

**Ms. Nimmy Lovely George, Dr. Rakesh Krishnan M**

**Ms. Nimmy Lovely George,**

Research Scholar, Department of Management Studies, Rajagiri College of Social Sciences (email: nimmylovelygeorge@gmail.com)

**Dr. Rakesh Krishnan M**

Assistant Professor, School of Management, Cochin University of Science and Technology, Cochin (email: mrakeshkrishnan@gmail.com)

### **ABSTRACT**

Following the outbreak of the COVID-19 pandemic in December 2019, the worldwide economy has been severely impacted. Not only did it trigger massive global health and economic crisis, it also triggered uncommon human habits, such as panic buying across the globe. Panic buying occurs when emotions like anxiety, fear, and feelings of bewilderment hinder behaviour, causing consumers to buy more products than usual. The study intends to examine the longitudinal influence of panic buying behaviour among the individual difference of consumers (spendthrifts, tightwads and unconflicted consumers) in India during the first wave and second wave of Covid 19. This study attempts to demonstrate how the spending behaviour of individual consumers is influenced by panic buying behaviour. This longitudinal study surveyed the population twice - during the first wave (April-May 2020) and the second wave (April-May 2021) of the Covid 19 outbreak, surveying demographics (gender, age, marital status, income, occupation and location), panic buying behaviour and individual differences of consumers (spendthrifts, tightwads and unconflicted consumers). The study used the panic buying scale introduced by Lins & Aquino (2020) and the individual difference scale created by Rick et al., (2008) to collect data on the panic buying behaviour and individual differences of respondents. The result of the study showed panic buying behaviour among all categories of consumers and the spendthrift consumers showed the highest level of panic buying behaviour. The negative psychological emotion of pain of paying differentiate the consumers into three categories namely, tightwad consumers, unconflicted consumers and spendthrift consumers. The panic buying behaviour created negative emotions of fear and anxiety which decreased the psychological emotions of the pain of paying. Due to the panic buying triggered by the pandemic, consumers who have a greater level of pain of paying (i.e., tightwad consumers) reported a decline in their level of pain.

Keywords: Panic Buying Behaviour; Covid-19; Individual Differences of Consumers; Pain of Paying.

### **INTRODUCTION**

The COVID-19 pandemic has impacted daily life and is posing a threat to the global economy (*Outlook India Magazine*, 2020). A significant number of people, including those specifically infected by the

outbreak and the remainder, have been affected by this pandemic, unable to lead their normal lives. The spreading of the virus has been exponential in most countries. Based on the advice from the scientific researchers and the trends of spreading of the virus, many countries have brought in very strict rules such as lockdown of various places and even the entire country for a certain period (Lancet, 2020; Lau et al., 2020). Owing to the uncertainty of its effects on everyday life, the coronavirus epidemic has triggered anxiety and panic. Many researchers predict that the pandemic can also affect everyone's mental wellbeing and health (Cullen et al., 2020; Kluge, 2020). When there is some sort of uncertainty or threats, it is natural for everyone to feel stressed, fearsome and worried. The same applies to the COVID-19 pandemic. Apart from the fear of when the pandemic will stop, there are restrictions on the movements and activities (Obi et al., 2020). We need to look after both our mental and physical well-being because of the changes that affected the various parts of our life such as no physical contact with friends and family, online classes for students, managing kids as well as working from home for parents (Armitage & Nellums, 2020; Wang et al., 2020).

The purchasing habit is also affected due to the outbreak of COVID-19. People's daily lives have been disrupted by the unpredictability of the lockdown, and fear has been generated as a result of the uncertain situation. In anticipation of product shortages, consumers prefer to purchase for basics and other vital things that they believe will assist them in surviving the crisis (Yoon et al., 2018). Some people may be concerned about a huge price increase as a result of the catastrophe (Su, 2010). The prior literature attempted to explain the causes and consequences of panic buying (Xu et al., 2011). The spending pattern of consumers gets affected as the purchasing habit gets changed. Consumers in the new era of COVID-19 tend to spend less than usual and spend mainly on daily essential products. Research on spending decisions suggests that the negative emotion of pain of paying influences the spending habit of consumers. Rick, Cryder, and Loewenstein (2008) stated that the proclivity to feel the pain of paying varied depending on individual differences. The spending decision of a person is influenced by the emotion a person feels at the time of making purchases. The researcher categorizes people into three categories grounded on pain of paying to influence their spending pattern. According to the researchers, tightwads are consumers who experience extreme pain when spending and they appear to spend lesser than they would like to spend. Spendthrifts at the thought of investing feel inadequate quantities of discomfort and thus prefer to spend more than they would prefer to pay. When making transactions, unconflicted customers feel a moderate level of discomfort and usually pay what they would ultimately want to pay.

