



# Factors Influencing Panic Buying Behavior among Consumers in Lebanon during the COVID-19 Pandemic

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**Abstract**

This study analyzes consumer panic buying behavior applied in the grocery sector. Furthermore, it examines the effect of perceived severity, perceived scarcity, and fear of COVID-19, anxiety on consumer panic buying behavior. Moreover, this study also investigates anxiety as a mediator to understand these relationships.

Likewise, the researchers conducted an administered structured questionnaire—with a convenience sample of 391 respondents of grocery sector consumers. The researchers adopted structural equation modeling (SEM) to analyze the proposed scale validity and the relationships between the present research variables.

The findings of this study revealed that perceived severity, perceived scarcity, fear of COVID-19 and anxiety have a positive effect on panic buying behavior. In addition, the results indicate that anxiety mediate the relation between these variables and the behavior of panic buying.

The current study is established on stimulus-organism- response-framework, expectation theory and reactance theory. In this context, this study provides empirical support to validate the above mentioned theories. Moreover, this study enhances marketing literature to understand consumers' behaviors under under unusual and emergent situations.

This research supports both policymakers and managers in the grocery sector. *First*, policymakers can better understand and analyze consumer buying behavior under emergent crises like the COVID-19 pandemic. However, this understanding will improve their proficiency to alleviate the negative aspects of the pandemic periods. *Second*, grocery managers could better understand consumer panic behavior, guiding them to fulfill consumer needs and efficiently attain their marketing objectives.

This study has some limitations. These limitations should be taken into consideration when explaining the current research results. *First*, the present study is conducted in Beirut, limiting the research scope. *Second*, this study adopted a convenience sampling technique that undermines its generalizability. *Finally*, other variables may advance and explain panic buying behavior, such as information overload and consumer personality traits. Future studies are recommended to highlight on consumer panic behavior as a topic to overcome the current study limitations.

**Keywords**— Perceived severity, perceived scarcity, fear of COVID-19; anxiety; panic buying behavior.

## 1. INTRODUCTION

The coronavirus pandemic is an exceptional crisis on an international hierarchy that has shown a surprising loss of human lives, with severe repercussions expanding beyond health (Nicola et al., 2020). Furthermore, the pandemic, along with the associated sociable distancing and lockdown standards, has had tremendous influences on the global economy, workforce, and food strategies that are still unraveled (Mardones et al., 2020 ). Previous studies showed that the fear of an unknown lethal contagious virus might have a powerful psychological impact on humans, causing a rise in anxiety and tension (Arumugam, 2020; Duan & Zhu, 2020). Undoubtedly, the fear COVID-19 outbreak have obtained psychological influences towards the behavior of consumer (Meyer, 2020). In this regard, reporters and scholars stated a change in consumer behavior during the COVID-19 outbreak as a kind of panic buying and stockpiling behavior. Moreover, some studies demonstrated a distinctive buying behavior pattern, such as an incremental increase in demand that could trigger consumers' fear and anxiety and show unpredicted outcomes.

The existing studies indicates that panic purchase is a complicated process. In this regard, panic buying is related to or triggered by the influence of perceived scarcity (Arafat et al., 2020), harmful feelings such as fear, panic, and difficulties feeling (Lins et al ., 2020), coping behavior, unknown fear and social psychological factors (Yuen et al., 2020), social learning (Zheng et al., 2020), social media (Naeem, 2020), trust in media and friends (Jeżewska-Zychowicz et al., 2020), perceived insecurity (Dholakia, 2020), perceived risk and uncertainty (Dickins et al., 2020), health-related knowledge (Du et al., 2020), personality traits (Dammeyer, 2020), anxiety (Omar et al., 2021). This study will analyze the impact of severity perception, scarcity perception, fear

of COVID-19 outbreak and consumer anxiety level on consumers' panic buying behavior.

Nevertheless, Scholars claimed that the behavior of panic buying could harmfully impact the countries economy through breaking the market demand and supply system, yielding in a rise of countries inflation rate (Yuen et al., 2020), and impacting the margins profit associations (Wright, 2020). Moreover, the disturbance of supply systems happens as a result of consumer panic purchase behavior in which numerous consumers attempt to purchase huge amounts of product to evade the probability of products deficiencies in the future because of COVID-19 outbreak. As a result, the stands at supermarkets were frequently off-loaded after the sudden spike of COVID-19 positive cases (Omar et al., 2021). In this regard, Hodeib (2020) stated that consumers in Lebanon embraced advanced panic buying and food-hoarding behaviors. Besides, consumers increasingly bought processed foodstuffs, which led to inflation spikes in food prices and the deficiency of many food supplies. Hence, this study aims to examine the impact of psychological factors such as the perceived severity, perceived scarcity, and fear of COVID-19 outbreak on panic buying behavior. Further, this study addresses the mediating impact of anxiety level between the relationship of these explored variables and panic buying behavior among Lebanese consumers of grocery products.

The fundamental significance of this study is to enhance marketing literature to understand consumers' behaviors under emergent circumstances. Also, this study adopted expectation theory, reactance theory, and stimulus-organism-response framework to illustrate the relationship between perceived severity, perceived scarcity, fear of COVID-19 and anxiety on consumers

panic buying behavior. Hence, the current research findings will provide empirical support to validate those theories. Instead, the results of this research will support both policymakers and managers in the grocery sector. Policymakers can benefit from this study by better understanding consumer buying behavior beneath emergent situation such as COVID-19 pandemic. Moreover, this understanding will improve policymakers and managers proficiency to alleviate the negative aspects of the current challenging periods. Also, grocery managers can utilize this study results for better understanding consumer panic behavior that guides them to fulfill consumer needs and efficiently attain their marketing goals.

