Exploring panic buying behavior during the COVID-19 pandemic: a developing country perspective
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Abstract
Purpose – This paper aims to identify factors that influence customers’ panic buying behavior during the COVID-19 pandemic.
Design/methodology/approach – A self-administered questionnaire was distributed to 357 participants in Fiji, and structural equation modeling to analyze the collected data.
Findings – Results indicate that expected personal outcomes is positively associated with customers’ attitudes while expected community-related outcomes negatively impact customers’ attitudes. Factors such as attitude, subjective norms, scarcity, time pressure and perceived competition were found to positively influence customers’ panic buying intention. Furthermore, scarcity and time pressure were confirmed to positively influence perceived competitiveness while perceived social detection risk negatively influences customer’s panic buying intention.
Practical implications – The findings highlight the need for better measures to ensure that every customer has access to goods and services and is not deprived of such necessities in times of a crisis. These results will assist store managers and policymakers in introducing better management, social policies and resource utilization mechanisms to mitigate panic buying during the pandemic.
Originality/value – This study’s findings contribute to the literature on customer’s panic buying behavior during a global pandemic. Research in this area remain scarce, inconsistent and inconclusive. Novel insights are generated as this study is the first to combine the theory of planned behavior, privacy calculus theory and protection motivation theory. Applying these theories allows new relationships to be tested to better understand customer behavior during a global pandemic. With most studies on customer behavior during crises and disasters in developed countries, this study generates new insights by exploring customer behavior in a developing country.

Keywords COVID-19, Panic buying, Theory of planned behavior, Behavioral risk, Perceived behavioral control

Paper type Research paper

1. Introduction
In early 2020, the World Health Organization (WHO) confirmed coronavirus (COVID-19) as a global pandemic (Khanra et al., 2021; Talwar et al., 2021), triggering panic buying across many parts of the globe. As governments announced lockdowns to curb the spread of the virus (Bennett et al., 2020), many people rushed to supermarkets to purchase essential supplies. Mainstream media, social media and scholarly research reported people stockpiling food items, medication and sanitary products out of fear of scarcity (Debiec, 2020; Norberg and Rucker, 2020). Most supermarket shelves were left empty by residents hoarding goods, a behavior that is typically observed at the outset of natural disasters such as cyclones or cold

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weather (Kitching, 2016; Rice, 2016). For instance, severe bulk buying of staples was observed among Taiwanese communities during the forecasted arrival of a super typhoon (Nepartak) in 2016 (Tsao et al., 2019). Similarly, China’s 2003 SARS outbreak caused people to bulk up on rice vinegar and medical products. Other notable public emergency crises in the past included: H1N1 flu in China, Hurricane Sandy in the United States, the nuclear accident in Japan, and Haiti’s earthquake (Wang et al., 2014).

This issue highlights the need to understand customer behavior during a global pandemic. Despite organizations and businesses being interested in disaster response, limited knowledge and research is available on the consequences of disaster and crisis on customer buying behavior (Hall et al., 2020). Researchers have highlighted that studies relating to obsessive buying behavior remain scarce, inconsistent and inconclusive (Islam et al., 2021; Iyer et al., 2020). The COVID-19 has left many supermarket shelves empty worldwide, leaving the retail markets with a looming question of how prepared are their counteractive responses (Laato et al., 2020). Most researchers (Islam et al., 2021; Laatoh et al., 2020; Lehberger et al., 2021) found that such an area opens up to more discussion for retail markets to consider, namely, whether the unusual purchases impacted customers financial buying power or why do certain products go out of stock (should there be the redevelopment of policies to mold customers attitudes, subjective norms and perceived behavioral control). The majority of studies on crisis and disaster have been conducted in developed countries like New Zealand (Hall et al., 2020), China, US, Pakistan and India (Islam et al., 2021), Australia (Prentice et al., 2020a, b), Italy, US, UK and China. Characteristics of developing countries, including culture, economy, education and income make customer behavior distinct from developed countries (Slack and Singh, 2020). Therefore, empirical evidence from developing countries is imperative to consider to ascertain the difference in customer behavior during a global pandemic. Due to the threat of the COVID-19 pandemic, this study applies the threat appraisal theory.

