
Are You a Panic Buyer? Observations from Consumers in Malaysia

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Abstract -Panic buying is an intriguing social phenomenon during a crisis. However, the existing literature primarily emphasises impulsive purchases and fails to address the objective of panic buying. A minimal study has examined panic buying, integrating variables within an S-O-R framework throughout a crisis. Therefore, this study bridges the existing gaps by examining the variables influencing panic buying behaviour in Malaysia. The quantitative and purposive sampling techniques were used to evaluate Malaysians aged 18 and above who have previously encountered panic buying. A total of 280 questionnaires were collected via distribution to social media platforms. Findings reveal that information overload impacts cyberchondria and perceived severity. Furthermore, price consciousness affects panic buying behaviour. No link is found between perceived severity and cyberchondria towards panic buying behavior. This study theoretically contributes to the literature on the variables influencing panic buying behaviour in Malaysia. This study enhances consumers' decision-making knowledge during a crisis. This study also provides insights to the government in ensuring product stability and business operators to undertake appropriate strategies pre- and post-crisis. Future research should consider the developed countries and different product categories.

Keywords – *Cyberchondria, information overload, panic buying behaviour, perceived severity, price Consciousness*

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I. Introduction

Panic buying behaviour is characterised by impulsive behaviour. It is motivated by a sense of uncertainty, in which a deliberate and informed approach is taken in disaster preparation. The emergence of panic buying is an uncommon and infrequent occurrence that poses challenges when attempting to do historical research on it. Media sometimes discourse panic buying or stockpiling as the phenomenon of heightened consumer purchase behaviour. Panic buying or stockpiling refers to acquiring and accumulating a greater quantity of essential household commodities required for daily living, presently and in anticipation of a potential scarcity in the future (Rune & Keech, 2023). In crises, panic buying has adverse effects on multiple parties involved, such as manufacturers, suppliers, retailers, consumers, and the economic system (Shri, Verma, Gupta & Kumra, 2023). For instance, the consumption habits of consumers underwent a transition, characterised by an increased preference for food products. This behaviour change can be attributed to the accumulation and heightened consumption of food items within their households (Kamarudin, Jasni & Mohamed, 2021). It might result in scarcity from increased demand. Consequently, retailers are compelled to implement quotas and raise prices.

This phenomenon can be traced back to 2019, the COVID-19 pandemic, as the world health crisis has significantly influenced people's well-being, wealth, and livelihood globally and locally (Kamarudin et al., 2021). This novel pandemic affected socially responsible corporate practices, shareholder values, customer preferences, and business confidence, mainly in developing countries (Magd & Karyamsetty, 2021). As a result, many people focused on panic buying during the COVID-19 pandemic. The academic community's study on the pandemic and its correlation with consumer behaviour, precisely corresponding to panic buying behaviour, has gained much attention from scholars across different continents, including consumer psychology, marketing, and economics (Cham, Cheng, Lee & Cheah, 2022). Scholars across the globe have shown their interest in the research being conducted among consumers from Finland (Laato, Islam, Farooq & Dhir, 2020a), Bangladesh (Laato, Islam, Islam & Whelan, 2020b), Indonesia (Hartono et al., 2020), Brazil (Lins & Aquino, 2020), and other countries (Islam et al., 2021). The topic was investigated in Japan by tracking customer purchases with empirical analysis to detect panic buying patterns for different products (Yoshizaki, de Brito Junior, Hino, Aguiar & Pinheiro, 2020). Another pandemic study on consumer emotions and purchasing behaviour was conducted in Indonesia on three distinct clusters: persistent, impressionable, and uninformed clients (Jamaludin, Mohamad, Zawawi, Ab Majid & Mohamed, 2021). Fear is expected to influence rational customer behaviour. Therefore, many have become necessary psychological coping mechanisms for panic buying. Even with the significance of comprehending panic buying behaviour, more evidence related to views from an emerging market such as Malaysia is needed. The views of Malaysian consumers still need to be improved. Analysing Malaysian consumers' panic buying behaviour is necessary to understand better consumers' psychological needs corresponding to future pandemic management.

Consumer behaviour research is populous because it is the cornerstone of any industry. Sociologists and psychologists have studied consumer behaviour trends and patterns as lifestyles change (Dulam, Furuta & Kanno, 2021). The investigation is timely and relevant given the significant impacts documented in many countries, either economically or psychologically. The findings could provide new insights to marketers and policymakers into understanding consumer psychological changes or consumption patterns (i.e. panic buying) during the pandemic. Based on prior historical instances, panic buying often occurs when public health emergencies arise (Chen, Jin, Yang & Cong, 2022; Tan, Sia & Tang, 2021; Yuen, Tan, Wong & Wang, 2022). Although panic buying behaviour is not a new phenomenon (Lins & Aquino, 2020), literature remains scarce and scattered, as argued by previous scholars (Islam et al., 2021; Yuen, Wang, Ma & Li, 2020).

Consumer behavioural changes and the nature of panic buying are unknown. Islam et al. (2021) highlighted that research on panic buying behaviour is largely inconclusive. However, recent changes in purchasing patterns can be attributed to uncertainty, insecurity, and a perceived lack of control (Mohamed et al., 2021). Therefore, panic buying in massive catastrophes or emergencies requires more attention as pandemic frequency increases (Dulam et al., 2021). Moreover, most research is qualitative, and quantitative research is rare (Chen et al., 2022). The purpose of panic buying is absent in the literature, primarily focusing on impulsive buying (Chein, Hui & Lee, 2020; Naeem, 2021a; Zaki & Ab Hamid, 2021). For example, Hawkins Stern's impulse buying inclination theory was established in 1962 (Zaki & Ab Hamid, 2021). This circumstance has brought to our attention extending the literature by examining the determinants of panic buying behaviour in Malaysia.