Previous research indicates situations that momentarily alleviate the pain of paying tend to cause tightwads to spend more (Thomas et al., 2011), and circumstances that temporarily raise the pain of paying tend to minimize spending by spendthrift (S. Rick, 2018). This study shows how panic buying behaviour caused by the fear and anxiety of COVID-19 pandemic tend to influence individual consumers spending pattern. It studies if there is any relationship between panic buying behaviour and consumer individual differences like tightwad, unconflicted and spendthrift consumers. The study intends to examine the longitudinal influence of panic buying behaviour among the individual difference of consumers (spendthrifts, tightwads and unconflicted consumers) in India during the first wave and second wave of Covid 19. This study attempts to demonstrate how the spending behaviour of individual consumers is influenced by panic buying behaviour. We assume that the uncertain situation of panic buying created by the COVID-19 pandemic increases the spending behaviour by decreasing the pain of paying.

## **LITERATURE REVIEW**

### **Panic Buying Behaviour**

Many people have started to buy much more items than what they usually require due to the change in behaviour caused by the uncertainty and fear of the pandemic; it is called panic buying (Yuen, Wang, et al., 2020). In certain circumstances and crises triggered by pandemics, natural disasters such as floods, and other unmanageable and catastrophe eventualities, this mentality of procuring more products happens (Lins & Aquino, 2020a). The purchase quantity of household items, groceries and essentials increased very much during the lockdown period indicating a significant increase in panic buying since people were fearing that much more restraints are coming and the lockdown will continue (*The Economic Times*, 2020). The social security literature suggests that the income level of people with low-income and high-income groups faces fear and panic differently (Wesseler, 2020).

Panic buying is normal behaviour, as lockdown focuses us to work from home and be at home more often, so naturally, people start to stock up products required for daily life. But some of this panic buying is very irrational (Lufkin, 2020). Consumer behaviour studies show that people panic buys for three reasons: (i) Guilt Avoidance, consumers buy too much because they don't want to be the one that doesn't have what they need, (ii) Social Cues, when somebody else is buying a lot it makes them also feel like they should do it too, (iii) Anxiety, a feeling that we can't solve the problem of virus so that buying more products will reduce their fear and anxiety (Dholakia, 2020; Dodgson, 2020). The epitome of panic buying gone wrong is when we lose any sort of social consciousness, that is when we think of getting all that we need without considering the needs of others (Patent, 2020).

Since customer decisions are influenced by emotions and social factors, panic buying is a relatively underdeveloped and niche field in consumer behaviour research (Yuen, Wang, et al., 2020). The causes and reasons for the panic buying among the masses all over the world due to the pandemic situation are generally focused on in the literature. The literature review suggests that it is possible to categorise the causes for panic buying into four key themes: (1) the person's fear of the crisis and the non-availability of the necessary items (Frank & Schvaneveldt, 2016; Zheng et al., 2020), (2) the fear about some unknown factors caused by uncertainty and other emotions (Dulam et al., 2020; Kemp et al., 2014; Larson & Shin, 2018; Sterman & Dogan, 2015), (3) coping behaviour caused by control deprivation (Gao & Liu, 2016) and (4) psychological and social factors considering the dynamics of the individual's social network (Kang et al., 2020). In situations like the COVID-19 pandemic, people will have a perception of risk. The level of it varies for each individual and mainly depends upon their perception of the panic situation which can be assessed based on the situation's vulnerability and severity (Wen et al., 2019; Yuen, Li, et al., 2020). The panic buying is a sort of self-protection behaviour for minimizing the risk during and before a disaster. They think that the risk can be minimised by storing larger quantities of products to make a sense of safety and confidence. People can reduce public contact by not visiting the stores very often. It is common for a person to indulge in panic buying to escape the great risk of catching the disease if the fear of spreading the disease is high. Therefore, panic buying can be interpreted as a method of self-protection to improve the wellbeing of individuals (Gao & Liu, 2016). The apprehension that there can be a scarcity of products in the future, may trigger the sense of urgency to procure more things. The individuals may be motivated to panic buying caused by a psychological impulse to avoid an anticipated regret (Sterman & Dogan, 2015).

