




Should I buy or not? Revisiting the concept and measurement of panic buying

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Abstract

Following various precautionary measures as executed by the government to curb the transmission of COVID-19, erratic changes in the form of temporary lockdowns and movement restrictions have created an emergency phenomenon—panic buying. While such consequence has emerged as a timely and relevant topic, reviewed literature indicate an apparent oversight for portraying panic buying through the perspectives of impulsive and compulsive consumptions. Given the gap in the association between panic buying and consumers' emotional aspects within the context of the COVID-19 pandemic, this study aspires to develop a contemporary measurement that accurately defines panic buying as a research variable. A combined methodology was hereby adopted, with the employment of qualitative inquiries towards the scale development of panic buying. Following this, quantitative data as collected from a total sample of 600 respondents through an online survey was analysed via both SPSS and AMOS statistical software towards scale assessment and hypothesis testing. Obtained findings uncovered the direct significance of both personal (fear, perceived risk, and perceived scarcity) and social (word-of-mouth and social media) factors on panic buying during the pandemic, whilst having indirect significance on the ensuing post-purchase regret. Impulsivity was further confirmed to exert a substantial moderating impact on the correlation between panic consumption and post-purchase emotional distress. Implications of the study are ultimately discussed.

Keywords Consumer behaviour · COVID-19 · Impulsivity · Panic buying · Personal factors · Social factors

Introduction

The coronavirus outbreak was announced as a public health emergency of international concern (PHEIC) by the World Health Organisation (WHO) as of January 2020. Outstripping previous outbreaks of swine flu in 2009, polio in 2014, Ebola in Western Africa in the same year, and the Zika virus from 2015 to 2016, the new virus was being declared as a worldwide pandemic in March of 2020 due to its proliferating infection rate at the global scale. Its severity was essentially realized following a whopping 55 million reported international infections with more than 1.33 million associated casualties (New Straits Times, 2020). Amid the continuous scientific odyssey in search of medical resolutions, multiple nations practised intense vigilance for a possible third wave of the Covid-19 outbreak by the end of 2020.

Given the scale of this public hazard, regulatory measures with the like of social distancing and mandatory national lockdowns were further enforced by governmental and authorised parties across countries in fulfilling the purpose of virus containment. Likewise, the Malaysian

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government has required its public to continuously observe social distancing, update their status via the tracking app (i.e., MySejahtera) on a timely basis, mandate the wearing of face masks in public, avoid mass gathering and crowded locations, without overlooking the importance of personal hygiene. The sudden invasion of the unavoidable outbreak has, therefore, preceded disrupted regularities via necessary changes like remote working, online education, social transformation, economic reformation as well as virtual communication (Cham et al., 2021a, b). Notable mainstream and social media outlets have concurrently demonstrated market unpreparedness in the face of pre-pandemic existential threats by observable norms of panic buying. Stockpiling of common items ranging from canned food, pasta, rice, flour, and yeast to hand sanitisers and other hygienic items like toilet paper subsequently befallen upon market perceptions on an extended movement restriction order.

Nevertheless, such impulsive consumption was apparently short-lifted, with consumers regaining their pre-pandemic levels of consumption upon reaching situational familiarity (Forani, 2020). Such transformative endeavours, thus, raised ambiguities in market perceptions, with manifesting fundamental questions of: 1) whether panic buying is just a transient behaviour, without underlying alteration to the stability of consumers' buying psychology; and 2) the likelihood in which pandemic-driven shopping habits and changes as introduced by business operators would persist in the post-pandemic scenario.

From the academic perspective, panic buying has received immense attention in various scholarly disciplines, such as consumer psychology (Kaur & Malik, 2020), marketing (He & Harris, 2020), and economics (Yoshizaki et al., 2020). However, preliminary reviewed literature have confirmed the new-fangled nature of most related studies, which left significant gaps concerning the operationalisation of the proposed construct to be filled. In particular, limited studies have put forward feasible measurements for panic buying as a research variable (Ahmad & Murad, 2020; Islam et al., 2021; Lins & Aquino, 2020; Tan et al., 2022). Moreover, the role of social media as a potential driver for panic buying during crisis moments remains relatively unexplored, despite its recognition as a primary channel of modern communication (Islam et al., 2021; Naeem, 2020a). These inadequacies signify an explorative gap that warrants further attention. Acknowledging the disastrous health-related crisis plaguing the world, the current study, therefore, sought to propose a theoretical framework aimed towards developing a usable measurement scale for consumers' panic buying particularly in the current pandemic context. It is anticipated that the new measurement scale will be able to address the shortcomings of the existing measurement scale for panic buying, while allowing gauging the variable in a more conclusive manner.

The importance of this topic is rooted in the behavioural shift caused by disruptive or destructive incidents. In this regard, the impact of the pandemic is evident in both societal unease and anxiety that traversed geographical boundaries (Forbes, 2012), consequently interrupting consumers' cognitive rationality. The resulting impulsive consumption and extreme panic buying are motivated by their need to retain perceived dominance in that aspect of life (Wang et al., 2020). With this, the recent groundwork has highlighted that the reasons behind such behavioural irregularity are individual perceptions of existing threats, resource deficiencies, future uncertainties, coping mechanisms, and societal pressure (Yuen et al., 2020). A contrasting outlook was offered by Loxton et al. (2020), who emphasised the catalytic influence of herd mentality or social factors in encountering distressing incidents, as well as the repercussions of communication media. This context clearly exemplifies the case of "scarcity heuristics", where certain ordinary products (e.g., toilet paper) gain elevated value following intensified anxiety-driven demands within the marketplace. In this altered environment, it is undeniable that varying results would be derived based on consumers' changing perceptions in different unfavourable situations.

As such, the empirical aspect of panic buying was addressed in the current study by examining the impact of consumers' personal (fear of COVID-19, perceived risk associated with COVID-19, and perceived scarcity) and social (word-of-mouth communication and social media communication) factors on their panic consumption. Naeem (2020a) highlighted the evident gap in terms of the limited theoretical understanding of the impact of social media on panic buying at a global scale, which motivated the incorporation of social media as an independent variable in the context of crises. Findings as obtained from this study would provide answers to the uncertain nature of panic buying during the COVID-19 pandemic, thereby shaping a better understanding of the market and benefitting both the retailing and the supply chain management fields.

In addition, given the research gaps, developing a relevant measurement scale for panic buying and validating it in the proposed model are expected to contribute valuable insights to the consumer behaviour literature. The remainder of this paper presents the literature review, the methodology used, and the analysis results. Finally, the findings and their implications are discussed.

Literature Review and Hypotheses Development

Drawing from the lens of compensatory control theory (CCT), the paradigm has reported that individuals strive to have a perceived sense of personal control over their

environment as a means of believing that the surrounding is within their control and the world is meaningfully structured (Sullivan et al., 2012). That is to say that individuals are able to assuage any threats if they believe that things are well in-hand (Kay & Eibach, 2013). Since its inception, CCT has been employed in various research settings due to its capability in explaining individuals' reaction towards uncertainties (Barnes et al., 2021). Facing an ambiguous marketing setting, CCT has put forward that consumers with lower perceived control tend to seek a feeling of control by buying utilitarian goods in any event of uncertainties (Arafat et al., 2021; Barnes et al., 2021). Alternatively, explanation is given by such paradigm within the organisational setting on the direct association between anxiety and productivity through increased personnel investment, intuitive efforts as well as physical and cognitive expenses; followed by the attainment of performance consistency by mean of reduced targets at the absence of additional costs (Hockey, 1997). In lieu of other adverse circumstances, CCT is specified towards addressing the consequential influence of diminished governance or perceived control towards lowered tolerance and heightened pessimism on dubious situations (Ma & Kay, 2017). Further devised by Eysenck et al. (2007), consistency is secured under conditions of stress and anxiety through the undertaking of precautionary endeavours in the forms of increased behavioural and capital investments. The statement seemingly reflected impulsive preparations amidst disruptive adversities with the like of a pandemic outbreak. Such defence mechanism fundamentally prevails as the consumers' immediate solution to a specified problem in the event of uncertainties (Arafat et al., 2021; Lu et al., 2022). Hence, this theory helps to explain why the situation of panic buying has been apparent during the pandemic period. Grounded on the foundation of CCT, examined framework within this study was, therefore, set to explore the fundamentals of panic buying and its antecedents.