During the pandemic, little research has been conducted on panic buying behaviour incorporating variables using a Stimulus-Organism-Response (S-O-R) framework. This concept emphasises the hypothesis that one's environment influences one's inner state and conducts activity according to one's experience (Ali, 2021). Thus, the motivation of this study is to fill in the gaps in the literature by investigating the determinants affecting panic buying behaviour in Malaysia. These determinants could be explained using the SOR model that proposed information overload as the stimuli that influence perceived severity and cyberchondria and how these variables (price consciousness) affect panic buying behaviour. This study suggests hypotheses and develops a research model based on the SOR model. In panic buying behaviour, using the SOR model in the context of the pandemic can provide insightful findings on Malaysian consumers' behavioural changes in panic buying. The objectives of this study are twofold. Firstly, this study reviews the critical influence of information overload on perceived severity. Secondly, this study explores the impacts of perceived severity, cyberchondria, and price consciousness on panic buying behaviour. A thorough analysis is conducted on consumer panic buying behaviour in Malaysia. This study discusses the impact of the pandemic on consumer psychological state by looking at the effects on panic buying behaviour among the Malaysian population. This analysis aims identify factors contributing to consumer panic buying behaviour and measures to prevent this unusual phenomenon.

II. Literature review and hypotheses development

Stimulus-Organism-Response (SOR) model

The SOR model has been applied to panic buying behaviour studies (Islam et al., 2021). Based upon the SOR model (Mehrabian & Russell, 1974), stimuli from various aspects of the environment affect individual internal or emotional states (organism) that cause a behavioural response. For example, if a user accesses online chat and excessive usage leads to strain (e.g. organism), the user's intention to discontinue will be affected. The discontinue intention is the behavioural response or a negative outcome (Luqman, Masood, Weng, Ali & Rasheed, 2020). Past studies have used panic buying behaviour as the behavioural response or result (Akoijam, Mazumder & Sharma, 2023; Islam et al., 2021; Lavuri, Jaiswal & Thaichon, 2023). Therefore, the SOR model is suited for investigating panic buying behaviour given the influences of external stimuli. Likewise, the SOR model examines panic buying behaviour, namely, information overload consumers face when exposed to much online material, which affects their mental ability to absorb it. The limited mental capability affects the consumer's internal state. For instance, consumers evaluate the seriousness of the situation the distress in searching online for health information or cyberchondria and paying attention to the low price. Such evaluation leads to consumer behavioural responses (i.e. panic buying behaviour). A research framework is proposed in Figure 1.

Panic buying

Panic buying behaviour is a recent phenomenon that has existed for a long time (Ben Hassen et al., 2021). The literature on panic buying behaviour has highlighted several definitions. Panic buying is the term used to describe the consumer behaviour of purchasing an abnormally high quantity of items in advance of, during, or after a disaster or in expectation of significant price increases or product shortages (Loxton et al., 2020; Yuen et al., 2020). Panic purchasing is an abrupt surge in purchasing critical products above typical requirements, often triggered by a crisis such as a tragedy or epidemic, leading to a mismatch between supply and demand (Arafat et al., 2020). Similarly, panic buying is described as buying large quantities of inventory or items out of concern of scarcity or a price spike (Yuen et al., 2022). Therefore, panic buying is perceived as unplanned purchases when the customer believes the product is limited or low (Gazali, 2020).

Panic buying behaviour is a strange social habit exhibited in times of distress. In 2021, Ben Hassen et al. established panic buying behaviour as a typical response to external stress and ambiguity. Panic buying is a psychological behaviour affected by negative emotions like dread (Lins & Aquino, 2020). Such negative emotions cause anxiety by creating ambiguity and forcing people to imagine other scenarios (Ben Hassen et al., 2021). Thus far, several studies have highlighted factors associated with panic buying behaviour following the pandemic. Hartono et al. (2021) explored Indonesian consumers' shopping patterns (i.e., panic buying behaviour) during the COVID-19 pandemic. Lins and Aquino (2020) developed and tested the Panic Buying Scale among Brazilian consumers. Similarly, Yuen et al. (2020) undertook a thorough literature analysis to determine the hidden reason for panic buying. Relevant determinants related to psychology following the panic buying behaviour resulting from the pandemic (Saleem & Saleem, 2022; Sharma & Pokharel, 2022; Wu, Shen, Geng, Chen & Xi, 2023).

Information overload

Information overload refers to cognitive overload that causes an individual a stress response (Sweller, 2011; Laato et al., 2020a). Information overload occurs when a person absorbs a considerable quantity of information relatively quickly, which surpasses the individual's cognitive capacity to comprehend it (Sweller, 2011; Whelan, Islam & Brooks, 2020). When individuals have the limited mental ability to understand and process available information, it pressures them to imagine the level of seriousness related to the situation (Laato et al., 2020a).

Gazali (2020) claimed that the hysteria on digital networking is spreading quickly. The public was panicked by accurate and inaccurate information. Panic buying is encouraged by organisational communication, proof of global unrest and knowledge of risk attitude. Likewise, Google Trends data were utilised to find correlations between spikes in pandemic cases and growth in internet searching (Yoshizaki et al., 2020). Perceived information overload positively affects negative emotions and increases discontinued usage intention (Zhang, Ma, Zhang & Wang, 2020). Despite the outcomes of prior studies by Laato et al. (2020a), no correlation was found between information overload and perceived severity. During a pandemic where information is easily accessible through social media, the capability to process the information differs among individuals and may amplify perceived severity. Moreover, information overload substantially contributes to cyberchondria (Laato et al., 2020a). For example, during the 2013–2016 West African Ebola epidemic, much disinformation arose on social media, with heavy coverage of panic buying, heightening public concern and risk perceptions (Yuen et al., 2022). Cyberchondria refers to the frequent and extensive use of the internet to look for health-related information, often accompanied by emotional stress, particularly worry, that intensifies and exacerbates fears and anxiety (Jungmann & Witthöft, 2020). Similarly, Laato et al. (2020a) describe that cyberchondria is usually triggered by the pandemic infection when a person's intellectual potential to assimilate information is reduced and leads to information

overload, which will cause potential risks to individuals. Past studies have suggested that cyberchondria is associated with information overload (Laato et al., 2020a; 2020b).