When a disease outbreaks, the common people will undergo emotional distress like fear, anxiety, and panic (Taylor, 2019). This fear regarding the unknown is due to the absence of knowledge about the disease crisis affecting health. Thus, the uncertainty induces people to imagine the worst and this arouses fear and panic (Freeland, 2020). In order to minimise the stress and fear, individuals make panic purchases, which give them a sense of security at least temporarily. This kind of motivation is not caused by the real necessity for the items purchased, but it is a realm to suppress their negative emotions and stress (Sneath et al., 2009). Since people are deprived of other chances of enjoyment and

entertainment, they turn to panic buying to compensate them and enjoy indirect satisfaction (Koles et al., 2018). The research studies are trying to elaborate a person's behaviour and response to the panic buying during this pandemic with the help of behavioural theories to understand the psychological process involved in the panic buying during the COVID-19 pandemic (Kuruppu & De Zoysa, 2020) and the controlling measures that can reduce the panic buying behaviour (Arafat et al., 2020).

#### Individual differences of consumers

The action of purchasing goods or services by an individual can cause the pain of parting with cash or savings. Purchase intention for consumers depends on the subjective component of shopping discomfort and enjoyment. Buying behaviour for consumers depends on the subjective component of buying pain and pleasure. If the pain or the discomfort of parting with cash is low, the customers will pay out more and vice versa (Soman, 2001). For the process of a clear trade-off, an individual must possess the skill of impulsive interpretation of the opportunity cost compared to the price of an item. This will be the comparison of enjoying the product currently to the expected upcoming purchase by effective usage of cash (Becker et al., 1974; Okada & Hoch, 2004). According to various researches based on the behaviours of individuals, plenty of individuals do not think about opportunity cost when dealing with a price (Frederick et al., 2006; Jones et al., 1998; Northcraft & Neale, 1986). In usual scenarios, individuals think about the pain of paying instead of the real opportunity cost, as it is much easier and satisfactory for individual feelings. Those individuals who spend less amount on products are prone to have a high pain of paying, while individuals who have no or little pain of paying tend to pay out more (S. I. Rick et al., 2008).

The studies on spending behaviour, however, indicate that individual differences tend to experience an immediate feeling, the pain of paying, which has a strong effect on spending behaviour (Prelec & Loewenstein, 1998). According to Rick (2013), These combinations of low and high levels of payment pain cause individuals to spend in a different way relative to the way they would typically spend. Rick et al. (2008) especially predict that the people who experience extreme pain of paying, the tightwads, close the purchase with a much lower sum than they would usually have paid. Due to this difficult discomfort of paying, they refrain from buying on several occasions. The spendthrifts, on the contrary, experience less pain than what is actually needed to pay and spend much more. Those who experience a natural and moderate pain of paying when spending may not have much difference between their real spending and the ideal spending habits are another category that is unconflicted consumers. To measure these individual differences, Rick et al. (2008) formed a four-item individual difference scale. This studies customers as to whether they have difficulty regulating their nature of overspending, or whether they are pressured to spend.

Frederick et al. (2009); Rick et al. (2008); Thomas et al. (2011) indicate that the scale of individual differences is likely to be affected by circumstances that affect the pain of paying. Contexts that minimise the pain of paying, mostly by modifying the actions of spendthrifts, should minimise individual spending disparities and can be minimised in situations that increase the pain of payment but do so mainly by modifying the actions of tightwads.

The COVID-19 pandemic has impacted consumer spending behaviour to a very significant degree. As customers hunker down for a sustained period of financial volatility, they expect to continue to transfer their spending to necessities such as food and household items and cut down on other discretionary categories (McKinsey, 2020). The pandemic crises have made consumers change their spending habits due to the uncertainty, fear and anxiety of the coming future.