According to Twedt (1965), the marketplace resembles as a living laboratory that indirectly accounts for the behavioural complexity among its consumers (Simonson et al., 2001). Case in point, the recent ravages of the COVID-19 pandemic resulted in unexpected forays, such as the worldwide stockpiling of toilet papers, a surging interest in bread making as well as an unforeseen scramble to get hold of a bicycle (Andrew, 2020; Chakravarty, 2020). Such behavioural displacement is commonly born from fear and anxiety, whilst prompted an increase in consumption (Lins & Aquino, 2020). Labelled as panic buying, this practice is commonly associated with unusually large consumption or an unexpectedly varied range of products purchased prior to, during, or after a perceived disaster or perceived product scarcity (Yuen et al., 2020); in turn, contributing undesirable repercussions to the aspects of social wellbeing, environmental systems, and supply chains. As revealed by the

UN International Strategy for Disaster Reduction (2009), dissimilar purchasing habits would emerge in accordance to diverging nature of the experienced crises. On this note, studies have repeatedly captured trends of panic buying in various disastrous occurrences, while concurrently attracted great interest among consumer behaviour scholars (Arafat et al., 2020a, b; Loxton et al., 2020). However, systematic operationalisation of panic buying as a measurable variable remains underdeveloped, with requiring additional empirical evidence to provide a more conclusive outlook on the construct.

Past studies have often compared panic buying to impulsive and compulsive consumption patterns (e.g., Islam et al., 2021; Naeem, 2020b). These claims might not be entirely appropriate in explaining the exact meaning of panic buying, as they have neglected the emotional aspects of consumers. Drawing from the transactional theory of stress and coping by Lazarus and Folkman (1984), panic buying is closely associated with consumers' perceptions of stress and anxiety in emergency situations, which provokes excessive consumption. Altered spending behaviours amid the COVID-19 pandemic have, therefore, been driven by consumers' fear of unknown threats (Song et al., 2020), stress-relief coping behaviour (Loxton et al., 2020), and risk (Addo et al., 2020; Arafat et al., 2020a, b). Essentially, these elements posit panic buying as consumers' attempt to recapture a sense of control against the collective circumstance of increased uncertainty, higher risk, and heightened anxiety. Yuen et al. (2020) understood panic buying as an individual's fear-limiting stress- and anxiety-coping mechanism to counter their psychological perceptions of ambiguity and uncertainty. Thus, scholars appear concur that panic buying is, in fact, built on the foundation of stress, anxiety, and excessive buying experienced by consumers during times of emergency or uncertainty.

Some scholars have separated panic buying into casual pursuits (wants) and critical requirements (needs). The former has often been investigated during regular periods where impulsivity acts as an initial motivator of compulsive buying, along with irrationality and self-governance (Williams & Grisham, 2012). Liu et al. (2018) suggested that individual attributes like materialism, egoism, and mentality are often underlying predictors of consumption in an anxiety-filled environment. This is further worsened by the triggering effect of promotional and marketing efforts by retailers, minimising consumers' efforts in the decision-making process. On the other hand, the second school of thought (i.e., panic buying for 'need') argues that behaviour reflects necessity over mere desire. For instance, Arafat et al., (2020a, b) suggested that necessities are manifested in the forms of: 1) perceived scarcity, 2) sense of control, 3) sense of security, 4) collective mentality, and 5) risk assessment. In these situations, despite unchanged personal preferences

and product inclinations, greater consumption of specific items are observed based on consumers' situational appraisal (Martin-Neuninger & Ruby, 2020). Indeed, as panic consumption parallels the pandemic's severity, materialism and herd mentality have proven to be substantial influencers (Jin et al., 2020). Similarly, widespread fear in times of crisis are cultivated through mutual interactions, leading to a vicious cycle of supply shortage (Loxton et al., 2020).

The cumulated outlook of Wang and Hao (2020) views both product hoarding and panic buying behaviours as separate consequences of irrational considerations, with the former relating to resource availability and the contagiousness of the pandemic and the latter relating to negative emotions and herd mentality. Understanding the determinants of panic buying solely through consumers' cognitive irrationality (e.g., compulsive consumption) would, once again, be overly simplified. Such findings have yet to address the significance of virtual information, which has overshadowed offline communication in generating and intensifying crisis-associated perceptions in the marketplace (Li et al., 2020a, b; Naeem, 2020b). Behavioural displacement during the COVID-19 outbreak has also been observed through the lens of perceived risk (Addo et al., 2020; Arafat et al., 2020a, b), threat-related uncertainties (Song et al., 2020), coping behaviours towards stress-relief, social influences (Loxton et al., 2020), and the technological influence of social media (Li et al., 2020a, b). In response to these factors, panic buying is potentially executed as a fear-limiting, anxiety-coping mechanism to face the unknown (Yuen et al., 2020). Nonetheless, ambiguity remains in terms of the variable's operationalisation and determinants beyond mere impulsivity in times of a global pandemic, by which the current research framework sought to explore.

Factors that Influence Panic Buying

Personal Factors

Fear

From the psychological perspective, fear is a perceptual and subjective concept (Teachman et al., 2008) that possesses the ability to shape one's action and behaviour (Maddux & Rogers, 1983). According to Laros and Steenkamp (2005), fear has been identified to be among the emotional sensations that influence the behavioural endeavours of fellow consumers. Moreover, Armfield (2006) argued that fear is a behavioural reaction triggered by individualistic perceptions of uncontrollability, unpredictability, uncertainty, and hazard presented by a specific stimulus. In the current context, such emotional and physical distress arises from the COVID-19 pandemic. In the face of threats and adversity,

fear prevails as an evolutionary adaptation that emotionally increases the degree of survivability (Kunimatsu & Marsee, 2012). It is comparable to individuals' fight-or-flight mechanism upon undergoing emotional and cognitive efforts (i.e., the best route of survivability based on the current level of consideration).

Understandably, the accelerated pace of the Coronavirus contagion has incited a corresponding level of fear and anxiety at the international scale, disrupting societal homeostasis in multiple ways (Liu et al., 2020; Sorokowski et al., 2020). Upon being declared a global pandemic, observed norms then followed the theory of fear appeal, wherein both the perceived level of risk and comfort-seeking intention heightened. Emotional unease in the form of stress propelled faster decision-making at this time, with the panic buying of apparent necessities (e.g., food) seen as an endeavour of survival assurance (Jezewska-Zychowicz et al., 2020). Instances in stockpiling of groceries (Hall, 2020), personal protective equipment (Addo et al., 2020), and toilet papers (Hall, 2020) have been solid exemplifications of stress relief in response to the current crisis. Other scholars have further proposed that the potential consequences of lockdowns include not only attempted evasion and frustration of isolation, but also abrupt monetary consumption as a proactive approach in crisis management (Taylor et al., 2020).

Another notable implication of fear is reflected in changes in social behaviour, as consumers embrace conformity towards contemporary conventions or norms (Song et al., 2020). This is because long-term familiarity can reduce stress and anxiety. However, this notion was rebutted by Wang et al. (2020), who proposed insignificant changes in stress levels throughout the pandemic when considerations are placed on medical confidence, perceived survivability, risk of contraction, availability of health-related knowledge, and individual precautionary attempts. In fact, while some scholars have showcased a positive correlation between perceived stress and compulsive consumption (Zheng et al., 2020), others have not found evidence of such a relationship (Lee & Yi, 2008). In this case, environmental factors would seemingly emerge as cumulative stimuli that provoke planned purchases, overshadowing the gravity of impulsivity.

On another note, despite their causal link, both the concepts of fear and panic have been investigated by researchers as parallel variables in transforming consumers' market intentions and behaviours (Aydınlioğlu & Gencer, 2020; Shorey et al., 2020). Balancing self-sufficiency, self-preservation, and social conformity, fear is a potential antecedent that acts beyond psychological aspects to include environmental considerations as well (e.g., personal preparedness). Thus, based on the role of fear in shaping compulsive behaviours via panic consumption, as well as the potential correlation between panic buying and fear, we hypothesised that:

H1: Fear has a significant impact on panic buying during the COVID-19 outbreak.

Perceived Risk

Perceived risk has continuously gained significance within consumer research as a powerful influencer of consumers' behaviour and decision-making process (Mitchell, 1992). Theory suggests that this concept is linked to a higher degree of uncertainty experienced by individuals (Shimp & Bearden, 1982) within the decision-making process. Hoque and Alam (2018) realised that such uncertainty directly depends on the trustworthiness of both information sources and desired products, pending situational apprehension and behavioural endeavours. As such, perceived risk is identical to fear and anxiety in prioritising consumers' cognitive orientation (i.e., concerns about the crisis) in their consumption decisions (Guzmán-González et al., 2020). The present study, therefore, defines perceived risk as an individual's perception of exposure to potential uncertainties and health hazards amidst the COVID-19 pandemic. The overwhelming concern about being infected explains the establishment of common standards of procedures (SoPs) across multiple nations to contain the pandemic.