H1: Information overload positively affects perceived severity.

H2: Information overload positively affects cyberchondria.

Perceived severity

According to Ling, Kothe and Mullan (2019), perceived severity could be explained as the personal evaluation of the seriousness of a circumstance related to well-being. Perceived severity could be defined as 'the seriousness of the overall situation', as Laato et al. (2020a, p.3) stated. Yuen, Leong, Wong and Wang (2021) discovered that perceived severity occurs when people are more prone to irrational thoughts when perceiving risk as higher than usual. In recent research by Cham et al. (2022), perceived severity has grown in importance in consumer study and has become a significant determinant of buying patterns and judgement. Consumers' cognitive orientation or perspective of vulnerability to possible uncertainty and health threats during the pandemic is prioritised by perceived risk. Therefore, perceived severity is an essential determinant for panic buying behaviour during the pandemic. During the pandemic appeared, consumers viewed the current environment as more restricted and severe. The consumer felt that it posed a negative impact and severe threat to individuals when they were not free to move around, such as shopping for groceries, and the inclination to participate in panic buying became significant. This circumstance led to panic buying and emptying supermarket shelves (Gazali, 2020). As a result, perceived severity boosts the desire to purchase uncommonly (Laato et al., 2020a). In this context, perceived severity affects panic buying behaviour.

H3: Perceived severity positively affects panic buying.

Cyberchondria

Cyberchondria is a complex concept comprising nervousness and compulsiveness (McElroy & Shevlin, 2014), observed through individual behaviours (Parveen, Ajina, Habbas, Al-Faryan & Khaled, 2022). This construct involves engaging in repetitive and extensive online health research, experiencing adverse feelings or stress related to online health research, and consequently neglecting others (McElroy & Shevlin, 2014). Cyberchondria is linked to the cyber world. It is described as distress, nervousness and fear when exposed to an online search for health-related information (Starcevic, Schimmenti, Billieux & Berle, 2021). Individuals could be endangered (Mathes, Norr, Allan, Albanese & Schmidt, 2018; Laato et al., 2020a), which may be problematic (Vismara et al., 2020). Laato et al. (2020a) stated that a person who has spent too much time searching health information online may develop a feeling of fear and make an unusual purchase.

H4: Cyberchondria positively affects panic buying.

Price Consciousness

The determination of consumer purchase behaviour is heavily influenced by price (Mohamed et al., 2021). A consumer who pays attention to low price only purchase products or goods when the price is low (Lichtenstein, Ridgway & Netemeyer, 1993). A study by Chein et al. (2020) towards Malaysian consumers reveals that 53% of respondents are low-income. Therefore, price-sensitive consumers are more inclined to make purchases when prices are lower by a small amount. Gazali (2020) also discovers that pricing affects how people buy things and assesses costs as high, low or fair in the same year. Thus, a consumer is suggested to pay a lower price or have more price consciousness. The propensity for panic buying has decreased since and during the pandemic. However, some product prices are high due to limited supply and out-of-stock. Thus, price consciousness negatively affects panic buying behaviour. Wu, Xin, Li, Yu and Guo (2021) concur that price consciousness affects impulse buying behaviour. However, some studies have argued that people intend to buy even if the price is high because of the fear of out-of-stock items (Naeem, 2021b), such as necessary products like toilet paper during the pandemic. Nonetheless, this study we argued that price-conscious consumers have a lesser propensity for panic purchases after the COVID-19 pandemic (Abdul Rashid et al., 2023). However, Malaysia has declared the pandemic to be in the endemic phase (Abdul Rashid et al., 2023). Thus, the fear of out-of-stock items might need to be more significant to trigger consumer panic buying.

H5: Price consciousness negatively affects panic buying.

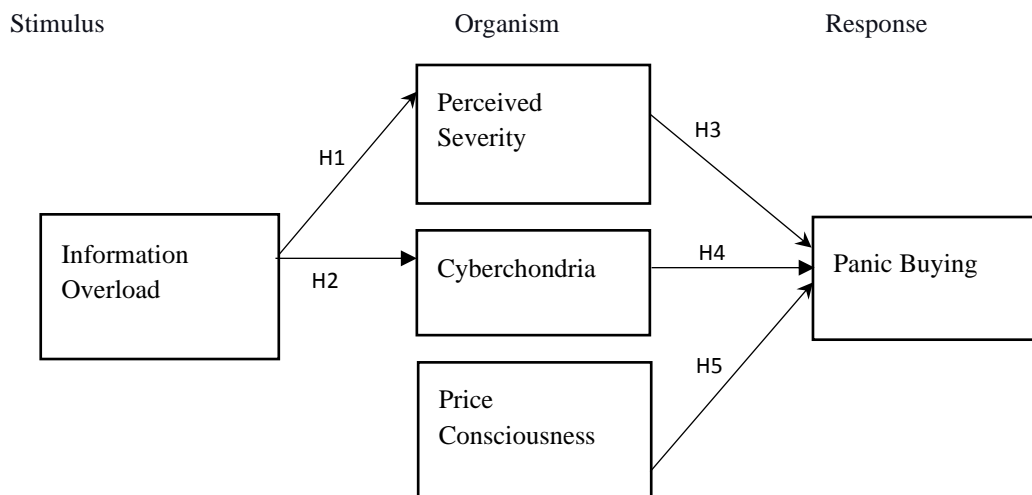


Figure 1: Research framework

III. Research methodology and data analysis

This quantitative study uses an online survey method to investigate the hypotheses presented in Figure 1. Specifically, this study examined the relationship of the proposed stimulus on the organism that led to panic buying behaviour in Malaysia. A purposive sampling method is adopted where Malaysian adults above 18 years old who have experienced panic buying before are examined. The target respondents will go through the prerequisite questions of the questionnaire to filter whether they are qualified to participate in this study survey. Moreover, an explanation of the term panic buying is stated clearly in the survey to enhance clarity and understanding.