The existent literature demonstrated the significance of studying consumer panic buying behavior from psychological social and economic standpoint's. However, the empirical investigations of the antecedents of consumer panic buying behavior are still limit (Wijaya, 2020). While previous research argued that the social and psychological factors explain consumer panic buying behavior, additional empirical investigation is necessary to comprehend the factors that affect panic buying behavior and understand the influence of the mediation or moderation variables that impact the relationship between the analyzed factors and customer panic buying behavior (Yuen et al., 2020).

Moreover, the framework of stimulus-organism-response was considerably debated by researchers for online shopping, social media, automobile, and purchase intention. Nonetheless, it has not been examined in the context of anxiety outcome with attitude cues and customer fear as arousal towards the panic buying behavior. Likewise, the damaging effect of the COVID-19 outbreak on grocery products buying was reported. However, according to Sheth (2020), the fundamental influences of the psychological

antecedents that affect consumer panic buying behavior of the grocery products during the COVID-19 outbreak have still understood. Thus, the present study attempts to investigate the influence of the psychological antecedents such as the perceived severity, perceived scarcity, the fear of COVID-19 and anxiety on panic buying behavior of grocery products during the COVID-19 outbreak.

## **2. Literature review and hypotheses development**

### **2.1. Panic buying**

Scholars have recently demonstrated various psychological human responses like depression, guilt feeling, exacerbated anxiety, panic feeling, isolation sense and fear during the COVID-19 pandemic (Sim et al., 2020; Omar et al., 2021). According to Ngunjiri (2020), panic is perception of sudden and uncontrolled fear that dramatically impacts individual behavior. Panic buying is unpleasant, unreasonable, and uncontrolled behavior that takes place when an enormous buyers supplies a huge amount of products because of future danger expectation (Duoyong, 2006; Liren et al., 2012; Steven et al., 2014; Yuen et al., 2020). Furthermore, the panic buying is a general public acts which is un-cooperative behavior that take place during emergence and unusual situations (Glass et al., 2002).

At the time of COVID-19 outbreak, particular products such as thermometers, toilet paper and hand sanitizer, are frequently purchased by consumers. Therefore, numerous countries passed these necessities off shop stands (Ngunjiri, 2020). Moreover, scholars highlighted the need to comprehend the antecedents of panic buying behavior at the time of COVID-19 outbreak. Regarding previous literature on stockpiling behavior, investigators had indicated that threat perceptions, social trust, scarcity perceptions, uncertainty, unknown fear, social influences, and coping

behavior are between the numerous essential factors that influence panic buying behavior (Yuen et al., 2020). Furthermore, perceived scarcity, fear and anxiety are empirically explored as a critical antecedents to panic purchasing (Ngunjiri, 2020). However, Yuen et al., (2020) & Sim et al., (2020) have pointed out that there is a necessity for additional studies to explain the direct and the indirect effect as well as the mediate and the moderate effect of some variables that could affect consumer panic buying behavior.

## 2.2. Theories in the context of panic purchase

The conceptual framework of this study is based on a three psychological theories: stimulus-organism- response- framework (Mehrabian & Russell, 1974), expectancy theory (Reiss, 1991), and reactance theory (Brchm & Brehm, 1981). *First*, the stimulus-response-organism framework noted that the behavior arises in an environment is a product of stimuli. Likewise, the stimuli affect the organism, particularly consumers' cognitive and affective processes, leading to a behavioral response. This research claims that the fears of COVID-19, and the perception of severity of an individual (stimuli), affect their cognitive and affective response (anxiety), and their behavioral response (panic buying behavior).

*Second*, the expectancy theory stated that hazard expectation along with individual sensitivity to this hazard object encourages them to take the appropriate activities to prevent the thought agents (Reiss, 1991). Further, the theory stated that the fear of human, might be fluctuated depending on their predicted unfavorable results and the effects of the unpleasant thought that associated with anxiety feeling or panic sensations. This study considers that the scarcities perception of grocery products, might influence customers anxiety and motivate them to purchase unusual amount of grocery products.

*Third*, the reactance theory stated that humans behavior are changed after a freedom threat experiencing (Brchm & Brehm, 1981). Gogarty (1997), explained reactance theory as individual actions to restore their freedom and control after a perceived threat toward their freedom. This study posits that the perception of severity of COVID-19 pandemic affect consumers' control and freedom perception and motivate them restore their control through their engagement in panic buying behavior. Although all mentioned theories are commonly applied in health and psychological contexts, this study adoptes these theories on marketing context in order to demonstrate the effects of fear of COVID-19, perception of severity, perception of scarcity and consumer anxiety on consumers' panic purchase behavior.

### **2.3. The effect of perceived severity on anxiety and panic buying behavior**

The perception of severity defined as individual's perception of threat or adverse outcomes which affect their behavior (Yuen et al., 2020). Individual severity perceptions increase anxiety level, and thereby, change their behaviors (Qian et al., 2020). Telch et al., (2012) noted that the the perception of threat and severity might force peoples to apply extreme standard points to remove the undesired feelings in the medical context. Regarding to marketing literatures, researchers stated that the fear perceptions might raise the personal decision to make frequent purchase to bypass undesired feeling like discomfort, fear, and stress (Kennett-Hensel et al., 2012; Qian et al., 2020). In this context, Omar et al., (2021) indicated that the perception of severity of an individual is positively associated with anxiety.