Treatment measures aside, preparedness yet again plays a key role, with studies by Nazione et al. (2021) and Naeem (2020a) demonstrating that concern about the pandemic's severity is a significant antecedent of preventive practices and behavioural displacement (e.g., frequent hand washing and social distancing measures). In direct consistency to such claim, Avery and Park (2021) regarded risk-reducing practices as well-planned decisions made through the assessment of available information during disastrous moments. Related literature on perceived risk has also noted prior crisis-focused preparation and survivability as a direct predictor of consumption behaviour in a crisis (Crockford, 2018). Notable attention should, thus, be brought to the concept of individual preparedness, which accounts for a sustainable decision-making process.

Several findings have manifested a behavioural shift among individuals, who naturally embrace survivalist actions as a precautionary response in events of anxiety or crises (Campbell et al., 2019; Mills, 2018). In fact, investigations undertaken by Clemens et al. (2020) and Herman et al. (2020) have shown the positive impact of perceived pandemic risk on consumers' product selection, and thus, their panic consumption. Yet, these findings barely argued the relevance of risk perception for planned purchases, potentially overlooking consumers' consideration of risk reduction. Suci (2020) highlighted those obvious behavioural changes in relation to uncertainty-driven anxiety is typically indisputable. Seeking to confirm the role of uncertainty-driven

perceived risk in promoting planned buying during times of disaster, it was hypothesised that:

H2: Perceived risk has a significant impact on panic buying during the COVID-19 outbreak.

Perceived Scarcity

As understood from the work of Gupta and Gentry (2016), perceived scarcity is the perception of product shortage experienced by consumers in a particular situation or circumstance; in this case, this situation is the COVID-19 pandemic. Scarcity is often directly driven by both human (i.e., fluctuations in both market supply and demand) and environmental (i.e., uncontrollable characteristic changes within the supply chain) factors (Gupta & Gentry, 2019). Recognising the unprecedented shifts in both market demand and supply capacity, economic dynamics ensure readjustments in scarcity-driven pricing, along with a supply-intensive mechanism (Bryan et al., 2018). In the current context, scarcity stems from the underestimation of the surge in market demand due to sudden interventions brought about by the global pandemic. Dependent on diverse types of scarcity, consumers' decision-making process is then correspondingly affected (Hamilton et al., 2019).

Economics literature has outlined perceived scarcity as an influential factor in an individual's economic behaviour (Gupta & Gentry, 2019; Slack et al., 2020). It is known to affect consumers' cognition, as it shapes comparable responses by generating a sense of urgency (Camargo et al., 2020; Yuen et al., 2020). Considered a negative state of psychological wellbeing, scarcity perceptions have been shown to influence short-term consumption, specifically via the act of unplanned buying (Nazri et al., 2021). While features like reliability, product quality, and attainable value remain crucial in the decision-making process, the sense of urgency triggered by both item and temporal scarcities would undoubtedly motivate behavioural compulsion (Mou & Shin, 2018). Interestingly, a different perspective states that perceived scarcity is directly correlated to acceptable risk (Liang et al., 2020). Since consumers' panic buying is undertaken to cope with stress during the pandemic, this study investigated both perceived risk and perceived scarcity as concepts that have potential inverse relationships (i.e., perceived scarcity increases one's willingness to take risk).

Fundamentally, panic consumption due to perceptions of market supply shortage has been the result of media communication, or rather, miscommunication (Arafat et al., 2020a, b; Islam et al., 2021). Nichols (2012) argued that relative changes in both perceived scarcity and the 'empty shelf' scenario led to competitive arousal among consumers when making successful purchases. This phenomenon is fairly self-explanatory, considering that scarcity topples

the societal order of equal distribution in the face of crises and disasters to prioritise survivability (Mannelli, 2020). The concept has, therefore, shown to factor both deliberate consideration (through available information) and psychological satisfaction (stress). Regardless, earlier research have consistently reported perceived scarcity as a significant antecedent to consumers' hoarding behaviour, urgency to buy (Gupta & Gentry, 2019), and compulsive buying (Wu et al., 2021). The current study, hence, examined the extensive role of perceived scarcity in generating panic buying during the outbreak of COVID-19. The third hypothesis was postulated as:

H3: Perceived scarcity has a significant impact on panic buying during the COVID-19 outbreak.

Social Factors

Word-of-Mouth Communication

Word-of-mouth (WOM) communication has constructively achieved recognition as an imperative means of information transfer among practitioners and academics alike (Dellarcas, 2003). Kotler (2006) defined WOM as an individual's personal communication with close acquaintances (family and friends) about their consumption decisions under specific circumstances. More often than not, decisions are weighted against the recommendations of family, relatives, and friends. This established reference point then undermines the potential risk and uncertainty associated with an otherwise challenging decision (Cheung & Thadani, 2012). Rationality is, thus, grounded in trust, where the source of information is deemed more inclusive, reliable, and objective (Tucker, 2011). The significance of WOM is highly recognised in the areas of brand communication (Andrei et al., 2017), product preference (Marchand et al., 2017), and mindful consumption decisions (Parsad et al., 2019).

In light of consumers' behavioural authenticity, crisis situations that demand quick decision-making benefit from WOM, as information that is comparatively credible, empathetic, trustworthy, relevant, and reliable can be attained under a rushed timeframe (Porter & Golan, 2006). The generation of WOM is contributed to by aspects like actual experience, encountered quality, and value perception (Mukerjee, 2018); as such, WOM possesses extensive empirical relevance as a predictor of consumers' behaviour. This is supported by Hu et al. (2019), who found that consumers' unplanned buying is a direct consequence of both emotional support and information exchange from trustworthy social groups. Evidently, WOM has a direct impact on consumers' compulsive consumption (Khorrami et al., 2015). Therefore, the adoption of WOM might see increased normality when there is a greater sense of urgency.

Alternatively, the framework of Hidayanto et al. (2017) posits that WOM indirectly influences purchase intention by increasing the urge for additional information search and creating a sense of dependency. Particularly in disastrous moments, WOM rivals governmental communication in shaping both underlying perceptions and protective measures to curb the global pandemic (Yasir et al., 2020). Nevertheless, while WOM prevails as a powerful advertising tool that ensures customers' participation and consumption intention (Mukerjee, 2018), its significance in disaster-related communication has not been well-established. It can be presumed that situational transparency determines the reliability and credibility of an information source (Ataguba & Ataguba, 2020), wherein conversation and information exchange are essential for consumers' mental wellbeing (Parsad et al., 2019). Yet, evidence on the direct influence of WOM on behavioural displacement, specifically panic consumption, remains underwhelming. The fourth hypothesis was, thus, put forth as:

H4: Word-of-mouth communication has a significant impact on panic buying during the COVID-19 outbreak.

Social Media Communication

According to Kaplan and Haenlein (2010), social media is defined as "a group of Internet-based applications that builds on the technological and the ideological foundations of Web 2.0, which allows the creation and the exchange of user-generated content" (p. 61). In congruence with this statement, social platforms like Facebook, Instagram, YouTube, Tumblr, WeChat, WhatsApp, Pinterest, LinkedIn, and Twitter have allowed users to interact with their acquaintances and exchange their views via self-generated content across these various domains (Cham et al., 2022a; Cheah et al., 2019). Be it to search for news (through news portals on social media) or to obtain information from virtual contacts, the existence of these platforms has indisputably changed the way individuals consume knowledge, communicate, and exchange information (Cham et al., 2020, 2021a, b; Hosen et al., 2021; Irshad et al., 2020; Singh & Chakrabarti, 2020). Moreover, social networks have also been reported to change consumers' buying patterns and habits (Eger et al., 2021; Liu et al., 2021). Practically speaking, these mediums do not only act as robust marketing tools, but have also emerged as useful sources of information during both emergency and catastrophic events (Eckert et al., 2018; Finau et al., 2018). In fact, social media is a key source of crisis communication when other sources are deemed slow and lagging; in this manner, it ensures the timely dissemination of appropriate messages to aid proactive social reactions (Eriksson, 2018).

Ranging from the spread of rumours and relief updates during the Haiti earthquake (Muralidharan et al., 2011), to

the proliferation of information about the SARS outbreak (Tai & Sun, 2007), social media has frequently proven itself as a tool that allows far-reaching communicative efficiency. Such robustness has, yet again, been rekindled during the recent COVID-19 outbreak, granting the capability for systematic management of the pandemic (Goel & Gupta, 2020). However, the study by Depoux et al. (2020) recognised the tendency for miscommunication across social media platforms, with negative implications arising from untrue information related to a particular crisis. It is indeed well-acknowledged that despite being useful in transferring real-time updates on a global pandemic, social media has also contributed to the deterioration of mental wellbeing among residents by disseminating anxiety and fear (Ahmad & Murad, 2020). In turn, these negative perceptions generate unintended compulsive or panic buying when consumers are exposed to product-related information via sellers' social portals (Naeem, 2020b).