Based on this theory, perceived scarcity and perceived time pressure are added to the TPB. As a result of the threat of COVID-19, customers were competing amongst themselves to buy essential items before stocks run out. This led to the addition of perceived competition as another variable to the TPB. As hoarding behavior aimed at maximizing self-interest at the expense of others would not be accepted by society. This led to the addition of social detection risk to the TPB. This comprehensive model of examining customers’ panic buying behavior was developed to answer the research question of what factors impact customers’ panic buying intention.

The findings of this study will make the following contributions. First, this research contributes to the preceding literature by endowing a comprehensive insight into customers’ panic buying during a pandemic. Second, this study offers unique insights by exploring the impact of scarcity brought about due to a global pandemic. This study is the first to investigate this behavior by integrating scarcity and time pressure on competitive customer behavior to purchase items before stock runs out. Third, this study is also the first to look at customers’ panic buying behavior in a developing country like Fiji. The theory developing literature has shed light and underpinned testing research models and instruments in diverse context as crucial (Sharma et al., 2020a; Venkatesh et al., 2012). Further to this, this study can be used as a guideline for many Pacific Island nations that share similar characteristics to Fiji for example, Papua New Guinea, Solomon Islands and Vanuatu (Sharma et al., 2021a; Singh et al., 2021). It would be impractical to apply developed nations retail market practices to that of developing nations. Fifth, this study adds towards a better understanding of customers’ attitude by adding expected community-related outcomes and expected personal outcomes as antecedents of attitude towards panic buying. Sixth, this study is also the first to examine the impact of social detection risk on customer buying behavior. These contributions will add
to the frontier of knowledge on customer behavior and provide retailers and policymakers assistance in devising strategies to reduce panic buying.

The following sections of this study are as follows: Section 2 discusses the literature and hypotheses proposed by this study. Section 3 highlights the methodology and provides details about the data analysis. Section 4 presents the results of the data analysis. Section 5 provides the discussion of results in comparison to existing literature. Section 6 highlights the limitations and future directions of this research. Section 7 provides the conclusion for this study.

2. Literature review

2.1 Customer panic buying

Panic buying is described as a compulsive behavior whereby customers purchase items in large quantities to avert real or perceived scarcity threats (Herjanto et al., 2021). Existing literature indicates that panic buying can be triggered by neurological factors (anxiety and depression), social factors (social networking) and situational factors (supply scarcity) (Herjanto et al., 2021; Yuen et al., 2020). Studies show that customer buying behavior is significantly influenced by a person’s perception of the threat imposed by the crisis and the fear of product scarcity (Arafat et al., 2020; Yuen et al., 2020). Panic buying acts as a coping mechanism to curb anxiety and increase food security. While some reports condone the hedonic nature of individuals who engage in hoarding behavior, such acts can also be used to express care, protection, and love for themselves and their family (Novemsky, 2020). Some scholars have identified that individuals cultivate a sense of communal personality or togetherness within tight-knit communities, leading to an enriched collaboration and sustenance for other community members (Drury and Alfadhli, 2019; Drury and Reicher, 2012; Reicher and Haslam, 2009). While numerous studies show a significant relationship between psychosocial factors and panic buying behavior, Herjanto et al. (2021) call for more researchers to investigate cognitive function’s effect on panic buying behavior, especially in different cultural and economic contexts.

2.2 Theoretical framework and research hypotheses

The theory of planned behavior (TPB) has been adopted to illustrate the factors influencing customers’ panic buying behavior during COVID-19 in Fiji. Along with the three antecedents of TPB, namely perceived behavioral control, attitude and subjective norms, this study extends the model by adding other antecedents derived from other behavioral theories, namely the privacy calculus theory and the appraisal theory. The privacy calculus theory proposes that individuals compare perceived risks and anticipated benefits (Hassandoust et al., 2021) in a particular situation. Hence, the inclusion of “expected personal outcomes” and “expected community outcomes” is recognized as antecedents to customers’ attitude toward panic buying. The appraisal theory depicts a psychological process that an individual undergoes when exposed to an environmental stimulus (Cai et al., 2018). It postulates that when confronted with a stressor, individuals engage in a primary appraisal of its relevance, potential benefits, and potential dangers (Pahayahay and Khalili-Mahani, 2020). Hence, the antecedents perceived scarcity, perceived time pressure, perceived competition and social detection risk were included to understand customers’ attitude toward panic buying.