Ngunjiri, (2020) indicated that the scared of long hours queuing to purchase some product by peoples increase anxiety level and generate panic buying. Moreover, Liren et al., (2012) stated that the individual's sense of life

threatening produced by the COVID-19 outbreak might boost the individuals fear perceptions. Therefore, anxiety levels will be increased which influence panic buying. Furthermore, Yuen et al. (2020) demonstrated that COVID-19 outbreak, influences the individual perception of threat. As a result, individual apply the recommended standards safety precautions through engaging in panic purchase of safety products. According to Laato et al., (2020), perceived severity affect individuals unusual purchase intention of hygiene products. Yuen et al (2020) revealed that the perceived severity and threat of the COVID-19 is one of the psychological causes that influence panic buying. Based on the above review, the following hypotheses were proposed:

*H1. The perceived of severity of COVID-19 outbreak positively influences consumer panic buying behavior in Lebanon.*

*H2. The perception of severity of COVID-19 outbreak positively influences consumer anxiety in Lebanon.*

#### **2.4. The effect of perceived scarcity on anxiety and panic buying behavior**

The perception of scarcity is defined as the anticipation of product diminishes by consumer after a crises situation like pandemics (Sheu et al., 2020). Scholars noted that the perception of scarcity significantly influences customer intent to purchase in retail (Parker et al., 2011). Which, in return, causes people anxiety and influence panic buying and stockpiling behavior (Sterman et al., 2015). Omar et al., (2020) revealed that perceived scarcity is positively associated with anxiety. However, there still lack of research investigating the impact of perceived scarcity on customer's anxiety. Thus, the current research contributes to enrich literature of the effect of perceived scarcity on anxiety.

Arafat et al (2020) claimed that the individual's fear of scarcity along with the loss of control, social learning, and exacerbation of anxiety are the psychological reasons of the panic buying. Moreover, several researchers stated that an individual's perception of future supplies could be insufficient might affect them to engage in panic buying (Shou et al., 2013; Wei et al., 2011; Sim et al., 2020). Arafat et al (2020) pointed out that one of the key driving forces for panic buying is the sense of scarcity. Further, Ngunjiri (2020) stated that the perception of scarcity of the products during the prevalence of COVID-19 pandemic, influences the products stockpiling behavior. Thus, this research indicates that the perception of scarcity of grocery products because of the COVID-19 outbreak, influences consumer panic buying behavior to reestablish their perceptions of freedom. According to the mentioned review, this study proposed the following hypotheses:

*H3. The perception of scarcity positively influences consumer anxiety in Lebanon.*

*H4. The perception of scarcity positively influences the consumer behavior of consumer panic buying behavior in Lebanon.*

### **2.5. The impact of the fear of COVID-19 on anxiety and panic buying behavior**

The term fear is referring to a state of negative feelings which originated from the perception of risk and terrifying circumstances. Individual's reaction toward the fear emotion stimulate individuals for fighting, running away and resisting the conditions that triggered the fearful feelings (Olssone & Phelps, 2007). Moreover, fear is closely related to anxiety (Cisler, et al., 2010). In this context, individuals fear is stimulated by their characteristics and traits which triggered by specific social and cultural relationships (Gill & Burrow, 2017). Akhrani et al., (2020) argued that the

fear is triggered by various events and situations. Further, the lack of individual awareness along with some psychological predictors cause fear, due to individual experiencing of some particular events, such as war, a zone of conflict or catastrophe, terrorism, and others (Gallagher, 2008; Carleton, 2016).

Beside that, people throughout the world are involved in the fear of COVID-19 outbreak. COVID-19 is pandemic life-threatening infectious disease entered the human life and affect their social, psychological and physiological human health. Akhrani et al., (2020) argued that COVID-19 pandemic is a viral infection that spread rapidly between human and has a high mortality rate. In this regard, the fear of COVID-19 appeared during the time of pandemic. A person's fear of COVID-19 is an undesired feeling of individuals due to a threat or extraordinary event. Mertens et al., (2020) discovered that the fear of COVID-19 is more closely related to anxiety. According to Tzur Bitan et al., (2020), the consumer fear of COVID-19 is linked to anxiety and stress, rather than depression.

Previous studies in Hong Kong have explained the role of fear and anxiety on panic purchase behavior during the spreading of the SARS and Swine Flu infectious diseases (Fast et al., 2015). Moreover, fear is a coping response that influence panic purchase. Harper et al., (2020) also indicated that the fear of COVID-pandemic is a socially perceived of danger which stimulates people to employ a special preventative behaviors. Sim et al., (2020) explained that panic purchase behavior appears as a result of conflict period fear as a form of surviving precautions. The fatal situation of COVID-19 eventually guides the individual to be scared, which force individuals to buy goods in unusual quantities to relieve the fear feeling. Akhrani et al., (2020) stated that the behavior panic purchase during the COVID-19 outbreak

is built from the fear of COVID-19. Hence, based on the above review, the following hypotheses were proposed:

*H5. The fear of COVID-19 outbreak positively influences consumer anxiety in Lebanon.*

*H6. The fear of COVID-19 outbreak positively influences consumer consumer panic buying behavior in Lebanon.*

## **2.6 The effect of anxiety on panic buying behavior**

Anxiety refers to the fear of arousal-related sensations (Taylor et al., 2007). This feeling arises from the individual's belief of their cognitive, physical, and social difficulties. Lock et al., (2015) argued that anxiety is bothersome feeling which leads to functional impairment, and frequently affects multiple domains (e.g., finances, work, and health). Moreover, anxiety is frequently accompanied by physical symptoms such as insomnia, restlessness, muscular tension, gastrointestinal issues, and persistent headaches. Anxiety is a significant predictor of panic behavior (Locke et al., 2015). Arafat et al (2020) revealed that exacerbation of anxiety represent one of the psychological reasons of panic buying behavior during the COVID-19 pandemic. Gazali, (2020) stated that anxiety influences Malaysian panic buying behavior. Similarly, Omar et al., (2021) indicated that anxiety is the most influential factors that explain panic buying behavior in Malaysia.