Aside from disseminating actual information, social media essentially holds the possibility to transform both authorised messages and public apprehension of a disastrous situation into miscommunication and exaggeration, which provokes stockpiling practices during the COVID-19 pandemic (Liu et al., 2021; Naeem, 2020b). Thus, a balance between situational preparedness and anxiety (about shortage, uncertainty, and infection) cannot be ignored. Based on the above discussion, it is anticipated that social media communication has a significant influence on behavioural displacement in the investigated context. The fifth hypothesis was postulated as:

H5: Social media communication has a significant impact on panic buying during the COVID-19 outbreak.

Post-Purchase Regret

As defined by Zeelenberg et al. (1998), post-purchase regret is an emotional state encountered upon perceived miscalculation in a particular purchase, which buyers aspire to revise and progress in a distinct, acceptable fashion. In a study on herd mentality, impulsive consumption induced by the worry of being excluded was found to directly provoke post-purchase regret (Karapinar et al., 2019). Additionally, impulsive buying and post-purchase behaviour are known to be directly correlated (Islam et al., 2021). Monetary consumption based on negative emotions like anxiety and sentimental distress further contribute to the generation of regret due to abrupt decision-making, changed necessities, and opportunity cost, which are regulated by unplanned intuition and attention seeking (Sokić et al., 2020). Ozer and Gultekin (2015) also argued that product-based satisfaction ensues impulsive buying and affects consumers' pre- and post-purchase emotional states, despite unplanned consumption being a direct

consequence of impulsivity. When such consumption fails to deliver the expected experience, resulting guilt potentially strengthens impulsive behaviours through acts of constructive criticism and cognitive withdrawal (Cornish, 2020). In contrast, Sarwar et al. (2020) have proposed that regret from unwarranted spending, collective mentality, and dismissed opportunity is a key factor that sabotages repurchase intention. The possibility of this recurring and disconfirming pattern, thus, holds extensive value as an outcome of panic buying.

The concept of post-purchase regret has gained attention within the field of brand-based satisfaction (Davvetas & Diamantopoulos, 2018), but has rarely been acknowledged in the context of panic behaviour. Other scholars have even focused on fashion consumption to validate the importance of reckless decision-making in subsequent remorse (Grigsby et al., 2020). Actions of impulsivity are viewed as a demonstration of luxury, where one's wants override his/her needs in influencing consumption decisions. The subsequent emotions of guilt and repentance emerge from overlooking the exigency of the purchased products. Redirected to crisis or disaster situations, Prentice et al. (2020) proposed panic buying as a two-edged blade having both consequences of perceived security in view of heightened preparedness and regret due to unplanned spending. Where consumers' needs are concerned, Grigsby et al. (2020) explained how unplanned purchasing leads to subsequent emotional distress through the cognitive response of foresight, which extends the benefits of purchased goods to future satisfaction over short-term gratification (e.g., if I don't use it now, I will have it for a later need). Therefore, post-purchase regret can be seen in a situational limelight, under which perceived needs exceed temperamental desires. Since this area has been potentially neglected, the sixth hypothesis was stipulated as:

H6: Panic buying during the COVID-19 outbreak has a significant impact on post-purchase regret.

The Moderating Effect of Impulsivity

In consumer research, the concept of impulsivity has been defined as an individual's implicit inclination which directly encourages his or her tendency to react instantly without cautious planning and genuine consideration (Beatty & Ferrell, 1998). Impulsivity among consumers can be examined through three diverse perspectives, namely psychological impulsivity, behavioural impulsivity, and process impulsivity (Huang & Kuo, 2012). Psychological impulsivity is manifested by consumers when they have the urge for monetary consumption. This motivates the act of stockpiling among consumers who otherwise withhold from such practices (i.e., sudden change in consumption behaviour) (Rook, 1987). Behavioural impulsivity is manifested when

consumers make unusual or poor choices through unplanned purchases that deviate from rationality. Process impulsivity refers to the pattern exhibited by an individual during their decision-making process that varies based on a particular information search pattern and situational assessment.

Being closely associated with consumption behaviour, impulsivity has been shown to act with sentimental compulsion and limited cognitive regulation in promoting compulsive practices (Williams & Grisham, 2012). Similar results were obtained by Wu et al. (2021), who also shed light on the potential formation of post-purchase regret through compulsive behaviour. In particular, a higher degree of impulsivity was found to stimulate an increased level of regret following compulsive purchases. A multitude of studies have also supported the impact of impulsivity on post-consumption regret (Mahmood et al., 2019). However, Lin et al. (2009) failed to establish the significance of post-purchase negativity (regret and guilt) in the display of glee and pleasure following decisions made under shallow consideration.

Nonetheless, impulsivity has been explored as a moderator between sensibility and regret and the decision-making process, despite its direct influence on consumers' negative perceptions following unplanned consumption (Sokić et al., 2020). It has also been frequently used to moderate the effects of adverse situations on compulsive behaviours (e.g., gaming addiction, episodic drinking) (Hu et al., 2017; Kaltenegger et al., 2019). Lim et al. (2020) further underlined the role of impulsivity in manoeuvring both consumers' ease of consumption (a positive outcome) and product return (a negative outcome). In the context of crisis and disaster, regular consumption is often overshadowed by panic buying due to herd mentality, social media communication, receptive anxiety, and the cost and availability of required necessities

(Gazali, 2020). In this situation, the evident consequence of unplanned purchases exploits impulsive decision-making. Unplanned purchases are shaped upon three main subsets of impulsivity, namely a sense of necessity, indecisiveness, and unclear expectations (Billieux et al., 2008). Yet, its position as a moderating factor between both unplanned consumption and post-purchase regret, specifically during crisis moments, has been underexplored. To fill this gap, it was hypothesised that:

H7: Impulsivity moderates the relationship between panic buying during the COVID-19 outbreak and post-purchase regret.

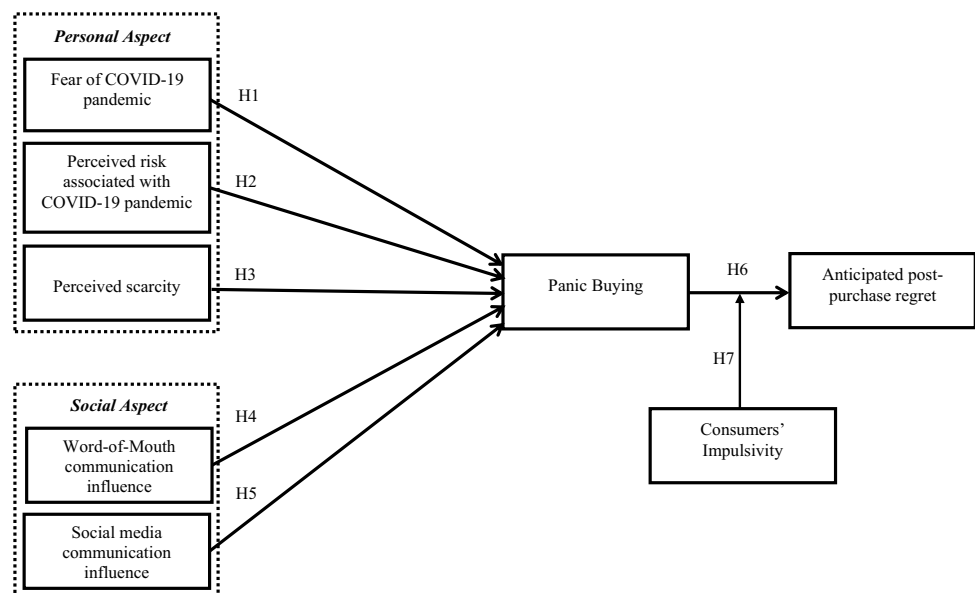
Theoretical framework of the current study is presented in Fig. 1.

Research Methodology

Questionnaire Development

Fear of the COVID-19 pandemic was operationalised using a seven-item scale adapted from Ahorsu et al. (2020) and Mertens et al. (2020), which reflects the level of fear and worry experienced by respondents during the pandemic. The measurement scale for perceived risk associated with the COVID-19 pandemic was adapted from past studies (e.g., Imai et al., 2005; Koh et al., 2005) as well. This construct was operationalised using a six-item scale that assesses respondents' overall perception of risk associated with COVID-19. Subsequently, items for perceived scarcity were modified from the work of

Fig. 1 The research model



Gupta and Gentry (2016, 2019) to measure respondents' perception of the scarcity of groceries when shopping during the COVID-19 Movement Control Order (MCO).