The questionnaire consists of three components. Prerequisite questions make up the first section to screen the accurate respondents' validity of Malaysians who have experienced panic buying behaviour before in Malaysia. The second section comprised demographic questions related to the respondents, whereas the third section comprised questions about the factors influencing panic buying behaviour. The last section concerns marker variables (Simmering, Fuller, Richardson, Ocal & Atinc, 2015).

The factors in this study were measured using a five-point Likert scale arranged from 1 to 5 (strongly disagree to strongly agree), including information overload, perceived severity, cyberchondria, and price consciousness. In contrast, the seven-point Likert scale, from 1 (strongly disagree) to 7 (strongly agree), was utilised to calculate the dependent variable panic buying. Different Likert scales were used to minimise the common method variance in this study, including a five-point Likert scale for exogenous variables and a seven-point Likert scale for endogenous variables (Malhotra, Nunan & Birks, 2017). All the measurement items used are adopted and adapted from past empirical studies. Before distributing the survey, we piloted the survey with 30 respondents—minor corrections in the wording for a few questions to improve clarity. Subsequently, 280 returned questionnaires were obtained through a Google form survey shared on social media. As stated in previous scholarly work, this sample size is deemed acceptable for PLS analysis on the 10 times rule guidelines (Barclay, Higgins & Thompson, 1995; Chin & Newsted, 1999). Data were collected from April to May 2021, and the data were analysed by utilising Smart PLS.

IV. Empirical results

Descriptive analysis results

Table 1 tabulates the demographics of the respondent who participated in the survey. The descriptive analysis shows that the study received slightly higher female respondents (68.6%) than the male respondent (31.4%). Moreover, approximately half of the respondents earn an income of RM5000 and above, and 60% of the respondents are from a bachelor's degree educational background.

Table 1: Profile of respondents

Measures	Items	Frequency	Percentage (%)
Gender	Male	88	31.4%
	Female	192	68.6%
Age	18-29	109	38.9%
	30-39	58	20.7%
	40-49	54	19.3%
	above 50	59	21.1%
Education	Secondary Education and below	11	3.9%
	Pre-U or Diploma	26	9.3%
	Bachelor's degree	168	60.0%
	Postgraduate qualifications	75	26.8%
Income	<RM2000	24	8.6%
	RM2001-RM5000	106	37.9%
	Above RM5000	150	53.6%

Convergent Validity

A convergent validity test is commonly used to assess the validity and reliability of the data collected. It included composite reliability, individual indicator reliability, and average variance extracted. In a study done by Hair, Hult, Ringle and Sarstedt (2017), the data should show composite reliability above 0.70, factor loading above 0.50, and AVE above 0.50 to deliver a precise model. Table 2 shows that the data in this study demonstrated convergent validity and internal consistency. The standard deviation, variance, and mean of the data collected are also clearly listed. The items of information overload, perceived severity and cyberchondria were adapted and adopted from Laato et al. (2020a). In contrast, the items of price consciousness were adapted and adopted from Wu et al. (2021). Lastly, panic-buying items were adopted from a study by Lins and Aquino (2020). Based on Hair et al. (2017), a standard deviation used to measure the average distance between the set and mean values has a concept that a low-value standard deviation will create more stable and reliable data due to the data being distributed normally.

Table 2: Convergent validity results

Latent Variable & Measurement Item	Loading	CR ^a	AVE ^b	Mean	Standard Deviation
Information Overload					
IO1:	0.658	0.829	0.621	3.532	0.952
IO2:	0.870			3.646	0.930
IO3:	0.822			3.636	0.900
Perceived Severity					
PS1:	0.865	0.880	0.786	3.704	0.895
PS2:	0.908			3.750	1.015
Cyberchondria					
C1:	0.853	0.858	0.669	3.771	0.947
C2:	0.866			3.775	0.954
C3:	0.729			3.707	1.025
Price Consciousness					
PC1:	0.824	0.913	0.677	3.975	0.704
PC2:	0.883			3.861	0.836

PC3:	0.825			3.879	0.922
PC4:	0.800			3.886	0.842
Panic buying					
PB1:	0.777	0.909	0.589	5.204	1.091
PB2:	0.831			5.254	1.197
PB3:	0.716			5.25	0.99
PB4:	0.785			5.2	1.064
PB5:	0.827			5.225	1.138
PB6:	0.770			5.275	1.137
PB7:	0.653			5.275	1.072

*composite reliability, ^b average extracted variance

Discriminant Validity

Discriminant validity explains how distinct each construct is from the others through the analysis using cross-loadings and the heterotrait-monotrait ratio (HTMT) of associations. The indicator's outer loading on the conceptual framework must be higher than any cross-loadings to demonstrate discriminant validity. Table 3 shows the external loading of the construct. Henseler, Ringle and Sarstedt (2015) conducted a study and attributed that HTMT is used to evaluate discriminant validity in PLS, one of the essential components of model assessment. The HTMT criterion outperforms traditional approaches to discriminant validity assessment, such as Fornell-Larcker's criterion. The result shows that all factors are less than 0.85, suggesting that discriminant validity is established (Kline, 2015). The HTMT ratio is shown in Table 3.