Previous studies seem to ignore the critical role of anxiety on panic buying. Therefore, this study contributes to enhance the literature of the role of anxiety in explaining panic buying behavior due to the current COVID-19 pandemic. Hence, based on the above review, the following hypothesis was proposed:

*H7. Anxiety positively influences consumer consumer panic buying behavior in Lebanon*

## 2.7 The mediating impact of anxiety

The word anxiety refers to unknown logic of discomfort that arises due to the tense feeling, difficulties, apprehensive, or danger expectation of the future (Stephan et al., 1985). Moreover, Craighead et al., (1976) stated that anxiety refer to affective state which arises from both cognitive and environmental stimuli. Further, Stephan et al., (1999) indicated that anxiety level is a serious integrated impact of stress and threat perception due predicted adverse consequences. Therefore, anxiety act as a strongest predictor for explaining aggressive consumer behaviors. According to Lerner et al., (2001) customers tend to assess the adverse impact of threat situation and evaluate the risky stimulus. Yuen et al., (2020) examined the consumer behavior during the COVID-19 outbreak in which consumer engaged in panic purchase to protect them self from the harmful consequences generated from the pandemic as a result of consumer perception of risk. Sim et al. (2020) demonstrated that panic buying lied after the passion for surviving with the uncertainty of the pandemic period. Further, the fate condition ultimately influences individual fear. Thus, the individual buys goods in unusual quantities to reduce the fear feeling.

Harper et al. (2020) argued that the fear of COVID-19 is perceived by the community as a threat which encourage people to embrace preventative behaviors that boost their lives. Previous studies demonstrated the influential role of fear and anxiety in explaining panic buying behavior during the SARS pandemic (Cheng, 2004; Fast et al., 2015; Leung et al., 2020). Previous investigations have also asserted that consumer attempt to pursue comfort, relieve negative emotional feelings and avoid anxiety through engaging in panic purchase during the COVID-19 pandemic (Bacon et al., 2020; Yuen et al., 2020).

As cited in Omar et al., (2021) study, panic occurs due to concurrent, repeatedly and unanticipated anxiety attacks. For Aafjes-van Doorn et al., (2019) a panic attack is a translation of concurrent and uncontrolled fear. According to Black et al., (2007) & Gallagher et al., (2017) anxiety boost purchase intention of bulk products. At the time of COVID-19 outbreak, consumers throughout the worlds stockpiled the products (Yuen et al., 2020). Previous studies have proposed that panic buying behavior are influenced by the consumer fear of COVID-19 (Akhrani et al., 2020), perceived severity (Liren et al., 2012), perceived scarcity (Sterman et al., 2015). These factors increase consumer's anxiety that leads to the panic purchase behavior (Akhrani et al., 2020; Omar et al., 2021). Besides, Nima et al. (2013) stated that the stress and depression are partially mediated through the consumer's anxiety.

In their experimental study, Lee et al. (2011) discovered in their study which was conducted in automotive service context that the relationship between stereotype threat and consumer buying intention is mediated by consumer anxiety. Another study conducted by Bakio~glu et al., (2020) demonstrated the mediating impact of anxiety level between the relationship of consumer fear of COVID-19 outbreak, uncertainty intolerance and the positive emotion of consumer. Further, consumer anxiety mediate the relationship between materialism effect and addictive purchase. Sim et al., (2020) & Yuen et al., (2020) claimed that the lack of products access, pandemic span uncertainty and the scared of supply system disruption influence consumers anxiety and in turn influence their panic buying.

Therefore, this study proposes that relationship between perceived severity, perceived scarcity and the fear of COVID-19 and panic behavior

behavior are mediated by consumers' anxiety. Thus, based on the previous discussion, the following hypotheses were proposed:

*H8a. Anxiety mediates the relationship between the perception of severity and consumer panic buying behavior in Lebanon.*

*H8b. Anxiety mediates the relationship between the perception of scarcity and consumer panic buying behavior in Lebanon.*

*H8c. Anxiety mediates the relationship between fear of COVID-19 and consumer panic buying behavior in Lebanon.*

### 3. Conceptual framework

This study focuses on panic buying behavior; the conceptual framework was developed based on a previous study conducted by Omar et al. (2020). Moreover, the researcher proposed this framework by adding further factors, as shown in Fig. 1.