Next, WOM communication was operationalised as a five-item scale modified from Yangui and Hajtaieb El Aoud's (2015) study to indicate the influence of family and friends on respondents' perception of COVID-19 and the stockout situation during the MCO. Items for social media communication were adapted from Yangui and Hajtaieb El Aoud (2015) as well, to measure respondents' use of and dependency on social media to learn about COVID-19 and the stockout situation during the MCO. Consumers' impulsivity was measured based on three items adapted from the existing literature (Aragoncillo & Orus, 2018; Li et al., 2020a, b), to gauge the level of impulsivity of consumption among consumers during COVID-19. Gupta and Gentry's (2019) four-item scale was employed to measure post-purchase regret after panic buying to operationalise respondents' sense of regret after a grocery shopping trip during the MCO.

Since measurements of panic buying remain limited to date (Islam et al., 2021; Lins & Aquino, 2020), a scale was developed based on the suggestions of Churchill (1979) and DeVellis (2003). First, we identified the possible dimensions and items relevant to the face value of panic buying. This was done by reviewing the existing literature in the marketing and psychology domains. Second, the foundation of panic buying derived from the literature review was further explored via qualitative inquiries. Specifically, focus group discussions were conducted to confirm the dimensions and items found in the literature and to generate items for the new scale. As many as 25 consumers were carefully selected for two focus groups. The focus group interviews successfully generated 21 items to capture the domain of panic buying. These items were subsequently reviewed by a panel of 10 experts comprising industry specialists, marketing researchers, and academics.

Following the above process, all panel members were requested to review the representativeness, clarity, and relevance of the 21 items for panic buying. Their feedback resulted in the exclusion of three items, leaving 18 items for the scale. These 18 items were then pilot tested with a sample of 60 consumers, the results of which revealed that one item was unclear. This item was subsequently dropped from the scale, yielding a final 17-item scale for panic buying. The above processes established face validity for the panic buying scale. However, as suggested by DeVellis (2003), all 17 items were subjected to item purification processes (i.e., exploratory factor analysis and confirmatory factor analysis), which are presented in the data analysis section.

Sampling and Data Collection

The target respondents for this study were individuals who had purchased groceries during the MCO period in Malaysia from March 2020 to May 2020. In view of the movement restriction imposed by the Malaysian government during the MCO period, self-administered survey questionnaires were distributed to the respondents via social media and email. A total of 600 respondents were selected with the use of purposive sampling technique. To obtain reliable and justifiable responses, four criteria were imposed to determine eligible respondents. The criteria were: (1) the respondent must be a Malaysian; (2) he or she is responsible for buying groceries during the MCO period; (3) he or she must have a minimum of one active social media account; and (4) he or she is over 18 years of age. Only individuals who fulfilled all four requirements were qualified to be respondents in the present study.

Of the returned questionnaires, only 547 were usable for data analysis, as 53 were excluded due to incomplete responses or doubtful response patterns (i.e., straight-lining and/or diagonal-lining responses). The data cleaning process to assess outliers, normality, and missing values further indicated that 25 observations had to be dropped from the data. As a result, the final data from 522 responses was retained for further analysis. A sample size of 522 is capable of representing a big population and was considered sufficient for the present study (Saunders et al., 2012). Moreover, from a statistical point of view, the minimum sample size required for the present study fulfilled the suggestion of Cohen (1988). Likewise, based on the suggestion from Faul et al. (2009), the outcome of the G*Power software confirmed that the sample size of 522 satisfied the minimum requirement of 132 samples at the 95% power level with an effect size of 0.15. Based on the evidence above, it can be affirmed that the final sample size of 522 was considered adequate for this study.

Common Method Bias

According to Podsakoff and Organ (1986), common method bias (CMB) is a methodological issue associated with bias in the estimation of constructs' relationships, often due to the use of a single method in data collection. Artificial inflation from CMB influences the relationships among the constructs, which affects the validity and reliability of the measures (MacKenzie & Podsakoff, 2012; Podsakoff & Organ, 1986). To address CMB, MacKenzie

and Podsakoff (2012) recommended that both procedural and statistical remedies should be applied. For the procedural remedy, we followed the suggestions in the literature (e.g., MacKenzie & Podsakoff, 2012; Podsakoff et al., 2012) by: (1) including detailed research information in the questionnaire's cover sheet and (2) conducting a pre-test and pilot-test for the questionnaire. These steps were performed to alleviate any uncertainty associated with the questionnaire.

As for the statistical remedy, Harman's Single Factor test was conducted to address the issue of CMB. According to past literature (e.g., Malhotra et al., 2006), CMB is not an issue if (1) the first factor derived from the factor analysis has a variance less than 40 percent, and (2) the hypothesised model (with all the items modelled as a single factor) is not fit. In the present study, the first factor in the factor analysis had a variance of 29.45 percent (<40%) and the

hypothesised model of single factors was not fit; thus, CMB was not a problem in the present study.

Sample Characteristics

Table 1 presents the demographic characteristics of the respondents who participated in this study. The respondents consisted of 54.2 percent of females while the rest were male. A majority of the respondents were married (79.7%) and held a bachelor's degree (63.6%). In addition, most of the respondents worked in executive/managerial positions (29.9%) and production/manufacturing positions (24.5%). In terms of shopping for groceries, many of them went shopping between four to six times per week and a majority of them spent RM 2001 to RM 4000 on groceries per month.

Table 1 Respondents' demographic profile

Variables	Descriptions	Percentage
Gender	Female	54.2%
	Male	45.8%
Marital status	Married	79.7%
	Single	18.0%
	Divorced	1.1%
	Widowed	0.8%
	Others	0.4%
Educational level	Primary school	1.1%
	Secondary school	1.7%
	Diploma/higher diploma	13.2%
	Bachelor's degree	63.7%
	Master's degree	18.8%
	Doctorate degree	1.5%
Employment	Professional position	14.6%
	Production/Manufacturing position	24.5%
	Business Proprietors/Self-employed	17.8%
	Executive/Managerial position	29.9%
	Clerical/Administrative/Secretarial	7.3%
	Retiree/Not in the work force	4.6%
	Unemployed	1.1%
	Others	0.2%
Weekly frequency of grocery shopping	1—3 times	36.2%
	4—6 times	52.3%
	7—9 times	9.0%
	More than 10 times	2.5%
Expenses on groceries per month	Less than RM 2000	14.2%
	RM 2001 to RM 4000	47.1%
	RM 4001 to RM 6000	18.8%
	RM 6001 to RM 8000	12.1%
	RM 8001 to RM 10000	6.1%
	RM 10001 and above	1.7%

Data Analysis and Findings

Following the procedures suggested by Churchill (1979), an iterative scale purification procedure was conducted to develop a parsimonious scale for panic buying. According to Kim et al. (2012), the iterative scale purification procedure for developing a new measurement scale is commonly conducted via the use of item-to-total correlations analysis, reliability analysis, exploratory factor analysis, and confirmatory factor analysis. Items that are poorly correlated ($r < 0.4$) to the total score should be eliminated from a construct (Kim et al., 2012). The outcome of the item-to-total correlations analysis in the present study indicated that all the correlation values between items and the sum of their scores were above 0.40. Thus, none of the items in the panic buying construct were removed. Moreover, the reliability score (Cronbach's alpha value) of the panic buying construct was 0.821, suggesting the scale's high reliability. To address scale validity, the data was split into two sub-samples (each with 261 cases) for the purpose of exploratory factor analysis (EFA) and confirmatory factor analysis (CFA).

Exploratory Factor Analysis

EFA was performed in this study using sample 1 ($n = 261$) to identify and explain the underlying dimensions of panic buying. EFA is assessed based on Bartlett's test of sphericity, Kaiser–Meyer–Olkin (KMO), Eigenvalues, and measure of sampling adequacy. Based on the results (see Table 2), Bartlett's Test ($X^2 = 3164.41$) was significant (P -value < 0.001) and the value of KMO was above 0.50, indicating that the data was appropriate for an EFA. Subsequently, a principal component analysis through the Varimax approach revealed that the 17 items of panic buying can be further categorised into three multi-dimensional factors: anxiety, stress, and excessive buying. The three factors were identified and extracted from the construct of panic buying with eigenvalues of 6.210, 1.550, and 1.113 respectively, which exceeded the threshold value of 1.0. Moreover, the three-factor solution derived in the present study accounted for 60.46 percent of the variance.