From the review of literature and theories, it was evident that due to the differences in emphasis of these theories, extending antecedents within the TPB could lead to a more holistic understanding of this phenomenon. Therefore, by combining relevant antecedents from TPB, privacy calculus theory and appraisal theory, a comprehensive model of examining customers’ panic buying behavior was developed to answer the research question of what factors impact customers’ panic buying intention in a global pandemic.
2.2.1 Theory of planned behavior. This study employs the TPB to understand customer behavior. TPB purports that intention to execute a particular behavior is regarded as the best predictor of actual behavioral performance. The intention, in such cases, is determined by perceived behavioral control, attitude and subjective norms (Ajzen, 1991), demonstrating the customers’ likelihood of undergoing such behavior (Honkanen and Young, 2015). The higher the intention level, the more likelihood of customers engaging in that behavior. As such, the study seeks to understand customers’ intention to engage in panic buying behavior. Several studies have applied the TPB and have ascertained that such intentions can directly and/or indirectly impact customer behavior (Moon, 2021; Sharma et al., 2020b).

Perceived behavioral control is the level of control an individual has over an action based on their past experiences, while attitude is coined as how individuals evaluate and assess the perceived outcomes of their actions. Further to this, subjective norms are defined as how an individual perceives the normative pressure imposed socially by those they consider important (Ajzen, 1991). For this study’s purpose, the researchers found that the perceived behavioral control addresses the customers’ ability and ease to purchase more products than needed during the pandemic. The researchers viewed attitude as customers’ evaluation of the outcome of buying more items in COVID-19 than they need, while subjective norms consider how customers consider the belief of significant members about purchasing more than necessary products during COVID-19.

2.2.2 Privacy calculus perspectives. According to the privacy calculus theory, an individual examines the benefits and risk associated with an action when making a decision. However, the benefit and risk assessment differs according to context. This theory has been used to examine customer behavior during COVID-19 (Sharma et al., 2020b). Therefore, based on this theory, expected personal outcomes of panic buying and potential community-related outcomes panic buying would impact customers’ attitude towards panic buying.

2.2.3 Protection motivation theory. According to Rogers’s (1975), protection motivation theory (PMT) is used to understand an individual’s social behavior. There are two dimensions of the PMT: threat appraisal and coping appraisal. This implies that an individual’s protection motivation behavior derived from the perceived threat is caused by threat and coping appraisal. The PMT is has been used to individual’s behavior during the COVID-19 pandemic (Itani and Hollebeck, 2021; Kim et al., 2021a, b; Rather, 2021). Therefore, to study the impact of the threat imposed by COVID-19, the PMT is appropriate for this study.

2.2.4 Scarcity. Scarcity has been considered an influential determinant of customer behavior by many theories in customer psychology and behavioral economics. Customers exhibit a stronger intention to acquire scarce products or services (Chung et al., 2017). The sense of scarcity has influenced many customers to engage in impulsive purchases. Advertisers have commonly used messages of scarcity in the form of “limited items remaining” or “last remaining item” to influence customer buying decisions (Chung et al., 2017). In the context of social commerce, scarcity can take the form of a limited quantity of time (Rice and Keller, 2009). Limited quantity implies a restriction to the number of items available for purchase, while time limitation is the restriction of the duration for which a particular product or service is available (Chung et al., 2017). This study looks at the perceived scarcity in terms of quantity and price that arise due to the COVID-19 pandemic. This provides novel insights by being the first study to combine the theory of planned behavior, privacy calculus theory and protection theory to understand customers panic buying behavior during the global COVID-19 pandemic.