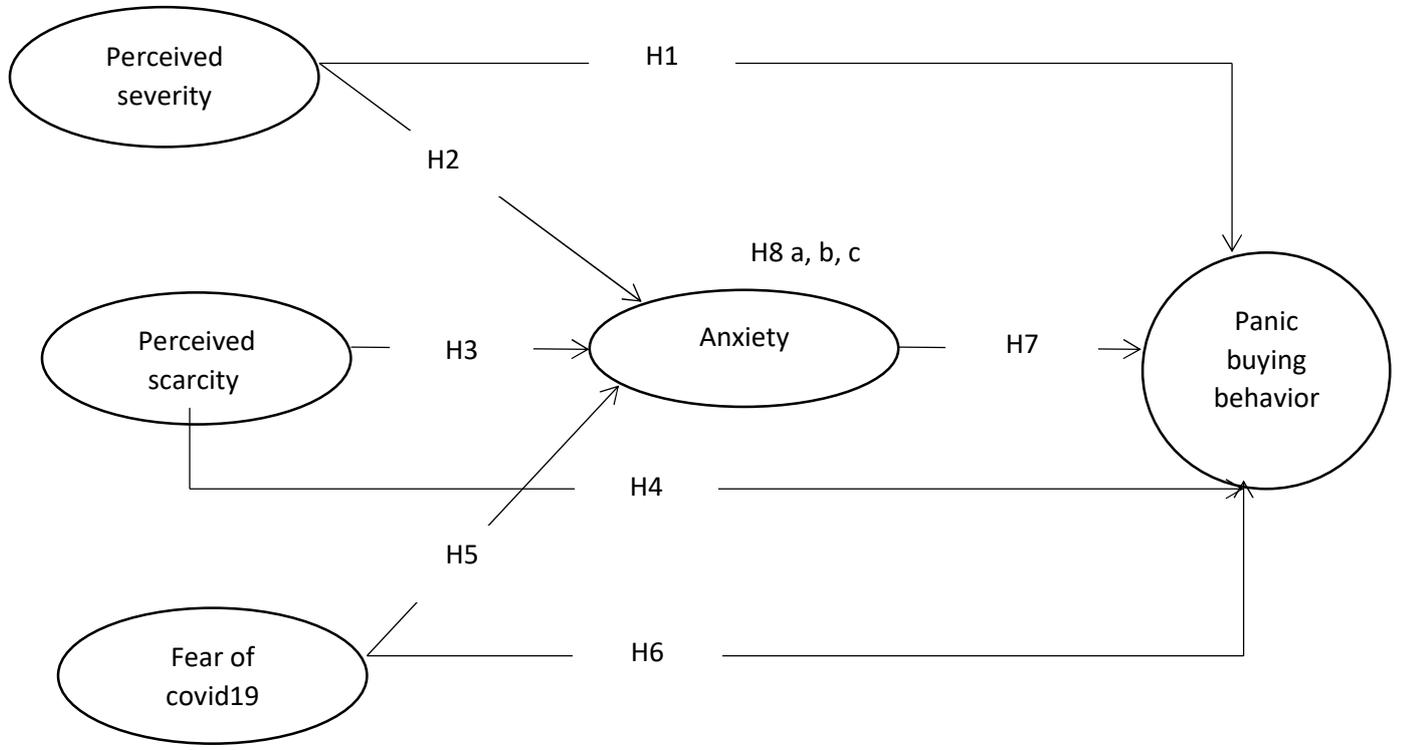


Figure (1): Conceptual Framework

Source: Omar et al. (2020) and adjusted by the researchers

## 4. Research Methodology

### 4.1 Research design and sampling

This study investigates the factors that affect panic buying behavior during the COVID-19 pandemic in Lebanese context, these factors include: “perceived severity, perceived scarcity, fear of COVID-19, and anxiety”. To achieve the current research objectives, and empirically analyzes the issue of panic buying in the grocery sector, data were collected from Lebanese respondents, during the time between 24-3-2022 and 10-3-2022. Knowing that this time was the beginning of Ukrainian and Russian war, which triggered the fear of food product diminish. In this context, Lebanese populations have experienced more panic buying behavior not only due to COVID-19 but also due to the current war (Rose, 2022).

Based on online and offline data collection method, structured questionnaires were distributed with a convenience sample of 600 respondents in large grocery markets in Beirut. The online data collection method facilitates obtaining a big number of respondents. Using social media platforms including Email, WhatsApp, and Messenger, the link of survey was administered to the potential respondents.

### 4.2 Measurement instrument

The research measurement instrument scale was adapted from previous studies (Table 1) based on a five-point Likert scale ranging from “strongly disagree to strongly agree”. First of all, this instrument was distributed to several experts to take their opinion about its validity, then the research instrument scales was modified based on their recommendations. The fear of COVID-19 construct was based on seven items and adapted from Ahorsu et al., (2020). The three measurement items for the perceived severity were adapted from Ling et al. (2019). Perceived scarcity construct was based on five measures and adapted from Byun & Sternquist (2011). Anxiety construct measure was based on five items from Zsido et al. (2020). Lastly, the three measurement items for the panic buying behavior construct were adapted from Van et al. (2010).

**Table 1**  
Constructs and items

Constructs	Item	Source
Fear of COVID-19	I am most afraid of the coronavirus	Adapted from Ahorsu et al., (2020)
	It makes me uncomfortable to think about coronavirus	
	My hands become clammy when I think about coronavirus	
	I am afraid of losing my life because of coronavirus	
	I become nervous or anxious when watching news and stories about coronavirus	
	I cannot sleep because I am worried about getting coronavirus	
	My heart races or palpitates when I think about coronavirus	
Perceived severity	Covid-19 pandemic is a serious threat	Adapted from Ling et al. (2019)
	Covid-19 pandemic is critical	
	Covid-19 pandemic can be life threatening.	
Perceived scarcity	My favorite products almost out of stock when I want to purchase them.	Adapted from Byun and Semquist (2011)
	There was only a limited number of my favorite product on the rack.	
	I found my favorite product was often scarce.	
	There was only a limited number of products on the shelf.	
	While shopping, I found that there were a limited number of product choices.	
Anxiety	When shopping for groceries, I feel that difficulties are piling up so that I cannot overcome them.	Adapted from Zsido et al. (2020)
	When shopping for groceries, I worry too much over something that really doesn't matter.	
	When shopping for groceries, I take disappointments so keenly that I can't put them out of my mind.	
	When shopping for groceries, I get in a state of tension or turmoil as I think over my recent concerns and interest.	
	When shopping for groceries, some unimportant thoughts run through my mind and bothers me	
Panic buying behavior	While shopping for groceries, I have bought more products than what I intended to buy.	Adapted from Van et al. (2010)
	Stock up groceries and/or other necessities	
	Unusual purchase of groceries	

The demographic information of the respondents including their age, gender, marital status, income and educational level was also captured for additional analysis. The demographic information is critical in consumer panic buying behavior because some of this information could constrain their ability to make unusual purchase as of limited amount of money. The descriptive statistics of consumers' demographic information were conducted by using the frequency analysis in SPSS. In addition, the structural equation modelling (SEM) approach was chosen to examine the gathered data. SEM includes evaluating the measurement model with confirmatory factor analysis (CFA) as well as testing the structural model. The data was analysed using the IBM SPSS AMOS 23 program.