Table 3: Result of HTMT criterion

Latent Variable	C	IO	PB	PC	PS
C					
IO	0.639				
PB	0.063	0.091			
PC	0.132	0.077	0.162		
PS	0.125	0.179	0.099	0.061	

*C: Cyberchondria, IO: Information Overload, PB: Panic Buying, PC: Price Consciousness, PS: Perceived Severity

Common Method Variance

Common method variance analysis was also included to ensure no biases (Simmering et al., 2015). Attitude toward colour blue items is designed in the last part of the questionnaire to provide evaluative and affective elements that may evoke responses comparable to the required reactions to other measures, making this marker correspondingly vulnerable to common method variance. According to Malhotra et al. (2017), the increment R^2 should be less than 10% (i.e. 7.0% in this study) to justify that no common variance was found in this study.

Hypothesis testing

The bootstrapping method in PLS was used for hypothesis testing. A minimum of 5000 bootstrap samples was used in a one-tailed test with a significance level of 0.05. The output is shown in Table 4.

Table 4: Path coefficient and hypotheses testing

Hypothesis	Relationship	Std Dev	Path Coefficient	F ²	T Value	P-Value	Decision
Direct Effect							
H1	IO -> PS	0.064	0.120	0.015	1.860	0.031	Supported
H2	IO -> C	0.045	0.497	0.329	11.096	0.000	Supported
H3	PS -> PB	0.071	-0.083	0.007	1.176	0.120	Not Supported
H4	C -> PB	0.062	0.041	0.002	0.659	0.255	Not Supported

H5	PC -> PB	0.06	-0.152	0.024	2.542	0.006	Supported
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***p < 0.001 ** p<0.01 *p< 0.05

*(Based on a one-tailed test with 5000 bootstrapping)

*PB: Panic Buying, C: Cyberchondria, IO: Information Overload, PC: Price Consciousness, PS: Perceived Severity

Based on the data analysis above, information overload has the most substantial positive relationship to the cyberchondria ($\beta = 0.497$, $p < 0.001$) and to the perceived severity as the second ($\beta = 0.120$, $p < 0.05$). This finding has proven that H1 and H2 are supported. Price consciousness negatively correlates with panic buying ($\beta = -0.152$, $p < 0.01$), which indicates H5 is supported. However, perceived severity ($\beta = -0.083$, $p < 0.05$) and cyberchondria ($\beta = 0.041$, $p < 0.05$) reveal no substantial connection with panic buying. Therefore, H1, H2, and H5 are supported by five hypotheses, while H3 and H4 are not supported.

V. Discussion

The significance of this subject arises from the alteration in behaviour caused by disrupting or detrimental events. In this context, the pandemic caused social unrest and worry that crossed geographical boundaries, disrupting consumers' rationality (Bikar, Rathakrishnan, Kamaluddin, Che Mohd Nasir & Mohd Nasir, 2021; Cham et al., 2022). The current study aligns with the finding that information overload and perceived severity have a positive and significant link. Therefore, H1 is supported. The pandemic dramatically impacted people's lifestyles. During the pandemic, the media focused on stockpiles and panic purchasing because of catastrophe and tragedy-associated consumerism. As a result, panic buying is a common human reaction (Ben Hassen et al., 2021). When consumers are faced with many facts about disasters that they can process daily in various ways, the probability is that they perceive the situation to be getting more severe. For example, when the information is related to an increasing daily trend, confirmed positive cases for the pandemic. Moreover, hashtags like '#toilet-paper-gate' and '#toilet-paper-crisis' are being used to show consumers' panic amid the coronavirus outbreak. Information exchange would be enhanced, increasing sensationalism and disinformation about the pandemic (Naeem, 2021a). By having this information overload, the consumer may perceive the situation to be getting more severe; thus, the perception of severity is more robust, as identified in this study. This finding is consistent with earlier research, such as Zhang et al. (2020), in which perceived information overload causes negative emotions. Another important finding is that information overload has the most decisive influence on cyberchondria. Thus, H2 is supported. This result matched earlier studies' results (Laato et al., 2020a; 2020b). Consumers can develop a cohesive picture of the situation when they acquire excessive information on the pandemic influencing anxiety and depression (i.e., cyberchondria).

This study did not discover a significant link between perceived severity and panic buying behaviour compared to predictions. The result of the current research does not support the previous analysis. Consequently, H3 is not supported. This finding contrasts with past studies, such as Laato et al. (2020a), in which perceived severity influences unusual purchase behaviour. A possible explanation for this may be that a consumer perceives that the pandemic did not have much of a negative impact or did not pose any serious threat because the pandemic like floods, would be over in one day. Moreover, government and non-governmental organisations usually help victims with funds, food and household goods.

This study has been unable to demonstrate that cyberchondria is related to panic buying behaviour. As a result, H4 is not supported. Furthermore, although much information has been received and processed by consumers, the feeling of anxiety is not pertinent among the customers. As a result, cyberchondria is not correlated with panic buying behaviour.

Price consciousness shows a negative and substantial association with panic buying behaviour. Thus, H5 is supported. Wu et al. (2021) stated that price consciousness affects impulse buying behaviour. This statement explains that when customers focus on paying low prices, the probability of engaging in panic buying behaviour is expected. For instance, finding a low cost for critical supplies such as face masks or hand sanitisers in the initial phases of the pandemic outbreak is impossible due to limited supply and high prices.

VI. Conclusion

This study contributed a few theoretical contributions overall. First, this study can extend the existing research of Laato et al. (2020a) by adding the new variable of price consciousness. Our research advances the unusual purchase intention with the proposed SOR model by focusing on panic buying behaviour during the pandemic. In this study, the SOR model provided good theoretical explanations of how information overload acts as the stimulus in the model, which implies the arousal of perceived severity and different consumer behavioural outcomes. Lastly, this study confirmed the theory from the previous research to indicate that the impact of

information overload as an environmental trigger on prompting panic buying behaviour is exacerbated by consumers' panic during the pandemic. This circumstance could provide brand-new consumer insights on panic buying during the pandemic. Furthermore, the study adds that consumer worry during natural catastrophes significantly impacts panic buying behaviour. This study can also contribute to developing scholarly research on the SOR model.