#### **HYPOTHESIS**

1. There is a significant difference in Panic Buying behaviour across gender, marital status, occupation, income and locality for the first wave and second wave of covid-19.
2. There is a significant difference in Panic Buying for Individual differences of consumers like tightwad, unconflicted and spendthrift consumers.
3. There is a positive correlation between panic buying behaviour and individual differences of consumers.

## **METHODOLOGY**

This study of panic buying behaviour among individual differences of consumers was conducted in India. The longitudinal study was conducted during the first wave (n=1020) (April – May 2020) and the second wave (n=822) (April-May 2021) of covid -19.

An online survey was conducted during the first wave and second wave of covid-19 to gather the data for the analysis and study. A questionnaire was given to the participants for answering and through this, the data was collected.

This questionnaire comprised three sections. The first segment was the demographic section, for collecting detailed information regarding the age, gender, marital status, occupation, income and locality of the participants. The second section for the data collection regarding the panic buying behaviour of the participants for which the panic buying scale was used. Seven Likert scale questions propounded by Lins & Aquino (2020b) were included in this section. The third section was for collecting data for studying the individual differences of the participants. The individual differences scale known as the spendthrift tightwads (ST-TW) scale proposed by Rick et al., (2008) was used.

### *Panic Buying Scale*

The study uses the Panic Buying Scale as suggested by Lins & Aquino (2020b). Seven items make up the scale (1 = strongly disagree and 7 = strongly agree) with an instruction to answer based on their current behaviour during Covid-19.

### *Individual Differences Scale*

Rick et al. (2008) designed the scale of the individual difference to quantify individual variations in the propensity to pain of paying and to classify three categories of customers: tightwads, spendthrifts, and unconflicted customers. The things of scale concentrate on whether customers have trouble monitoring their spending or difficulty pushing themselves to spend. The scale consists of four elements, the first of which uses a scale of 1 to 11 to measure individual differences of consumers, of which the minimum shows tightwad and the maximum shows spendthrift. The scale's second item consists of two sub-questions that include two sets of 5-point scale explanation and calculation. A scenario and measure using the 5-point scale are defined in the final item of the scale.

## **RESULT**

The panic buying was measured based on demographic information (gender, age, marital status, income, occupation and location).

An independent sample t-test was conducted to test if there is a significant difference in panic buying across gender and marital status of respondents during the first and second wave of covid-19. The descriptive statistics and independent sample t-test associated with panic buying across gender and marital status of respondents during the first and second wave of covid-19 are reported in Table 1. The independent sample t-test showed a statistically significant effect between panic buying and gender of respondents during the first wave ( $t(1018) = -2.232, p = .026$ ) and showed an insignificant effect during the second wave ( $t(820) = .459, p = .646$ ). The independent sample t-test showed a statistically

Covid-19 Panic Buying Behaviour Of Tightwad Spendthrift Consumers: A Longitudinal Study

Ms. Nimmy Lovely George, Dr. Rakesh Krishnan M

significant effect for panic buying and marital status of respondents during first wave ( $t(1018) = -7.647$ ,  $p < .001$ ) and during second wave ( $t(820) = -9.00$ ,  $p < .001$ ).

Table 1. Descriptive statistics and independent sample t-test results of panic buying across gender and marital status of respondents

Panic Buying	First wave						Second wave					
	N	M	SD	t-test for Equality of Means			N	M	SD	t-test for Equality of Means		
				t	df	p				t	df	p
Gender:												
Male	514	3.1	0.84	-2.232	1018	0.026	490	3.35	.849	.459	820	.646
Female	506	3.22	0.878				332	3.32	.758			
Marital Status:												
Single	712	3.02	0.819	-7.647	1018	0.00	234	2.95	.704	-9.00	820	0.00
Married	308	3.46	0.878				588	3.49	.803			