## 5- Data analysis and results

**Table 2**

Demographic profile of respondents (N=391)

Attribute	Value	Frequency	Percentage (%)
Gender	Male	173	44.2
	Female	218	55.8
Age	18- 25 years	149	38.1
	26-35 years	170	43.5
	36-45 years	46	11.8
	46-65 years	21	5.4
	> 65 years	5	1.3
Education Level	Primary school	57	14.6
	Secondary school	69	17.6
	Bachelor degree	160	40.9
	Diploma	90	23.0
	Master degree	8	2.0
	PhD or DBA	7	1.8
Marital status	Single	207	52.9
	Married	150	38.4
	Divorced	22	5.6
	Widow	12	3.1
Income	Less than 100\$	169	43.2
	Between 100\$-300\$	164	41.9
	Between 300\$-500\$	45	11.5
	Between 500\$-1000\$	9	2.3
	Between 1000\$-5000\$	2	.5
	Above 5000\$	2	.5

A total of 391 consumers out of 600 successfully completed the questionnaire, accounting for 65.1 percent of the overall population. Table 2 illustrates the results of descriptive statistics of consumer demographic information, including 55.8% of female respondents and 44.2% of male respondents in this survey. Single respondents made up 52.9 percent of the total, with married respondents accounting for 38.4 percent of the total. The majority of respondents were between the ages of 26 and 35 (43.5%),

followed by those between the ages of 18 and 25 (38.1%), and those between the ages of 36 and 45 (11.8%), then the ages between 46 and 65 (5.4%), and those above the age 65 (1.3%). Consumers with a bachelor's degree accounted for 40.9% which took the majority of respondents in the study, followed by those with a certificate/diploma (23 %) and those with a secondary school (17.6%). The primary income levels were between \$100 and \$300 and less than \$100, accounting for 85.1 % of all respondents.

### 5.1 Measurement model evaluation

This study used Cronbach's alpha, composite reliability (CR), confirmatory factor analysis, and average variance extracted for all constructs to evaluate the measuring model's outcomes. In order to determine the internal consistency of the variables, cronbach's alpha and composite reliability values (Table 3) was indicated. The Cronbach's alpha and composite reliable values of all the variables were larger than 0.830 and 0.880, respectively, which are higher than Hair et al (2017) recommended threshold value of 0.7.

**Table 3**

Result of measurement model.

Latent Variable	N	Cronbach Alpha	CR	AVE	MSV
Fear of covid-19	7	0.942	0.933	0.735	0.661
Perceived severity	3	0.866	0.943	0.701	0.265
Perceived scarcity	5	0.932	0.867	0.685	0.564
Anxiety	5	0.932	0.931	0.731	0.661
Panic Purchasing	3	0.901	0.903	0.755	0.723

Furthermore, this study tested the average variance extracted values (AVE) for all of the constructs and the results show that AVE ranged from

0.553 to 0.873, which is higher than the cut-off level of 0.5. Therefore, the findings guarantee the study's constructs' consistency, reliability, and convergent validity. We looked also at the MSV values in order to determine the discriminant validity for all the constructs, the MSV values of all constructs are fewer than the AVE values, indicating the presence of discriminant validity.

**Table 4**  
Confirmatory Factor Analysis

Measure	Estimate	Threshold	Interpretation
CMIN	449.740	--	--
DF	220	--	--
CMIN/DF	2.044	Between 1 and 3	Excellent
CFI	0.972	>0.95	Excellent
SRMR	0.029	<0.08	Excellent
RMSEA	0.052	<0.06	Excellent
PClose	0.329	>0.05	Excellent

In this study, the confirmatory factor analysis (Table 4) for the five factors was also tested. Table 4 demonstrates that the CFA findings provided a satisfactory fit with the data, and the fit measures met the permitted cut off standards.

### 5.2 Hypotheses testing, and results

This study investigate the relationship between costumers perceptions of severity, perceptions of scarcity, fear of COVID-19, anxiety, and panic buying behavior of the grocery product during the outbreak of COVID-19 pandemic in Lebanon. Moreover, this study explored the mediate impact of anxiety among the explored psychological variables: perceptions of severity, perceptions of scarcity, fear of COVID-19 and panic purchasing

behavior. To assess the structural model and the hypotheses, this study employs the path coefficient significance and the standard error of the of the variables.

The direct and indirect relationships among the variables also provided in Table 5. The structural model assessment estimates that perceived severity, perceived scarcity, fear of COVID-19 and anxiety influences panic buying behavior. Moreover, the assessment indicates that anxiety mediates the relationship between the fear of COVID-19, perceived severity, perceived scarcity and panic buying behavior.

**Table 5**  
Structural relationships and hypotheses testing

Hypothesis	Relationship	Estimate	S.E.	C.R.	P	Results
H1	PS→PBB	.593	.056	10.529	***	supported
H2	PS→A	.648	.052	12.558	***	supported
H3	PSC→A	.936	.048	19.370	***	supported
H4	PSC→PBB	.888	.053	17.786	***	supported
H5	FOC→A	.352	.054	6.544	***	supported
H6	FOC→PBB	.268	.057	4.674	***	supported
H7	A→PBB	.950	.049	19.393	***	supported

P\*\*\*= $\leq$ 0.001

PS: perceived severity  
PSC: perceived scarcity  
FOC: fear of COVID-19  
A: anxiety  
PBB: panic buying behaviour

The results indicate that perceived severity ( $\beta$  0.593,  $p \leq 0.001$ ) has a positive effect on panic buying behavior; therefore, H1 is supported. H2 is supported as perceived severity has a positive effect on anxiety ( $\beta$  0.648,  $p \leq 0.001$ ). H3 is also supported as perceived scarcity has a positive effect on anxiety ( $\beta$  0.936,  $p \leq 0.001$ ). Similarly, perceived scarcity has a positive effect on panic buying behavior ( $\beta$  0.888,  $p \leq 0.001$ ); therefore, H4 is

supported. The fear of COVID-19 has a positive relationship with consumer anxiety ( $\beta$  0.352,  $p \leq 0.001$ ); thus H5 is supported. The fear of COVID-19 has also a positive relationship with consumer panic buying behavior ( $\beta$  0.268,  $p \leq 0.001$ ); therefore H6 is supported. Finally, the results indicate that anxiety ( $\beta$  0.593,  $p \leq 0.001$ ) has a positive effect on panic buying behavior. Thus, H7 is supported.

These findings revealed that perceived scarcity plays the most crucial role in influencing consumer anxiety, followed by the perception of severity. In essence, the most crucial role in influencing panic buying behavior was anxiety followed by the perceived scarcity and perceived severity. However, the fear of COVID-19 played the least role in influencing both anxiety and panic buying behavior.