The rapid global proliferation of the pandemic has impacted people's consumption and production habits. Thus, this study is critical for the industrial sector to adapt to customer trends and comprehend customer buying behaviour better. This study is crucial in raising the public's awareness by emphasising the seriousness of the situation to people. By examining the stimuli and determinants that prompt panic buying, consumers may enhance their understanding why they participate in such conduct. This consciousness may assist consumers in making more knowledgeable and logical choices during disasters or instability. Moreover, by comprehending the features that impact panic buying behaviour, business operators can predict abnormal consumer behaviour amid a pandemic or crisis by monitoring what other types of behaviours people engage in through this research. At the same time, this study can create awareness for the government to take measures to ensure product price stability for emergencies like pandemics. People can calm fears if they believe things are under control. This study could also help the economists provide valuable insights into how the consumers and the whole industry are affected during any pandemic recovery plan.

Despite the study's promising results, future research may consider several limitations. This study is conducted solely in Malaysia. Future research may be conducted in multiple countries to have better-generalised outcomes as developed and developing countries differ. Moreover, this survey should have specified the sorts of things customers purchase. More research is required to understand whether types of products impact panic buying behaviour. Different product categories may have an extra level of impact. Panic buying products like a face mask for health protection or food may deliver different results.

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Conflict of Interest Statement

The authors declare that they have no conflict of interest.

Author's Contribution

YC contributed to the conceptualisation of the study and design. Methodology, data collection and analysis by YC. YC wrote the original draft. YN and CN review and editing. All authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

References

- Abdul Rashid, M. R., Syed Mohamad, S. N., Tajjudin, A. I. A., Roslan, N., Jaffar, A., Mohideen, F. B. S., Addnan, F. H., Baharom, N., & Ithnin, M. (2023). COVID-19 Pandemic Fatigue and Its Sociodemographic, Mental Health Status, and Perceived Causes: A Cross-Sectional Study Nearing the Transition to an Endemic Phase in Malaysia. *International Journal of Environmental Research and Public Health*, 20(5), 4476. <https://doi.org/10.3390/ijerph20054476>
- Akoijam, S. L., Mazumder, S. B., & Sharma, L. S. (2023). Panic buying in the second wave of COVID-19: the moderating effect of past buying experience. *Journal of Asia Business Studies*, Vol. ahead-of-print No. ahead-of-print.
- Ali, A. (2021). A conceptual study on the influence of social network services and electronic word of mouth on food purchase intention during a pandemic. *Global Business & Management Research*, 13(4), 92-103.
- Arafat, S. Y., Kar, S. K., Menon, V., Kaliamoorthy, C., Mukherjee, S., Alradie-Mohamed, A., Sharma, P., Marthoenis, M., & Kabir, R. (2020). Panic buying: An insight from the content analysis of media reports during the COVID-19 pandemic. *Neurology, Psychiatry and Brain Research*, 37, 100-103. <https://doi.org/10.1016/j.npbr.2020.07.002>
- Barclay, D., Higgins, C., & Thompson, R. (1995). The partial least squares (PLS) approach to causal modeling: Personal computer adoption and use, as an illustration. *Technology Studies*, 2(2), 285-309.