2.3 Hypotheses development
2.3.1 Expected personal outcomes. According to Compeau et al. (1999), expected personal outcomes refer to the opportunities of rewards or increase in pleasure arising out of engaging in a certain activity. Some customers may perceive greater benefits or rewards resulting from
purchasing commodities before anyone else in the community. Several studies illustrate a positive relationship between expected personal outcome and behavior (Hsi-Peng and Kuo-Lun, 2007, 2009). A study conducted by Raude et al. (2020) suggested that because of certain differences in people’s beliefs and expectations (personal outcomes), their social behaviors change. In this research context, the pandemic has affected the rate of personal outcome with relation to purchasing various commodities in the marketplace because of the belief that they will get greater benefits. As such, we posit that:

\[ H1. \text{ Expected personal outcome positively influences attitude towards panic buying.} \]

2.3.2 Expected community-related outcomes. Existing research indicates that providing support and sharing experiences often unite community members (Chung, 2011; Evans et al., 2012; Kordzadeh et al., 2016). People engage in a particular behavior if it reaps the rewards or benefits. Though individuals can act for their self-interest, their propensity toward communal self-help in emergencies is one of the unsurpassed resources accessible to a society (Danziger, 2020; Drury and Alfadhli, 2019). The study by Sharma et al. (2020b) found that the expected personal outcomes are positively associated with information sharing intention during the COVID19 pandemic. According to Kumalawati et al. (2021) during a crisis community should engage with one another, be vigilant, protect themselves and adhere to government injunctions. As such, we posit that:

\[ H2. \text{ Expected community-related outcomes positively influence attitude towards panic buying.} \]

2.3.3 Attitude. An individual’s attitude toward a particular activity and its associated outcome is a major predictor of behavioral intentions (Chandran and Morwitz, 2005). Attitude has commonly been linked to behavioral intention rather than behavior (Sharma et al., 2020a, b). Customer’s intention to engage in panic buying can be associated with a heightened sense of financial security and aversion to the risk of scarcity (Chen, 2020; Consumer Council of Fiji, 2020; Talwar et al., 2021), resulting in customers’ making irrational decisions at times (Talwar et al., 2021). Laato et al. (2020) confirmed that such panic buying can result in self-isolation for most customers. Lehberger et al. (2021) reported that people had negative attitude towards stockpiling goods, while others believed there was a need to stockpile. As such, we posit that:

\[ H3. \text{ Attitude positively influences panic buying intention.} \]

2.3.4 Subjective norms. Existing literature indicates that subjective norms influence customer preferences and behaviors (Connell and Kozar, 2012; Schultz et al., 2007; White and Simpson, 2013). Fishbein and Ajzen (1975) and Cialdini and Trost (1998) purport that subjective norms set social pressures on an individual to execute a given behavior, whereby that individual is driven to comply with such societal pressures without the potency of laws. Subjective norms influence an individual’s perceptions of the expectations from family members, friends, online discussion forums and colleagues (Raman, 2019).

With regards to COVID-19, to be considered as actively taking part and being societally accepted, individuals feel societal pressure to engage in panic buying. This was evident in New Zealand, United Kingdom, Australia and Singapore, whereby individuals engaged in panic buying with lines stretching out onto the streets in every region (BBC News, 2020; El-Bar, 2020; Lewis, 2020; Yoon, 2020). Several studies indicate that subjective norms positively influence customers’ purchase decisions and behavior (Chang and Watcharavesringkan, 2018; Homburg et al., 2010; Lee et al., 2009). As such, we posit that:

\[ H4. \text{ Subjective norms positively influence panic buying intention.} \]

2.3.5 Perceived behavioral control. Khan (2020) and Long and Khoi (2020) revealed that the pandemic situation might incite customers to procure more reserve goods and services. This
is a result of high customer risk perception and high-risk awareness of the pandemic. During the COVID-19 pandemic, it was evident that most of the health products and other essential products were declared scarce. Panic buying had resulted in an augmentation of demand for the products (Long and Khoi, 2020).

Extant behavioral literature elucidates customer hoarding based on individual experience and sentimental perceptions (Deng et al., 2017; Laatoh et al., 2020; Sterman and Dogan, 2015). These decisions seep from psychological factors, namely, uncertainties about resource depletion, scarcity of goods and services, concern about an individual's inability to cater for shortage situations with their monetary ability, and lastly, the herd behavior that triggers panic. It is believed that customers do not act lucidly when panic spreads all over. The situation in Fiji was no different during the crisis. Customers' engagement in procuring more products and services results in the unbalanced supply market (Laato et al., 2020; Long and Khoi, 2020; Talwar et al., 2021). Many people are deprived of the opportunity to purchase goods as supermarket shelves remain empty. Due to such panic, the market gets more psychologically run-down. As such, a financial liability is placed on every individual (Long and Khoi, 2020). As such, we posit that:

**H5.** Perceived behavioral control positively influences panic buying intention.

### 2.3.6 Scarcity influence on perceived competition and panic buying intentions.

Preceding literature suggests panic buying is often augmented by the distress, scarcity or unattainability of the product. Customers who witness scarcity orpanic buying are more likely to hoard the product instantly before the other customer could purchase it (Debiec, 2020; Norberg and Rucker, 2020). Coskun et al. (2020) held that perceived scarcity and competition impacts customers' in-store behavior through human crowding. High levels of human crowding in retail stores can cause customers to experience competition and perceived scarcity. This leads customers to develop aberrant behaviors such as in-store hiding and hoarding. Similarly, during the COVID-19 crisis in Fiji, supermarkets and retail outlets were high on human crowding, leading customers to compete for essential products. Customers were noted to purchase products in large quantities as a result of fear of product scarcity. As such, we posit that:

**H6a.** Scarcity positively influences perceived competition with customers.

Behaviors such as in-store hoarding and hiding endow customers with opportunities to take ownership of the exceptional and/or scarce product before being procured by other customers (Hamilton et al., 2019). This study postulates that customers are more likely to be actively involved in in-store hoarding behaviors, when procuring products and services during scarcity. The COVID-19 situation in Fiji created an urgency among customers to essential items before they finished. As such, we posit that:

**H6b.** Scarcity positively influences panic buying intention.

### 2.3.7 Time pressure influence on perceived competition and panic buying intentions.

Researchers purport that customers do not understand all the information and are less likely to concede to choices when encountered with making decisions in limited time and complex situations (Chang and Kukar-Kinney, 2011; Godinho et al., 2016), and as such, develops negative emotions (Sohn and Lee, 2017) and augmented impulse buying for products. However, Oppewal and Holyoake (2004) and Skallerud et al. (2009) found that perceived time pressure and impulse buying tendency negatively affect customers, resulting in customers not purchasing if there were competitors nearby.

Time pressure affects supply chains and may create tension and reduce collaboration between customer-customer and customer-retailer (Thomas, 2008), thus creating competition for product acquisition. Such pressure was evident in Fiji, whereby many customers sensed
an urgency to buy products quickly and hastily as the Fijian Government imposed curfew hours and restricted movement. As such, we posit that:

H7a. Time pressure positively influences perceived competition with customers.

Time pressure can influence customer’s purchase decisions and buying behavior (Islam et al., 2021). According to Herrington and Capella (1995), customer buying patterns are affected at different levels under varying time pressure circumstances. This notion is supported by Hausman (2000), stating customers who purchase during augmented levels of time pressure do not undertake any proper or prior planning and are simply engaging in impulse buying.

According to Sohn and Lee (2017) time pressure has a great impact on emotions that results in impulsive purchases. Zheng et al. (2020) also mentions that time pressure highly influences the ideology of group buying behavior. Additionally, Mitchell and Papavassiliou (1999) argue that time pressure confuses customers because they have to process bulk information with a limited time (Yao and Oppewal, 2015), thus resulting in customers unintentionally increasing their purchasing volume (Prentice et al., 2020b). This notion can be related to the COVID-19 pandemic that saw many Fijian customers rush to purchase essential items in supermarkets. As such, we posit that:

H7b. Time pressure positively influences panic buying intention.

2.3.8 Perceived competition. Crowd shopping leads to perceived competition among many customers; thus customers believe they ought to procure the product before it finishes (Byun and Sternquist, 2011). Drury et al. (2013) mentions that such behaviors are due to an emergency or crisis that affects a person’s psychological intent to stockpile or panic buy. According to Gupta and Gentry (2016), this leads to competitive behaviors such as in-store hoarding that can be instigated by fear of scarcity and uncertainty of availability (Byun and Sternquist, 2011) of various products and services. Castro et al. (2013) suggest that when customers notice that only a few items are left on the shelves, they may infer that the products are scarce (Van Bavel et al., 2020). According to Moran (2020) this behavior can be classified as “following the crowd.” This can be implied in the COVID-19 shopping scenario in supermarket chains in Fiji. As such, we posit that:

H8. Perceived competition with customers positively influences panic buying intention.