In order to test the significant difference in Panic Buying across occupation, income and location of respondents, a between-groups ANOVA was performed. Table 2 shows the result of ANOVA with panic buying of respondents based on their occupation, income level and location during the first and second wave of covid-19. The independent results of ANOVA with panic buying between the occupation of respondents yield a statistically significant effect during the first wave ( $F(4,1015) = 2.439$ ,  $p = .045$ ) and during the second wave with ( $F(4,817) = 2.787$ ,  $p = .026$ ). The ANOVA result with panic buying across income of respondents show a statistically significant effect during the first wave ( $F(6,1013) = 10.661$ ,  $p < .001$ ) and during the second wave ( $F(6,815) = 9.658$ ,  $p < .001$ ). The independent results of ANOVA with panic buying between the location of respondents was not statistically significant during the first wave ( $p > .05$ ) but was statistically significant during the second wave ( $F(2,819) = 43.929$ ,  $p < .001$ ).

Table 2: Descriptive statistics and ANOVA results of panic buying across occupation, income and location of respondents

Panic Buying		First wave						Second wave					
		N	M	SD	F	df	p	N	M	SD	F	df	p
Occupation	Private employee	542	3.17	0.845	2.439	4,1015	0.045	416	3.28	0.78	2.787	4,817	0.026
	Government employee	165	3.01	0.958				208	3.41	0.87			
	Business	140	3.31	0.973				64	3.54	0.53			
	Students	114	3.18	0.622				100	3.21	0.95			
	Homemaker	59	3.06	0.78				34	3.52	0.67			
Income	No income	89	2.97	0.693	10.661	6,1013	0.00	70	3.15	0.629	9.658	6,815	0.00

	Below 1 lakh	144	3.18	0.769				64	3.06	0.744			
	1 lakh–3 lakhs	235	3.02	0.748				110	3.45	1.052			
	3 lakh–5 lakhs	199	3.19	0.921				184	3.35	0.515			
	5 lakh–7 lakhs	154	3.08	0.861				136	3.25	0.741			
	7 lakh–10 lakhs	121	3.13	1.058				166	3.21	0.927			
	Above 10 lakhs	78	3.84	0.691				92	3.85	0.81			
Location	Urban	480	3.21	0.924	1.892	2,1017	0.151	346	3.27	0.682	43.929	2,819	0.00
	Semi-Urban	366	3.13	0.778				274	3.66	0.916			
	Rural	174	3.07	0.842				202	3.00	0.707			

Individual differences scale score was divided into three equally sized groups of sums. The scale sum from 4 to 11 was classified as Tightwads (N = 273), consumers with scale sum from 12 to 18 were classified as Unconflicted (N = 431) and those with a sum scale from 19 to 26 were classified as Spendthrift (N = 316) (S. I. Rick et al., 2008).

The result of Pearson’s correlation showed that panic buying was positively correlated with the spendthrift tightwad scale during the first wave ( $r = 0.093$  and  $p < .001$ ) and second wave ( $r = 0.313$ ,  $p < .001$ ).

Table 3: Correlation between Panic buying behaviour and Individual differences of consumers

	Covid-19 First wave				Covid-19 Second wave			
	M	SD	Panic Buying Behaviour	Individual differences	M	SD	Panic Buying Behaviour	Individual differences
Panic buying behaviour	3.16	0.86	1		3.33	0.813	1	
Individual differences	3.79	1.36	0.093	1	3.88	0.829	0.313	1

The descriptive statistics associated with panic buying across the three individual differences of consumers are reported in Table 3. In order to test the hypothesis that there is a significant difference in Panic Buying for Individual differences of consumers (tightwad, unconflicted and spendthrift consumers), a between-groups ANOVA was performed.

Table 4 shows the result of ANOVA with panic buying as a dependent variable and individual difference as a factor variable. The independent results of ANOVA between groups yield a statistically significant effect during first wave ( $F(2,1017) = 5.768$ ,  $p < .05$ ) and during second wave ( $F(2,819) = 6.362$ ,  $p < 0.001$ ).