- Ben Hassen, T., El Bilali, H., Allahyari, M. S., Berjan, S., Karabašević, D., Radosavac, A., Dašić, G., & Dervida, R. (2021). Preparing for the worst? Household food stockpiling during the second wave of COVID-19 in Serbia. *Sustainability*, *13*(20), 11380. <https://doi.org/10.3390/su132011380>
- Bikar, S. S., Rathakrishnan, B., Kamaluddin, M. R., Che Mohd Nasir, N., & Mohd Nasir, M. A. (2021). Social sustainability of post-disaster: how teachers enable primary school students to be resilient in times of Ranau earthquake. *Sustainability*, *13*(13), 7308. <https://doi.org/10.3390/su13137308>
- Cham, T. H., Cheng, B. L., Lee, Y. H., & Cheah, J. H. (2022). Should I buy or not? Revisiting the concept and measurement of panic buying. *Current Psychology*, 1-21. <https://doi.org/10.1007/s12144-022-03089-9>
- Chein, T. S., Hui, O. T., & Lee, C. J. (2020). Factors affecting impulsive buying behaviour—evidence from Malaysia. *Global Business & Management Research*, *12*(2), 1-14.
- Chen, T., Jin, Y., Yang, J., & Cong, G. (2022). Identifying emergence process of group panic buying behavior under the COVID-19 pandemic. *Journal of Retailing and Consumer Services*, *67*, 102970. <https://doi.org/10.1016/j.jretconser.2022.102970>
- Chin, W. W., & Newsted, P. R. (1999). *Structural equation modelling analysis with small samples using partial least squares*. In Statistical strategies for small sample research, edited by R. H. Hoyle, 307-341. Thousand Oaks: CA: Sage Publications.
- Dulam, R., Furuta, K., & Kanno, T. (2021). Consumer panic buying: Realizing its consequences and repercussions on the supply chain. *Sustainability*, *13*(8), 4370. <https://doi.org/10.3390/su13084370>
- Gazali, H. M. (2020). The COVID-19 pandemic: Factors triggering panic buying behaviour among consumers in Malaysia. *Labuan Bulletin of International Business and Finance (LBIBF)*, *18*(1), 84-95.
- Hair, J., Hult, T. G. M., Ringle, C. M., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. 2nd edition. SAGE Publications, Inc.
- Hartono, A., Ishak, A. I., Abdurrahman, A., Astuti, B., Marsasi, E. G., Ridanasti, E., Roostika, R., & Muhammad, S. (2021). COVID-19 pandemic and adaptive shopping patterns: An insight from Indonesian consumers. *Global Business Review*, 09721509211013512. <https://doi.org/10.1177/09721509211013512>
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modelling. *Journal of the Academy of Marketing Science*, *43*(1), 115–135. <https://doi.org/10.1007/s11747-014-0403-8>
- Islam, T., Pitafi, A. H., Arya, V., Wang, Y., Akhtar, N., Mubarik, S., & Liang, X. (2021). Panic buying in the COVID-19 pandemic: A multi-country examination. *Journal of Retailing and Consumer Services*, *59*, 102357.
- Jamaludin, H., Mohamad, M., Zawawi, Z. A., Ab Majid, N. F. N., & Mohamed, B. (2021). The first moratorium in Malaysia: How it works? An exploratory study. *Global Business & Management Research*, *13*(4s), 954-962.
- Jungmann, S. M., & Witthöft, M. (2020). Health anxiety, cyberchondria, and coping in the current COVID-19 pandemic: Which factors are related to coronavirus anxiety?. *Journal of Anxiety Disorders*, *73*, 102239. <https://doi.org/10.1016/j.janxdis.2020.102239>
- Kamarudin, S. N., Jasni, N. S., & Mohamed, Z. S. S. (2021). The implications of Covid-19 pandemic on consumer burden in Malaysia: an analysis. *Journal of International Business, Economics and Entrepreneurship (JIBE)*, *6*(2), 82-95. <https://doi.org/10.24191/jibe.v6i2.16682>
- Kline, R. B. (2015). *Principles and practice of Structural Equation Modelling*. New York: Guilford Publications.
- Laato, S., Islam, A. N., Farooq, A., & Dhir, A. (2020a). Unusual purchasing behavior during the early stages of the COVID-19 pandemic: The stimulus-organism-response approach. *Journal of Retailing and Consumer Services*, *57*, 102224. <https://doi.org/10.1016/j.jretconser.2020.102224>
- Laato, S., Islam, A. N., Islam, M. N., & Whelan, E. (2020b). What drives unverified information sharing and cyberchondria during the COVID-19 pandemic?. *European Journal of Information Systems*, *29*(3), 288-305. <https://doi.org/10.1080/0960085X.2020.1770632>
- Lavuri, R., Jaiswal, D., & Thaichon, P. (2023). Extrinsic and intrinsic motives: panic buying and impulsive buying during a pandemic. *International Journal of Retail & Distribution Management*, *51*(2), 190-204. <https://doi.org/10.1108/IJRDM-01-2022-0010>
- Lichtenstein, D. R., Ridgway, N. M., & Netemeyer, R. G. (1993). Price perceptions and consumer shopping behavior: A field study. *Journal of Marketing Research*, *30*(2): 234-245. <https://doi.org/10.1177/002224379303000208>
- Ling, M., Kothe, E. J., & Mullan, B. A. (2019). Predicting intention to receive a seasonal influenza vaccination using protection motivation theory. *Social Science & Medicine*, *233*(14), 87–92. <https://doi.org/10.1016/j.socscimed.2019.06.002>

- Lins, S., & Aquino, S. (2020). Development and initial psychometric properties of a panic buying scale during COVID-19 pandemic. *Heliyon*, 6(9), e04746. <https://doi.org/10.1016/j.heliyon.2020.e04746>
- Loxton, M., Truskett, R., Scarf, B., Sindone, L., Baldry, G., & Zhao, Y. (2020). Consumer behaviour during crises: Preliminary research on how coronavirus has manifested consumer panic buying, herd mentality, changing discretionary spending and the role of the media in influencing behaviour. *Journal of Risk and Financial Management*, 13(8), 166. <https://doi.org/10.3390/jrfm13080166>
- Luqman, A., Masood, A., Weng, Q., Ali, A., & Rasheed, M. I. (2020). Linking excessive SNS use, technological friction, strain, and discontinuance: The moderating role of guilt. *Information Systems Management*, 37(2), 94-112. <https://doi.org/10.1080/10580530.2020.1732527>
- Magd, H., & Karyamsetty, H. (2021). Assessing the significance of corporate social responsibility actions to achieve sustainable business and organizational performance during the COVID-19 pandemic in Oman. *Global Business & Management Research*, 13(3), 10-24.
- Malhotra, N. K., Nunan, D., & Birks, D. (2017). *Marketing research: An applied approach*. 6th edition. New Jersey: Pearson.
- Mathes, B. M., Norr, A. M., Allan, N. P., Albanese, B. J., & Schmidt, N. B. (2018). Cyberchondria: Overlap with health anxiety and unique relations with impairment, quality of life, and service utilization. *Psychiatry Research*, 261(3), 204-211. <https://doi.org/10.1016/j.psychres.2018.01.002>
- McElroy, E., & Shevlin, M. (2014). The development and initial validation of the cyberchondria severity scale (CSS). *Journal of Anxiety Disorders*, 28(2), 259-265. <https://doi.org/10.1016/j.janxdis.2013.12.007>
- Mehrabian, A., & Russell, J. A. (1974). *An approach to environmental psychology*. Cambridge: M. I. T Press.
- Mohamed, R. N., Sawangchai, A., Rusli, M. S., Mohd, R., Prasamkam, H., Md Elias, N. L., & Mahmood, A. N. (2021). The implications of Covid-19 pandemic on consumer burden in Malaysia: an analysis. *Journal of International Business, Economics and Entrepreneurship (JIBE)*, 6(2), 82-95. <https://ir.uitm.edu.my/id/eprint/71586>
- Naeem, M. (2021a). Do social media platforms develop consumer panic buying during the fear of Covid-19 pandemic. *Journal of Retailing and Consumer Services*, 58, 102226. <https://doi.org/10.1016/j.jretconser.2020.102226>
- Naeem, M. (2021b). Understanding the customer psychology of impulse buying during COVID-19 pandemic: Implications for retailers. *International Journal of Retail & Distribution Management*, 49(3), 377-393. <https://doi.org/10.1108/IJRDM-08-2020-0317>
- Parveen, H., Ajina, A. S., Habbas, N. S., Al-Faryan, M. A. S., & Khaled, A. S. (2022). Buy now or regret later: social media-induced panic buying of medical supplies during COVID-19. *Innovative Marketing*, 18(3), 197-206. [https://doi.org/10.21511/im.18\(3\).2022.17](https://doi.org/10.21511/im.18(3).2022.17)
- Rune, K. T., & Keech, J. J. (2023). Is it time to stock up? Understanding panic buying during the COVID-19 pandemic. *Australian Journal of Psychology*, 75(1), 2180299. <https://doi.org/10.1016/j.eswa.2020.114360>
- Saleem, S., & Saleem, T. (2022). Disaster, e-commerce, and panic buying. In *Panic Buying and Environmental Disasters: Management and Mitigation Approaches* (pp. 249-265). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-031-10278-3_14
- Sharma, P., & Pokharel, M. (2022). Social Structure, Security, Disaster, and Panic Buying. In *Panic Buying and Environmental Disasters: Management and Mitigation Approaches* (pp. 61-74). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-031-10278-3_4
- Shri, C., Verma, A., Gupta, G., & Kumra, R. (2023). Prioritizing Factors of Panic Buying Behaviour: A Neutrosophic Analytical Approach. *IIM Kozhikode Society & Management Review*, 22779752231166186. <https://doi.org/10.1177/22779752231166186>
- Simmering, M. J., Fuller, C. M., Richardson, H. A., Ocal, Y., & Atinc, G. M. (2015). Marker variable choice, reporting, and interpretation in the detection of common method variance: A review and demonstration. *Organizational Research Methods*, 18(3), 473-511. <https://doi.org/10.1177/1094428114560023>
- Starcevic, V., Schimmenti, A., Billieux, J., & Berle, D. (2021). Cyberchondria in the time of the COVID-19 pandemic. *Human Behavior and Emerging Technologies*, 3(1), 53-62. <https://doi.org/10.1002/hbe2.233>
- Sweller, J. (2011). *Cognitive load theory*. In Psychology of learning and motivation, edited by Mestre, J. P. and Ross, B. H., 37-76. Academic Press.
- Tan, K. L., Sia, J. K. M., & Tang, D. K. H. (2021). To verify or not to verify: using partial least squares to predict effect of online news on panic buying during pandemic. *Asia Pacific Journal of Marketing and Logistics*, 34(4), 647-668. <https://doi.org/10.1108/APJML-02-2021-0125>