**Table 6**

Indirect effects

Hypothesis	Estimate	S.E.	C.R.	P	Results
H8a: buying behaviour <--- PerSeverity	-.039	.047	-.822	.411 <sub>ns</sub>	Fully mediate
H8b: buying behaviour <--- PerScarcity	-.008	.122	-.061	.951 <sub>ns</sub>	Fully mediate
H8c: buying behaviour <--- FearCovid	-.076	.035	-2.173	.030*	Partially mediate

P\*\*\*= $<0.05$ , ns=not significant

### 5.2.1 Testing the Mediating Relationships

The first stage was to investigate whether the predictor variables (perceived severity, perceived scarcity, and fear of COVID-19) explain the mediator variable substantially (Anxiety). In addition, the second phase determines whether both predictor variables and mediator variables substantially influence the predicted variable (Panic buying behaviour). The

final phase is to assess whether anxiety predicts panic purchase behaviour significantly.

As indicated in Table 5, the direct effect of perceived severity on anxiety and panic buying behaviour are supported. Similarly, anxiety has positive relationship with consumer panic buying behaviour. However, as indicated in Table 6, the indirect effect of perceived severity on panic behaviour through the mediator (anxiety) was not significant ( $\beta$  -0.039,  $p = 0.411$ ). This means that anxiety fully mediates the relationship between perceived severity and panic buying behaviour, and thus supporting H8a.

Likewise, as indicated in Table 5, the direct effect of perceived scarcity on anxiety and panic buying behaviour are supported. However, the use of the mediator (Anxiety) results in a non-significant relationship between perceived scarcity ( $\beta$  -0.008,  $p = 0.951$ ) and panic buying behaviour (as shown in Table 6). Thus, anxiety fully mediates the relationship between perceived scarcity and panic buying behaviour. Thus, H8b is supported.

In addition, the direct effect of fear of COVID-19 on anxiety and panic behaviour were supported, as indicated in Table 5. However, the indirect effect through the use of the mediator (anxiety) results in a decrease in  $\beta$ -value for the Fear of COVID-19 ( $\beta$  -0.076,  $p \leq 0.05$ ) as revealed in Table 6, indicating partial mediation and supporting H8c.

Overall, this findings indicate that the severity perceptions about COVID-19 and fear of COVID-19 outbreak of consumers' in Lebanon, and their perceived scarcity that the food products could run out from the stores have a positive impact on their levels of anxiety and panic buying behavior. Moreover, the current study authenticates that the anxiety levels of customers is an important predictor for their panic buying behavior, which acts as a mediator between the psychological factors: fear of COVID-19,

severity perceptions, scarcity perceptions, and consumer panic buying behavior.

## 6. Discussions

This study is conducted to investigate the relationship among perceived severity, perceived scarcity, fear of COVID-19, anxiety and panic buying behavior. Further, this study addresses the mediating effect of anxiety between the relationship of perceived severity, perceived scarcity, fear of COVID-19, and panic buying behavior. The considerable direct and indirect correlations among the investigated variables confirm previous researchers' argument that fear of COVID-19, severity perceptions, scarcity perceptions, and anxiety are critical precursors to panic buying. (Kemp et al., 2014; Liren et al., 2012; Sim et al., 2020; Yuen et al., 2020; Akhrani et al., 2020; Omar et al., 2021).

The findings of this study state that perceived severity affect consumer panic buying behavior. The positive relationship between perceived severity and panic buying behavior is in line with previous studies that argued the perception of severity influences panic buying behavior (Laato et al., 2020; Yuen et al. 2020). However, the finding opposes recent study by Omar et al., (2021) that found a negative relationship between perceived severity and panic buying behavior (Omar et al., 2021). In this context, the researchers believe that when consumers have perceived severity and take COVID-19 as a serious life threatening condition, this will inspire them to bring a large and unusual amount of grocery products in order for them to limit their mingling with other people in crowded places particularly in markets and shops. The findings also indicate that perceived severity influences anxiety, the positive relationship between perceived severity and

anxiety supports previous studies that found the perception of severity influences customer's anxiety (Ngunjiri, 2020; Yuen et al., 2020; Omar et al., 2021). In essence, the findings contradict with other study by Lie et al., (2020) that revealed a negative relationship between perceived severity and anxiety. The researchers consider that the positive relationship between perceived severity and anxiety is a reason of the increase COVID-19 cases. Moreover, the death rate of COVID-19 patients was increased accompanied with the inability of the hospitals to admit more COVID-19 patient as a result of the complete full hospital beds.

Besides that, the findings of this study also indicated that there is a positive relationship between perceived scarcity and anxiety, this finding is consistence with previous studies that argued the perception of scarcity can influence anxiety (Sterman et al., 2015; Omar et al., 2021). The researchers suggest that the positive relationship between perceived scarcity and anxiety is caused by the negative feeling of customers that the grocery products could disappear from the markets or the price of grocery products could elevate. Further, the current study revealed that there is a positive relationship between perceived scarcity and panic buying behavior, this finding supports previous studies that states that perceived scarcity influences panic buying behavior (Shou et al., 2013; Wei et al., 2011; Arafat et al., 2020; Sim et al., 2020). However, this finding contradicts other study by Omar et al., (2020) that revealed a negative relationship between perceived scarcity and panic buying behavior. The researchers assume that the positive relationship between perceived scarcity and panic buying behavior is due to the lack of governmental trust to supply the grocery markets and to control the price that is expected to increase with the current economic trouble that already exist. Thus,

customers are forced to bring a large amount of grocery products to maintain their self from any unexpected situation could happen.