Table 4: ANOVA results of Panic Buying across Individual differences of consumers (tightwad, unconflicted and spendthrift consumers)

Panic Buying		First wave						Second wave					
		N	M	SD	F	df	p	N	M	SD	F	df	p
Individual differences of consumers	Tightwad	273	3.04	0.9	5.768	2,1017	0.03	112	2.8	0.6	6.362	2,819	0.00
	Unconflicted	431	3.14	0.8				554	3.3	0.79			
	Spendthrift	316	3.28	0.8				156	3.9	0.71			

**DISCUSSION AND IMPLICATION**

Panic buying is the inclination of people to stock up large amounts of necessities such as food, groceries, medicines and other items due to the rapid fear of a potential shortage or price increase. Millions across the globe have begun to stockpile necessities as a precautionary measure in the aftermath of the novel Coronavirus outbreak before being shut down for an unknown number of days. The study suggests that panic buying due to the COVID-19 pandemic has affected the whole population. The findings show panic buying differ among male and female respondents during the first wave where female respondents have greater panic buying behaviour compared with male respondents. During the first and second wave, the marital status shows that married respondents have more panic buying than single respondents. The respondents with higher income showed higher panic buying behaviour. Based on location all the respondent groups showed similar behaviour during the first wave and during the second wave, semi-urban respondents showed higher panic buying behaviour.

The relationship of panic buying with the individual difference scale shows a positive correlation, which says that as the score in the spendthrift tightwad scale increases the panic buying level also increases. This suggests that spendthrifts show a higher panic buying behaviour. Panic buying is a pattern of behaviour triggered by crises (currently COVID-19), motivated by negative emotions, such as fear and anxiety. The adverse feeling of panic buying affects the negative feeling of pain of paying. As per Rick et al. (2008), the pain of paying experienced by spendthrift is very less compared to that of a tightwad. The pain of paying decreases as the negative sensation of panic buying rises. The expectation and apprehension of an increase in price or a lack of stocks produce a condition that helps to minimise the discomfort of paying for essential goods. As the pain of payment reduces, individuals indulge in more acquisitions of essential goods.

If the problems and challenges due to COVID-19 tend to rise by a considerable amount, over a prolonged time, people continue to suffer from elevated levels of anxiety and insecurity, even more with the possibility of new waves of virus spread. The experience in the pandemic demonstrates to us that it is important that the psychological effect that COVID-19 has on individuals and culture is not neglected. Since a pandemic is a danger that creates panic, distress, and confusion, questions are often posed about whether adequate resources will be available or how long economic turmoil will continue. Unnecessarily high purchasing and storing habits may induce supply-overcoming demands, create commodity shortages in the middle of the recession, or even trigger panic purchasing from a herd, raising feelings of uncertainty and anxiety.

The possible effect of these stressful emotions on shopping behaviour must be understood by customers, healthcare providers and government decision-makers, as this helps to establish strategies that avoid or reduce mental and economic suffering in the wake of emergencies. Understanding purchase choices



affected by dramatic environmental shifts will pave the way in periods of disaster to minimise and tackle post-traumatic disorders, or to tackle the impact of pandemic-related panic.

The findings discussed here show that individual variations in emotion to feel an intense feeling, the pain of paying, have an influential effect on panic buying purchasing and spending behaviour. The situation of panic buying created anxiety and fear of the uncertain future which reduced the feeling of pain of paying. There may be many more different waves in panic purchasing if the pandemic is not fully under control, and research carried out after a traumatic event may carry new conclusions regarding it. Investigations should also determine the influence and impact of different types of consumer activity on the retail market, family financial issues, and mental wellbeing, reflecting more on the history of panic purchasing behaviour. Only a body of qualitative studies, removing shortcuts in the retail market and developing behavioural wellbeing promotion strategies will draw any findings and indications for public policymakers and health practitioners.