In addition, past studies have highlighted that items with low factor loadings (< 0.60) or cross-loadings should be dropped from the factor analysis (Hair et al., 2019; Kim et al., 2012). Referring to this guideline, two items from anxiety and one item from stress were dropped from further analyses. After the deletion of these items, reliability analysis (Cronbach's alpha) was conducted on the three factors, reporting values well above the recommended value

Table 2 Results of exploratory factor analysis (Sample 1)

Code	Items	Anxiety	Stress	Excessive buying
<i>Anxiety (eigenvalue = 6.210; Variation = 39.814%; Cronbach's Alpha = 0.848)</i>				
AX1	I felt tensed when thinking or buying groceries	0.608		
AX2	I felt pressured when thinking or buying groceries	0.700		
AX3	I felt upset when thinking or buying groceries	0.712		
AX4	I was worried about the possible shortage of groceries	0.763		
AX5	I am worried I do not have sufficient groceries	0.713		
AX6	I felt frightened when thinking of buying groceries	0.652		
AX7	I felt confused with the rules imposed*	0.522		
AX8	I felt nervous when thinking or buying groceries*	0.417		
<i>Stress (eigenvalue = 1.550; Variation = 10.688%; Cronbach's Alpha = 0.817)</i>				
ST1	I felt things were not going my way when buying groceries		0.761	
ST2	I have no control over my selection when buying groceries		0.832	
ST3	I am not confident with my selection when buying groceries		0.674	
ST4	I encountered difficulties in selecting groceries		0.633	
ST5	I find myself confused with the selection of groceries that are available to me*		0.558	
<i>Excessive buying (eigenvalue = 1.113; Variation = 9.958%; Cronbach's Alpha = 0.780)</i>				
EB1	I bought more groceries than usual			0.836
EB2	I made more unplanned purchases than I needed to			0.718
EB3	I gave less consideration to the amount of groceries purchased			0.769

*represents item that has been dropped from further analysis

of 0.70 (anxiety = 0.848, stress = 0.817, and excessive buying = 0.780); therefore, all the factors underlying panic buying were reliable. Having completed the EFA, the following section presents results of the CFA for the measurement model.

Confirmatory Factor Analysis

CFA was employed to further examine the validity of the measurement items for all the constructs using sample 2 ($n = 261$). CFA is commonly used to examine the model fit of the measurement model and to address constructs' convergent and discriminant validity. According to Hair et al. (2019), a model is considered to be fit when variance-based software (e.g., AMOS) reports: (1) normed Chi-square (χ^2/df) less than 3.0; (2) root mean square error of approximation (RMSEA) less than 0.08; (3) goodness of fit (GFI) greater than 0.90; (4) parsimony normed fit index (PNFI) greater than 0.50; and (5) Tucker-Lewis index (TLI) above 0.90. In the present study, the CFA results indicated that the model had good fit ($\chi^2/df = 1.597$, GFI = 0.905, RMSEA = 0.034, PNFI = 0.809, and TLI = 0.951).

Convergent validity for the constructs was assessed based on Hair et al.'s (2019) proposition that convergent validity is established if factor loadings for construct items are equal to or greater than 0.60, the average variance extracted (AVE) for each individual construct is larger than 0.50, and the composite reliability for each individual construct is greater than 0.70. The outcome of the CFA, as reported in Table 3, confirmed that all the measurement items for each respective construct had factor loadings higher than 0.60, while both AVE and composite reliability values for all the constructs were above the recommended value of 0.50 and 0.70,

respectively. These findings suggested that the convergent validity of the data was achieved.

The discriminant validity of the constructs was assessed based on guidelines in the literature (e.g., Fornell & Larcker, 1981; Hair et al., 2019). According to Fornell and Larcker (1981), discriminant validity is evaluated by comparing (1) the variance of the constructs with the square roots of AVE and (2) AVE with Maximum-Shared-Squared-Variance (MSV). Discriminant validity is established if the variance shared between any two constructs is lower than the squared root of AVE for each construct, and if the MSV values for all constructs are smaller than AVE. As shown in Table 3, the values of the squared AVE (diagonal entries in italic and bold) were greater than the values of the correlation (off-diagonal entries), whereas the values of AVE for all the constructs were greater than their respective MSV. As such, discriminant validity was established for all the constructs in this study.

Structural Model and Hypothesis Testing

The present study employed the structural equation modelling (SEM) technique to examine the structural model and test the hypotheses. According to Hair et al. (2019), SEM is a powerful statistical technique capable of examining the strengths of individual causal paths proposed in the hypotheses. The analysis indicated that the structural model, as presented in Fig. 1, was found to have good fit ($\chi^2/df = 1.621$, GFI = 0.908, RMSEA = 0.035, CFI = 0.956, PNFI = 0.822, and TLI = 0.952). Next, the results of the path analysis, presented in Table 4, showed that all the direct hypotheses in this study (H1 to H6) were significant. It was revealed that fear of the COVID-19 pandemic

Table 3 Results of convergent and discriminant validity (Sample 2)

	Items	FL	AVE	CR	MSV	1	2	3	4	5	6	7	8
PANIC ^a	16	0.646 – 0.777	0.518	0.763	0.184	0.720^b							
SCAR	7	0.683 – 0.781	0.504	0.876	0.177	0.421 ^c	0.710						
FEAR	7	0.615 – 0.828	0.533	0.888	0.184	0.429	0.220	0.730					
RISK	6	0.663 – 0.803	0.513	0.840	0.031	0.175	0.035	0.089	0.717				
SMEDIA	5	0.622 – 0.893	0.577	0.870	0.060	0.213	0.019	0.054	0.000	0.760			
WOM	5	0.721 – 0.808	0.608	0.886	0.141	0.376	0.211	0.199	0.106	0.160	0.780		
REGRET	4	0.731 – 0.808	0.551	0.829	0.128	0.346	0.210	0.078	0.076	0.097	0.230	0.742	
IMPUL	3	0.671 – 0.826	0.563	0.793	0.128	0.242	0.185	0.069	-0.036	0.244	0.299	0.358	0.750

PANIC Panic buying, SCAR Perceived scarcity, FEAR Fear of the COVID-19 pandemic, RISK Perceived risk associated with the COVID-19 pandemic, SMEDIA Social media communication, WOM Word-of-Mouth communication, REGRET Anticipated post-purchase regret, IMPUL Consumers' impulsivity, FL Factor loadings, AVE Average variance extracted, CR Composite reliability, MSV Maximum shared variance

^aSecond order construct

^bThe diagonal entries (in italics and bold) represent the squared root average variance extracted by the construct

^cThe off-diagonal entries represent the variance shared between constructs

Table 4 Results of path analysis

Hypothesised path	Standardised estimate (β)	Critical ratio	Hypothesis
H1: Fear of COVID-19 pandemic → Panic buying	0.290	5.728**	Yes
H2: PRisk → Panic buying	0.124	2.676*	Yes
H3: Perceived scarcity → Panic buying	0.311	6.189**	Yes
H4: WOM → Panic buying	0.225	4.614**	Yes
H5: SMEDIA → Panic buying	0.159	3.444**	Yes
H6: Panic buying → Anticipated post-purchase regret	0.356	6.517**	Yes

PRisk Perceived risk associated with the COVID-19 pandemic, SMEDIA Social media communication, WOM Word-of-Mouth communication

** and * denote significant at 99% and 95% confidence level respectively

Table 5 Results of moderation analysis

	β	SE	t-value	LLCI	ULCI
<i>Outcome variable = Anticipated post-purchase regret, R² = 0.156, F = 31.904</i>					
Constant	4.645	0.024	195.951*	4.598	4.691
Panic buying	0.317	0.058	5.459*	0.203	0.430
Impulse consumption	0.245	0.036	6.763*	0.174	0.316
Interaction	0.154	0.0345	4.410*	0.085	0.222

Interaction Panic purchase X Impulse consumption, β Standardised beta, SE Standard Error, LLCI Low limit confidence interval, ULCI Upper limit confidence interval