Likewise, the findings of this study stated that there is a positive relationship between the fear of COVID-19 and anxiety. This finding is in line with previous study by Tzur Bitan et al., (2020) that indicated the fear of COVID-19 influences anxiety level. The researchers suppose that the positive relationship between the fear of COVID-19 and anxiety is due to the daily exposure to the online information by customers which triggers their fear of disease. Moreover, the lack of customer's awareness related to the facts of the COVID-19 pandemic increase customers fear of COVID-19 and thereby increase their anxiety level. Furthermore, the findings of this study indicated that there is a positive relationship between the fear of COVID-19 and panic buying behavior. This finding supports other study by Akhrani et al., (2020) that argued the fear of COVID-19 influences panic buying behavior. The researchers suggest that the positive relationship between the fear of COVID-19 and panic buying behavior is instigated by the customer's fear of complete lock down that could be implemented by the government to decrease the cases and the prevalence of COVID-19. Thus, customers bought large quantity of product while shopping for groceries for products stockpiling.

In addition, the findings of this study confirm that anxiety is crucial antecedent to panic buying behaviors. The positive relationship between anxiety and panic buying behavior supports previous scholars that argued the anxiety influences panic buying behavior (Locke et al., 2015; Arafat et al., 2020; Gazali, 2020; Omar et al., 2021). The researchers deliberate that the customer's panic buying behavior derived from the exacerbated anxiety

is initiated from the negative feeling, stress and uncontrolled fears that force customers to buy a large amount of products in order to mitigate these feelings. In this context, customers involved in unusual and panic buying as a result of harmful thoughts that run through their mind and bother them.

Finally, the results of this study indicate that anxiety mediate the relationship between perceived severity, perceived scarcity, fear of COVID-19 and panic buying behavior. These findings are in line with previous scholars that argued the anxiety mediate the relationship between perceived severity, perceived scarcity, fear of COVID-19 and panic buying behavior (Fast et al., 2015; Akhrani et al., 2020; Gazali, 2020; Omar et al., 2021). The researchers assume that anxiety mediate the relation between these variables because anxiety contains all the negative feelings perceived by the customers whether those of scarcity and severity perception or the fear of COVID-19 pandemic. Thus, anxiety explains the relationship between these variables and panic buying behaviors.

## 7. Implications

### 7.1 Theoretical implication

The findings of this study have a number of ramifications. *First*, the empirical research of stockpiling and hoarding behavior during unusual situation is still lacking (Yuen et al., 2020). Therefore, this study enhances marketing literature to understand consumers' behaviors under unusual and emergent situations. *In addition*, the current study is based on stimulus-organism- response- framework, expectation theory and reactance theory. The finding of this study provides empirical support to validate those theories. More specifically, the findings of this study support the stimulus-organism- response- framework (Mehrabian et al., 1974) that individual's

behavior is a result of stimuli that affect their cognitive and emotional processes. Moreover, the study's finding confirm Reiss' (1991) expectation theory, which states that a person's prediction of danger and sensitivity to the harmful object encourage them to take the appropriate actions to escape the fear stimulus. Further, the findings of this study validate the reactance theory (Brehm, 1981) which indicates that people's threat perception toward their freedom encourages them to reclaim their freedom.

*Finally*, this study expanded previous literature that investigated various psychological factors on panic buying behavior (Laato et al., 2020; Omar et al., 2021; Sheu et al., 2020). This study adds to this body of literature by identifying the consumer's fear of COVID-19 as a predictor of anxiety and panic buying behavior.

### *7.2 Practical implications*

The findings of this study are beneficial for policy makers, retailers and government. The findings suggest that panic buying behavior is related to the consumer's psychological factors including: perceived severity, perceived scarcity, fear of COVID-19 and anxiety. *First*, this research will aid policy makers, retailers and government to comprehend the factors that influence panic buying behavior in order to plan for the required actions to guarantee that demand and supply are in balance when a crisis occurs.

*Second*, the findings suggest that anxiety levels of customer played the most crucial role in influencing panic buying behavior. In order to alleviate the anxiety of consumers and minimize their negative feelings which drive their panic purchase, policymakers should make timely and effective choices and strategies through a good communication tactics and extensive in the early onset of a pandemic or emergent situations.

*Third*, the current research suggests that marketers and policy makers may combat panic buying by giving constructive information during a pandemic crisis and maintaining enough product availability in marketplaces. They are suggested to implement a multiple strategies that focus on sharing timely information on social media to show consumers that the government, market, and economy are prepared well to face any of challenges or problems during the pandemic or any crises situations.

*Finally*, panic purchasing is usually carried out by consumers who are afraid of stock outs owing to their impression of scarcity. The present study argues that the perceived scarcity is the most determinant factor in influencing customer's anxiety. Thus, policy makers and governments are suggested to decrease the perception of customer's anxiety. Governments might consider imposing a restriction on the quantity of vital goods that a single customer can buy at a time, alleviating the strain on products that are in short supply. Additionally, retail stores can enhance the frequency with which they reload goods to avoid empty shelves.

### *7.3 Limitation and future research*

Like any research, this study is not free of limitations. These limitations should be taken into considerations. *First*, the current study is conducted in Lebanon city which limit the scope of the research. The replication of the research framework in another country is important for the findings generalizability. *Second*, this study adopted convenience sampling technique that undermines its generalizability. Future research could employ another sampling technique to further analyze the relationship between the variables. *Third*, data was gathered while the Ukraine and Russian war beginning. Thus, the perception of scarcity and the level of

customer anxiety could be stimulated by the fear of the absence of food product or the fear of food price elevation related to the current war rather than COVID-19 pandemic impact. Future studies Future research might focus on any additional mediating or moderating variables that can have a major impact on the link between these variables.

Fourth, this study investigates the psychological factors including: “perceived severity, perceived scarcity, fear of COVID-19 and anxiety” on panic buying behavior. However, other social factors such as social and political trust, social norms, and peer buying might also affect the customer’s panic buying behavior. Thus, future research should study the social factors that affect panic buying behavior.

*Finally*, other variables may contribute in advancing and explaining panic buying behavior such as information overload and consumer personality traits. Future researches are recommended to highlight on consumer panic behavior as a topic to overcome the current study limitations.

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