## REFERENCES

1. Arafat, S. M. Y., Kar, S. K., & Kabir, R. (2020). Possible Controlling Measures of Panic Buying During COVID-19. *International Journal of Mental Health and Addiction*. <https://doi.org/10.1007/s11469-020-00320-1>
2. Armitage, R., & Nellums, L. B. (2020). COVID-19 and the consequences of isolating the elderly. *The Lancet Public Health*, 5(5), e256.
3. Becker, S. W., Ronen, J., & Sorter, G. H. (1974). Opportunity costs-an experimental approach. *Journal of Accounting Research*, 317–329.
4. Cullen, W., Gulati, G., & Kelly, B. D. (2020). Mental health in the Covid-19 pandemic. *QJM: An International Journal of Medicine*, 113(5), 311–312.
5. Dholakia, U. (2020, March). *Why Are We Panic Buying During the Coronavirus Pandemic?* Psychology Today. <https://www.psychologytoday.com/blog/the-science-behind-behavior/202003/why-are-we-panic-buying-during-the-coronavirus-pandemic>
6. Dodgson, L. (2020, March). *A human behavior expert explains 4 psychological reasons why people are panic buying items in bulk during the coronavirus pandemic*. Insider. <https://www.insider.com/why-people-are-panic-bulk-buying-during-the-coronavirus-pandemic-2020-3>
7. Dulam, R., Furuta, K., & Kanno, T. (2020). Development of an agent-based model for the analysis of the effect of consumer panic buying on supply chain disruption due to a disaster. *Journal of Advanced Simulation in Science and Engineering*, 7(1), 102–116.
8. 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, 199–208.
9. Frederick, S., Novemsky, N., Wang, J., Dhar, R., & Nowlis, S. (2006). *Neglect of Opportunity Costs in Consumer Choice*. working paper, Marketing Department, Sloan School of Management ....
10. Frederick, S., Novemsky, N., Wang, J., Dhar, R., & Nowlis, S. (2009). Opportunity cost neglect. *Journal of Consumer Research*, 36(4), 553–561.
11. Freeland, S. (2020, March). *Why people are panic buying and what can help*. UGA Today. <https://news.uga.edu/panic-buying-and-anxiety-tips/>
12. Gao, C., & Liu, J. (2016). Network-based modeling for characterizing human collective behaviors during extreme events. *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 47(1), 171–183.

13. Jones, S. K., Frisch, D., Yurak, T. J., & Kim, E. (1998). Choices and opportunities: Another effect of framing on decisions. *Journal of Behavioral Decision Making*, *11*(3), 211–226.
14. Kang, I., He, X., & Shin, M. M. (2020). Chinese consumers' herd consumption behavior related to Korean luxury cosmetics: The mediating role of fear of missing out. *Frontiers in Psychology*, *11*, 121.
15. 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. *Psychology & Marketing*, *31*(11), 933–945.
16. Kluge, H. H. P. (2020). Mental health and psychological resilience during the COVID-19 Pandemic. *World Health Organisation*.
17. Koles, B., Wells, V., & Tadajewski, M. (2018). Compensatory consumption and consumer compromises: A state-of-the-art review. *Journal of Marketing Management*, *34*(1–2), 96–133.
18. Kuruppu, G. N., & De Zoysa, A. (2020). *COVID-19 and Panic Buying: An Examination of the Impact of Behavioural Biases*.
19. Lancet, T. (2020). India under COVID-19 lockdown. *Lancet (London, England)*, *395*(10233), 1315.
20. Larson, L. R., & Shin, H. (2018). Fear during natural disaster: Its impact on perceptions of shopping convenience and shopping behavior. *Services Marketing Quarterly*, *39*(4), 293–309.
21. Lau, H., Khosrawipour, V., Kocbach, P., Mikolajczyk, A., Schubert, J., Bania, J., & Khosrawipour, T. (2020). The positive impact of lockdown in Wuhan on containing the COVID-19 outbreak in China. *Journal of Travel Medicine*, *27*(3), taaa037.
22. Lins, S., & Aquino, S. (2020a). *Building a Panic Buying Scale during COVID-19: Preliminary results*. <https://doi.org/10.13140/RG.2.2.30208.05125>
23. Lins, S., & Aquino, S. (2020b). Development and initial psychometric properties of a panic buying scale during COVID-19 pandemic. *Heliyon*, *6*(9), e04746.
24. Lufkin, B. (2020, March). *Coronavirus: The psychology of panic buying*. <https://www.bbc.com/worklife/article/20200304-coronavirus-covid-19-update-why-people-are-stockpiling>
25. McKinsey. (2020). *Consumer sentiment and behavior continue to reflect the uncertainty of the COVID-19 crisis | McKinsey*. <https://www.mckinsey.com/business-functions/marketing-and-sales/our-insights/a-global-view-of-how-consumer-behavior-is-changing-amid-covid-19>
26. Northcraft, G. B., & Neale, M. A. (1986). Opportunity costs and the framing of resource allocation decisions. *Organizational Behavior and Human Decision Processes*, *37*(3), 348–356.
27. Obi, S. E., Yunusa, T., Ezeogueri-Oyewole, A. N., Sekpe, S. S., Egwemi, E., & Isiaka, A. S. (2020). The Socio-Economic Impact of Covid-19 on The Economic Activities of Selected States in Nigeria. *Indonesian Journal of Social and Environmental Issues*, *1*(2), 39–47.
28. Okada, E. M., & Hoch, S. J. (2004). Spending time versus spending money. *Journal of Consumer Research*, *31*(2), 313–323.
29. *Outlook India Magazine*. (2020, April). How Coronavirus Pandemic Will Impact The Economy and You. <https://www.outlookindia.com/magazine/story/how-coronavirus-pandemic-will-impact-the-economy-and-you/303014>
30. Patent, V. (2020, March). *Panic buying and how to stop it*. OpenLearn. <https://www.open.edu/openlearn/health-sports-psychology/psychology/panic-buying-and-how-stop-it>
31. Prelec, D., & Loewenstein, G. (1998). The Red and the Black: Mental Accounting of Savings and Debt. *Marketing Science*, *17*(1), 4–28. <https://doi.org/10.1287/mksc.17.1.4>