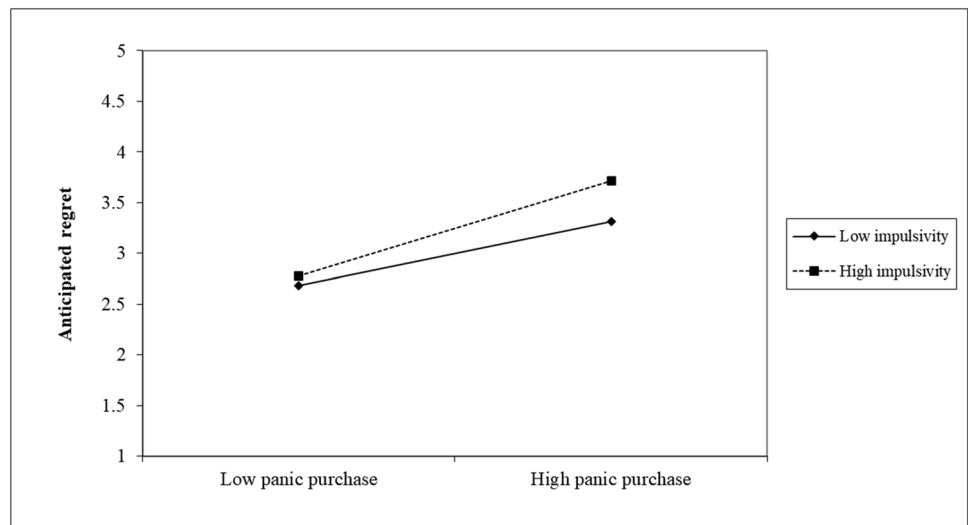
* = $p < 0.001$, Bootstrap sample size = 5000

($\beta = 0.290, p < 0.001$), perceived risk associated with the COVID-19 pandemic ($\beta = 0.124, p < 0.05$), perceived scarcity ($\beta = 0.311, p < 0.001$), WOM ($\beta = 0.225, p < 0.001$), and social media ($\beta = 0.159, p < 0.001$) have a significant influence on consumers' panic buying of groceries during the MCO imposed in Malaysia. Additionally, consumers'

panic buying was found to have a significant impact on their regret after a panic purchase ($\beta = 0.356, p < 0.001$).

The moderating effect of consumers' impulsivity on the relationship between panic buying and post-panic-purchase regret was assessed using SPSS PROCESS macro, developed by Hayes (2013). Hayes (2013) argued that a moderation effect exists if the interaction term is significant in the regression analysis generated by the PROCESS macro. As indicated in Table 5, the results of the regression test showed that consumers' impulsive consumption ($\beta = 0.154, p < 0.001$) moderates the relationship between panic buying and regret after a panic purchase. Subsequently, the moderating effect of consumers' impulsivity was plotted in a graph (Cham et al., 2022b; Cheah et al., 2020), shown in Fig. 2. The interpolation line shows consumers with greater impulsivity in grocery purchasing during the MCO compared to those with lower impulsivity. Specifically, the results indicated that panic buying is more strongly associated with post-purchase regret for consumers who purchased groceries impulsively. In view of this finding above, we concluded that H7 was supported.

Fig. 2 The moderation effect of impulsive consumption on the relationship between panic buying and anticipated regret



Discussion

With the current study being set to examine the impact of personal and social factors on panic buying, and the ensuing influence on post-purchase regret by moderation of impulsivity amidst the COVID-19 pandemic, obtained results have primarily demonstrated the significance of personal factors, enclosing the components of fear, perceived risk and perceived scarcity, towards anxiety-driven consumptions. Mirroring the reported findings by Clemens et al. (2020) and Laato et al. (2020), predictive ability of such personal factors is vigorously underscored on the instantaneous consumption urges of necessities during period of uncertainty. The occurrence is understandably generated through consumers' active judgment of a situation's severity regarding the perceived scarcity of common items, future concerns, unfavourable emotions and societal pressure (Yuen et al., 2020). Following the transformative lifestyles as experienced by individuals throughout ravage of the global pandemic, regulatory enforcements with the like of movement control and severe healthcare risk have inevitably encouraged unanticipated consumption patterns, whilst reflecting their perceptions towards seriousness of the situation. On an extreme, consumption and loyalty are prompted by the yearn for social companionship through elevated degrees of emotional attachment, approval and public knowledge (Addo et al., 2020). On another extreme, sense of relief is sought for aroused anxiety and worries as generated from communicated information on market scarcity by mean of impulsive purchases and stockpiling (Guo et al., 2017). The extent of emotional discomfort as developed from the consumers' personalized dissemination of encountered adversity would, therefore, act as a gauge to their unplanned shopping frenzies.

On similar note, significance of social factors, comprised of WOM and social media towards panic purchase has also been confirmed within the current study. Supported by both Depoux et al. (2020) and Ahmad and Murad (2020), shared information via social platforms possesses considerable influence in shaping consumers' perceptions regarding such adversity in view of its constant escalation which overshadowed severity of the actual situation. Whereas, such discovery has overturned the proposition by Naeem (2020a) on the associations between social media information, pandemic-oriented beliefs and health-related precautions. Beyond negative cognitions one holds regarding uncertain circumstances, their unplanned consumptions are further maneuverer by societal pressures, communicated news and virtual persuasiveness. The findings fundamentally complete the disposition of Yuen et al. (2020) for their sole emphasis on the significant repercussion of personal factors. Both buzzes and social media communication,

therefore, complement autoreactive communications in promoting precautionary and stockpiling attempts facing the global pandemic without regarding their legitimacy and integrity (Liu et al., 2021; Yasir et al., 2020). Behavioural adoption ensues following generated sense of urgency the endorsed communications. Reflectively addressed within the norm of social collectivism (i.e., I need toilet paper when everyone needs toilet paper, vice versa), an integrated outlook is congruently proposed between both personal and social factors. Aggregated relevance of individual perceptions and societal persuasions concerning the pandemic, thus, fulfilled the initial objective of this study in empowering increased understanding of the marketplace during interim of uncertainty, whilst proposing a counterargument towards the contrasted outlooks by both Loxton et al. (2020) and Yuen et al. (2020) on the lack of convergence between both uncertainty-oriented and inclusivity-based panic consumptions,

Subsequent findings then disclosed emotional distress in an anticipated feeling of regret as the direct resultant of panic consumption. Similar phenomenon has been exemplified in the study by Saleh's (2012) with indicating monetary consumption which invested minimal consideration effort as a proven antecedent to post-purchase regret. In the preference for individual centrism over social concerns, impulsive consumption due to the feeling of anxiety has shown to entail regrets as a result of emotional distress and depression (Gallagher et al., 2017). Such association prevails as an uncanny reflection of the current context, following the contradictory aftereffects of unplanned purchases and stockpiling of common items without sufficient informational-based assessment on severity of the adversity (e.g., overstocking of easily expired goods or better financial options during the pandemic interval). With Wang et al. (2019) highlighting the positive correlation between impulsive consumption and post-purchase evaluation, the degree of the intelligence one invested to rationalise the purchase during such limited interim would seemingly prevail as the determinant which diverged regrets and satisfaction. However, finite information concerning the situation further limits the ability for thorough financial rationalisation. Whilst the "bandwagon effect" remains intact alongside personalized judgment of the scenario, consumers' cognitive preparations in experiencing such negative emotions from their haphazard consumptions would be of utmost critical.

Obtained results further acknowledged impulsivity as a substantiated moderator in bridging panic consumption to post-purchase regret. Such association is comparable to the study by M'Barek and Gharbi (2011) alongside other regulatory factors including temporal outlook, product confidence, perfectionism, perceived satisfaction, level of uncertainty avoidance, and market demographics within the area of consumption-oriented regret. Unlike previous studies

which essentially examined impulsive consumption in the independent position (Fenton-O'Creevy et al., 2018; Santini et al., 2019), significance of the variable in the moderating role has validated its importance in channelling unfavourable judgment concerning a specified purchase. Such can be explained through the exposition by Sokić et al. (2020) with constructed influence of impulsivity on the relationship between emotional expression and regret being directly emanated by shortfalls in both expected outcomes and the failure for extensive consideration of other existing alternatives. Integrating the underlying reasoning between direct correlation of panic purchase and post-purchase distress, level of impulsivity, thus, stands as a gauge of the latter (i.e., the more unplanned I am at the purchase, the more regretted I am). Embracing both the society's bandwagon and self-evaluated consumption blueprint, this, yet again, relies heavily on the amount of efforts invested towards consideration of the purchase pending actual behavioural endeavour during period of disastrous conditions.