2.3.9 Perceived social risk. Perceived social risk is when poor product/service choices can result in disapproval or disappointment from family and friends (Maziriri and Chuchu, 2017). Faarup (2010) asserts that there are diverse stages of social risks and some customers are more sensitive than others to what reference groups think, especially teenagers. Newton (1967) argues customers under an augmented amount of social risk tend to need reassurance for their behavior from their reference group when engaging in purchasing a product or service. In the same vein, Almousa (2011) stated that customers seek approval or advice from reference groups to reduce social risks. Kim et al. (2009) and Zheng et al. (2020) found that product/service recommendations by family and friends are considered an important risk-reduction strategy. Close reference groups often have a major influence on individuals in terms of stockpiling on products during the pandemic (Billore and Anisimova, 2021; Zheng et al., 2020). For instance, issues of stocking up on toilet paper. This concept is relatable to the COVID-19 spending activities, as many customers were purchasing products and services that could have resulted in social risks. As such, we posit that:

H9. Perceived social risk negatively influences panic buying intention.

The following figure represents the conceptual framework for this research, alongside the proposed hypotheses (see Figure 1).
3. Research methods

3.1 Participants and procedure

This research aims to identify the factors driving panic buying behavior in Fiji. Fiji is a developing island nation positioned within the South Pacific Region, with a populace of around 0.9 million (Sharma et al., 2020a). Due to the COVID-19 crisis, online data collection was considered the most feasible method. We conducted an online survey using SurveyMonkey. The authors of this study distributed links to the questionnaire using social media, such as Facebook. Using the snowballing technique (Pentina et al., 2016), participants were requested to forward the survey link to people within their networks (Browne, 2005). To fill the questionnaire, respondents had to be more than 18 years of age. Data collection was done in Fiji from May to June 2020. The online survey methodology reduced the chances of social desirability bias (Sharma et al., 2021a, b, c). Other studies have adopted similar methods of data collection (Sharma et al., 2020c, d; Slack et al., 2020a).

3.2 Measures

The measurement instrument scales employed in this study were adopted and revised from preceding studies. A five-point Likert scale was used. This Likert scale ranged from (1) “strongly disagree” to (5) “strongly agree.” The attributes such as perceived behavioral control, subjective norms and attitude were formed as TPB constructs and were adopted from (Sharma et al., 2021c). Time pressure was adopted from Oppewal and Holyoake (2004) and Herrington and Capella (1995). Scarcity was adopted from Brock (1968), while the perceived competition was adopted from Gupta and Gentry (2016). Perceived social detection risk was adopted from Wu et al. (2019). Expected personal outcome and expected community-related outcome were adopted from Chiu et al. (2006).

Appendix provides details for each of the variables.
3.3 Data analysis

SPSS and AMOS were used to perform the data analysis. Analysis of the empirical data was conducted using covariance-based structural equation modelling (CB-SEM) as it is most suited to analyze structured relationships. CB-SEM use also allowed for the linkage between the theory, philosophy and data (Wu et al., 2019). Anderson and Gerbing (1988) recommended the measurement model be first examined using various fit indices. Following this, Anderson and Gerbing (1988) suggested confirmations of reliability and validity of the study’s variables be done using appropriate tests. Other studies of customer behavior have employed this approach (Jain et al., 2021; Pitardi and Marriott, 2021).

The data screening procedure involved examining responses where the respondents seemed unengaged and those that contained missing data. The Z-score values were used to identify 11 outliers that were removed from the dataset. Confirmation of normality of data was obtained by examining the kurtosis and skewness values. Variance inflation factors and tolerance values confirmed the absence of multicollinearity issues (Hair et al., 2010). The remaining 357 responses after data screening tests were used for subsequent analyses.

The absence of multicollinearity issue was confirmed by variance inflation factors and tolerance values being within the suggested range (Hair et al., 2010). The remaining 404 responses were used to perform subsequent analyses.

3.4 Demographic profile

Comprehensive demographic profiling of the participants was illustrated in Table 1. It shows that 47.9% of the respondents were male while 51% were females. 0.6% of the respondents identified as “others” while the remaining 0.6% did not wish to indicate their gender. An overview of the age distribution indicates that 13.7% were below the age of 20, 50.7% were between the ages of 21–30, 26.1% were between 31 and 40, 7.3% were between 41 and 50, 1.4% were between 51 and 60 while the remaining 0.8% were 61 years and above.