32. Rick, S. (2013). The Pain of Paying and Tightwadism: New Insights and Open Questions. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2271900>
33. Rick, S. (2018). Tightwads and spendthrifts: An interdisciplinary review. *Financial Planning Review*, 1(1–2), e1010. <https://doi.org/10.1002/cfp2.1010>
34. Rick, S. I., Cryder, C. E., & Loewenstein, G. (2008). Tightwads and spendthrifts. *Journal of Consumer Research*, 34(6), 767–782.
35. 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.
36. Soman, D. (2001). Effects of payment mechanism on spending behavior: The role of rehearsal and immediacy of payments. *Journal of Consumer Research*, 27(4), 460–474.
37. 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, 6–22.
38. Su, X. (2010). Intertemporal pricing and consumer stockpiling. *Operations Research*, 58(4-part-2), 1133–1147.
39. Taylor, S. (2019). *The psychology of pandemics: Preparing for the next global outbreak of infectious disease*. Cambridge Scholars Publishing.
40. *The Economic Times*. (2020, May). <https://economictimes.indiatimes.com/industry/cons-products/fmcg/people-resorted-to-panic-buying-during-announcement-of-lockdown-or-its-extension/articleshow/75656427.cms?from=mdr>
41. Thomas, M., Desai, K. K., & Seenivasan, S. (2011). How credit card payments increase unhealthy food purchases: Visceral regulation of vices. *Journal of Consumer Research*, 38(1), 126–139.
42. Wang, G., Zhang, Y., Zhao, J., Zhang, J., & Jiang, F. (2020). Mitigate the effects of home confinement on children during the COVID-19 outbreak. *The Lancet*, 395(10228), 945–947.
43. 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), 4139.
44. Wesseler, J. (2020). Storage policies: Stockpiling versus immediate release. *Journal of Agricultural & Food Industrial Organization*, 18(1), 1–9.
45. Xu, C., Bai, T., Iuliano, A. D., Wang, M., Yang, L., Wen, L., Zeng, Y., Li, X., Chen, T., & Wang, W. (2011). The seroprevalence of pandemic influenza H1N1 (2009) virus in China. *PLoS One*, 6(4), e17919.
46. Yoon, J., Narasimhan, R., & Kim, M. K. (2018). Retailer’s sourcing strategy under consumer stockpiling in anticipation of supply disruptions. *International Journal of Production Research*, 56(10), 3615–3635.
47. Yuen, K. F., Li, K. X., Ma, F., & Wang, X. (2020). The effect of emotional appeal on seafarers’ safety behaviour: An extended health belief model. *Journal of Transport & Health*, 16, 100810.
48. 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), 3513.
49. Zheng, R., Shou, B., & Yang, J. (2020). Supply disruption management under consumer panic buying and social learning effects. *Omega*, 102238.