Theoretical Implications

The current research model has illustrated consumers' decision-making process in its totality. Investigations of panic consumption have proven it to be different from regular consumption. As in the former, consumers seemingly possess a weaker foothold in both exploratory endeavours and the assessment of available alternatives. Rather, disruptions from the pandemic entail dependency on existing, yet, limited situational information, with finite resources (e.g., time) available to thoroughly evaluate existing choices and engage in well-thought consumption. Presented findings, therefore, illustrate direct congruence to the founded paradigm of CCT, with having compensatory behaviours in forms of unplanned purchases as the direct consequent of emotional distress entailed by circumstances of vagueness and uncertainty (Arafat et al., 2021; Barnes et al., 2021). Facing disruptive input to an otherwise homeostasis condition, explored situation mirrors the unavoidable plight as acknowledged by Eysenck et al. (2007) with requiring preparatory and precautionary measures to counteract an encountered cognitive discomfort. In this regard, this study has empirically emphasised the role of both personal and social factors in buyers' product purchase decisions during a crisis. Moreover, it has divulged the impact of impulsivity on post-purchase reviews. As there is a tendency for changed purchasing decisions upon receiving additional information during emergency situations, intention is less convincing compared to actual consumption behaviour. In this case, the sequential flow of the decision-making process merely gains partial support for both habitual consumption (i.e., accustomed consumption patterns) and panic buying, awarding

less importance to both information search and evaluation of alternatives. Revisiting the study's second objective for unearthing potential measurement variables of panic consumptions, alternative assessments regarding consumptions amid similar situations, thus, driven noteworthy adoption of the currently confirmed personal and social components.

Another theoretical implication pertains to the urgent nature of panic purchasing behaviour based on Maslow's hierarchy of needs, which shows that people are motivated to pursue higher needs along the hierarchical pyramid (Loxton et al., 2020). Spending on necessities over leisure (needs outweigh wants) is a phenomenon described by Lester (2013) as the fulfilment of components most important for survivability. This explains consumers' urge for panic buying during a crisis to gratify their basic needs (physiological and safety needs) while setting aside psychological and self-fulfilment needs. Gupta and Gentry (2019) also elaborated that the impulsivity to possess items perceived as scarce is prompted by vulnerability, uncertainty, and reduced control of some aspects of life, which drives people to regain feelings of security, readiness, and satisfaction. This study's findings thereby contribute to the application of Maslow's hierarchy by underscoring consumers' sense of desperation amidst the crisis due to personal and social factors. The obtained knowledge illustrates the nature of panic consumption, particularly under circumstances where consumers' perceptions are formed through personal and surrounding influences rather than the actual situation.

Practical Implications

Interpretations of panic buying indicate it is more psychological than behavioural. With this being said, Hall et al. (2020) showcased a shift in consumption following the COVID-19 outbreak, exhibiting increased demand for lasting commodities and less service-based expenditure. In view of crisis preparation, short-term stockpiling purchases surfaced as a mirror trend upon realising the severity of the outbreak, which results in peaked short-term consumption (Arafat et al., 2020a, b). Assuming that consumers' overreactions during crises is solely a result of impulsivity would have been misleading. Rather, there remain aspects of rationality prior to actual consumption, despite the process being relatively reckless. A possible explanation is given by Chen et al. (2020) in terms of containment (i.e., avoiding the potential worsening of the pandemic) following decreased consumption corresponding to gravity of the outbreak, with observable increase in spending prior and after the MCO. Situation-based consumption is understandably driven by a combination of social communication and individual factors to make necessary preparatory purchases. Personal factors aside,

well-managed communication through existing touch-points would hold substantial weight in forming cognitive perceptions of the situation (either to reflect or distort reality), thereby indirectly moulding consumers' outlook of panic buying. This study, thus, sheds light on relevance of the "bandwagon effect", where the perceived severity of a crisis can be manipulated through received messages; therefore, extensive administrative efforts must be invested to manage communication during a crisis.

On this note, attention should be given to anticipated regret as a direct consequence of panic consumption. Gallagher et al. (2017) outlined that though buyers' considerations of their own wellbeing outweigh that of the society, their anxiety-driven panic buying is followed by regret due to emotional distress and depression. Both perceptions of crisis severity and post-purchase regret are negative cognitions, for which panic buying has emerged as a means of relief (Yuen et al., 2020). However, it has also revealed consumers' greater tolerance of consumption-related regret due to unplanned purchases. Moreover, marketing efforts undertaken by organisations to gain a market following are meaningless under the circumstance of panic buying. The need for necessities over luxuries to fulfil physiological and safety needs entail temporary neglect of other needs within Maslow's hierarchy (Lester, 2013). In other words, products would serve identical purposes regardless of the purchased brand. Nevertheless, motivations to achieve other needs in the hierarchy would potentially regenerate post stabilisation of the situation, thereby offering a solid forecast for massive recovery and revenge spending.

Ultimately, blame can be assigned to environmental uncertainties. As stated by Li et al., (2020a, b), perceived control, actual situational severity, and personalised materialism are significant predictors of unplanned purchases during the outbreak. Recognising panic buying as a means of assurance, an increased sense of control would entail greater considerations towards monetary spending, further reducing impulsivity. Often, cases of misguided consumption can also be resolved through the availability of continual directives (Lehmann et al., 2019). The importance of source credibility, proficiency, and reliability towards inducing consumption behaviour should not be neglected (Hu et al., 2019). All the more so when it comes to impulsive purchase (Mahmood et al., 2019). Particularly in periods of ambiguity, the need for announcements that promote stability (e.g., continuous availability of daily consumables) should not be neglected to prevent over-stockpiling that topples the balanced distribution of vital commodities. Dulam et al.'s (2020) proposition is, therefore, recommended, which is to implement a periodical quota policy to combat crisis situations. This policy grants benefits in terms of equalised product distributions and the effective satisfaction of market demands among sellers and retailers.

Limitations and Future Research Directions

While this study has highlighted the multifaceted nature of the current societal phenomenon in the COVID-19 pandemic, we must acknowledge its limitations. Primarily, the paper remains a cross-sectional study on the short-term implications of panic buying and emotional gratification. The results obtained seemingly neglect the potential long-term influence of present consumption to focus on immediate cognitive judgment across the span of several months. Habitual changes over temporary behavioural adaptations carry greater practical value; as such, the long-term impact of the pandemic on consumers' perceptions should be assessed in terms of emotions and lifestyle related to panic consumption. This research also narrowed its scope to several social and personal factors, leaving other potential variables unexplored. Apart from the controllable factors of consumers' purchase decisions studied in this paper, uncontrollable factors (e.g., financial and geographical characteristics) may likely exert an influence on the subject matter. Future research can, thus, extend upon sociocultural impacts on situational consumerism from the latter perspective.

Additionally, this study adopted a non-probability sampling approach in the selection of its participants, which may have alienated possible consumer segments. Since individuals exercise crisis-situation behaviours in accordance with their demographic attributes (e.g., income level and lifestyle), probability sampling can present more representative results on the total population. Last but not least, the significance of impulsivity as a moderator between actual consumption behaviour and subsequent emotional responses leaves room for the investigation of other potential moderators associating both the variables. Times of crisis understandably drive the stockpiling of commodities (e.g., food and drinks, sanitary appliances) over luxuries; as such, there remains the possibility of impulsivity playing a peripheral role in other factors like the usefulness and relevance of purchased items. Amidst the pandemic, further studies can be conducted in this regard to producing results that guide mindful consumption decisions.

Conclusion

The present study is one of the few to prevail as a founding groundwork in uncovering a new measurement that provide more conclusive detail for panic buying. Such discovery has, therefore, contributed an alternative

measurement to the scholastic evaluation of panic buying as a research variable. Expanding the works of Arafat et al., (2020a, b) and Yuen et al. (2020), the current study has also clarified the importance of both personal and social aspects of consumers' endeavours for panic consumption during the COVID-19 outbreak. Earlier research have primarily placed emphasis on the rationale behind panic buying, overlooking the emotional repercussions of such impulsivity. Motivational factors aside, findings of the present study acknowledged the significance of post-purchase regret following pandemic-triggered preparatory consumption. We argue the relevance of pre-evaluated purchases, seeing that (1) the outbreak was, to some extent, unforeseeable and disruptive to otherwise habitual routines, and 2) there is a shortage of available resources for the comprehensive evaluation of available alternatives prior to crisis-related consumption. In addition, panic buying, unlike rationality and impulsivity, has a varying degree of influence on regret based on the degree of impulsivity within each purchase. Situational aspects have been inevitably taken into consideration, particularly in linking perceptions (i.e., worry, uncertainty, and misguided information) to overly frantic preparatory consumption. The phenomenon hereby highlights the notable complexity in balancing cases of pre-purchasing distress to well-thought consumption, without the anticipation of post-purchase regret. Thus, in minimising their anticipated regret, consumers have undergone adjustments to their short-term monetary investments from leisure to sustainability (Hall et al., 2020). Buyers would probably continue to endure impulsivity-generated regret when the situation is vague, though their emotional distress depends on cognitive perceptions of each penny spent.

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Data Availability The datasets generated during and/or analysed during the current study are available from the corresponding author on a reasonable request.

Declarations

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in this study.

Conflict of Interest The authors declare that they have no conflict of interest.

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