- Tseng, M. L., Ardaniah, V., Bui, T. D., Ali, M. H., & Chiu, A. S. (2020). Circular economy needs the resilient systems in COVID-19 pandemic. *Jurnal Pengurusan*, 59(1), 1-4. <https://doi.org/10.17576/pengurusan-2020-59-01>
- Vismara, M., Caricasole, V., Starcevic, V., Cinosi, E., Dell'Osso, B., Martinotti, G., & Fineberg, N. A. (2020). Is cyberchondria a new transdiagnostic digital compulsive syndrome? A systematic review of the evidence. *Comprehensive Psychiatry*, 99, 152167. <https://doi.org/10.1016/j.comppsy.2020.152167>
- Whelan, E., Islam, A. N., & Brooks, S. (2020). Applying the SOBC paradigm to explain how social media overload affects academic performance. *Computers & Education*, 143, 103692. <https://doi.org/10.1016/j.compedu.2019.103692>
- Wu, S., Shen, Y., Geng, Y., Chen, T., & Xi, L. (2023). Consumer Panic Buying Behavior and Supply Distribution Strategy in a Multiregional Network after a Sudden Disaster. *Systems*, 11(2), 110. <https://doi.org/10.3390/systems11020110>
- Wu, Y., Xin, L., Li, D., Yu, J., & Guo, J. (2021). How does scarcity promotion lead to impulse purchase in the online market? A field experiment. *Information & Management*, 58(1): 103283. <https://doi.org/10.1016/j.im.2020.103283>
- Yoshizaki, H. T., de Brito Junior, I., Hino, C. M., Aguiar, L. L., & Pinheiro, M. C. R. (2020). Relationship between panic buying and per capita income during COVID-19. *Sustainability*, 12(23), 9968. <https://doi.org/10.3390/su12239968>
- 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. <https://doi.org/10.3390/ijerph17103513>
- Yuen, K. F., Leong, J. Z. E., Wong, Y. D., & Wang, X. (2021). Panic buying during COVID-19: Survival psychology and needs perspectives in deprived environments. *International Journal of Disaster Risk Reduction*, 62, 102421. <https://doi.org/10.1016/j.ijdrr.2021.102421>
- Yuen, K. F., Tan, L. S., Wong, Y. D., & Wang, X. (2022). Social determinants of panic buying behaviour amidst COVID-19 pandemic: The role of perceived scarcity and anticipated regret. *Journal of Retailing and Consumer Services*, 66, 102948. <https://doi.org/10.1016/j.jretconser.2022.102948>
- Zaki, H. O., & Ab Hamid, S. N. (2021). The influence of time availability, happiness, and weariness on consumers' impulse buying tendency amidst Covid-19 partial lockdown in Malaysia. *Jurnal Pengurusan*, 62(1), 81-90. <https://doi.org/10.17576/pengurusan-2021-62-07>
- Zhang, X., Ma, L., Zhang, G., & Wang, G. S. (2020). An integrated model of the antecedents and consequences of perceived information overload using WeChat as an example. *International Journal of Mobile Communications*, 18(1), 19-40. <https://doi.org/10.1504/IJMC.2020.104419>