<table>
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<tr>
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<tr>
<td>Age</td>
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Table 1. Demographic profile
4. Results

4.1 Common method bias
Due to this study relying on self-reported data, it is critical to examine common method bias (Podsakoff et al., 2003). Using the Harman’s single factor test, the variance was computed to be 36%. As this was below the 50% threshold, it was confirmed that the common method bias issue would not influence the findings of this study.

4.2 Measurement model
The Cronbach’s alpha tests ascertained the internal consistency of all factors. The following results were found: Expected Personal Outcome (0.918), Expected Community Outcomes (0.870), Attitude (0.933), Subjective Norm (0.958), Perceived Behavioral Control (0.833), Scarcity (0.841), Time Pressure (0.819), Perceived Competition (0.821), Perceived Social Detection Risk (0.898) and Panic Buying Intention (0.943). These results confirmed a high degree of internal consistency. Confirmation of content validity was obtained as the factor loadings of the study’s variables were more than 0.60. Convergent validity was also confirmed as the average variance extracted (AVE) were more than 0.50. Following this, the discriminant validity of the constructs was examined. As a result of this test, items PSC4, PSC5 and PBC3 were removed to confirm discriminant validity. The constructs employed in this research had reported the AVE to be higher than the average shared squared variance and maximum shared variance (MSV). Tables 2 and 3 provide the detailed results of the discriminant validity tests and confirmatory factor analysis results. Furthermore, all HTMT values were less than 0.90, thus establishing discriminant validity (Barclay et al., 1995; Bhutto et al., 2020). This result is presented in Table 4. As per the recommendation of Hair et al. (2010), a good model fit was confirmed of the measurement model ($\chi^2$/df = 3.10, CFI = 0.93; GFI = 0.90; TLI = 0.92; RMSEA = 0.068).

Following the evaluation of the measurement model, tests performed on the structural model obtained the following results. Expected personal outcome was found to have a significant impact on customers’ attitude towards panic buying ($\beta = 0.777$, $p < 0.001$) while expected community-related outcomes was found to have a negative impact ($\beta = -0.219$, $p < 0.001$). Attitude buying ($\beta = 0.664$, $p < 0.001$), subjective norm buying ($\beta = 0.261$, $p < 0.001$), scarcity buying ($\beta = 0.614$, $p < 0.01$), time pressure buying ($\beta = 0.772$, $p < 0.01$), and perceived competition buying ($\beta = 0.423$, $p < 0.001$) were found to have a positive impact on customers’ panic buying intention. Scarcity ($\beta = 0.117$, $p < 0.05$) and time pressure ($\beta = 0.617$, $p < 0.001$) were found to positively influence perceived competitiveness. Perceived social detection risk ($\beta = -0.082$, $p < 0.05$) was found to have a negative impact on customer’s panic buying intention. This result confirms that all hypotheses apart from H5 were supported by empirical data from this study. Results show that the model explained a significant percentage ($R^2 = 0.57$) of observed variance for this study.

Figure 2 illustrates the results of the data analysis.

5. Discussion and implications
The results demonstrate that expected personal outcome (H1) is the most influential factor that affects the customer’s attitude towards panic buying. The expected personal outcome is positively correlated with attitude, meaning that customers will engage in a particular set of activities if it produces personal benefits and rewards (Compeau et al., 1999). The positive correlation between expected personal outcome and attitude towards panic buying indicates that customers will purchase items during a pandemic to secure their physical and mental well-being. If measures are imposed on customer’s attitude in panic buying behaviors, it can moderate the amount of purchases a customer can make. The present studies empirical findings are consistent with Lu and Hsiao (2007) and Papadopoulous et al. (2013) study. Lu
Table 2.
Discriminant validity

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Table 4. HTMT analysis

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and Hsiao (2007) and Papadopoulous et al. (2013) upheld that expected personal outcomes demonstrated stronger effects on customer attitudes (behavioral intentions), inclining customers to use blogs more to expect rewards.

The expected community-related benefit (H2) is found to have a negative impact on attitudes. The customers did not perceive that their act of buying more than necessary would harm or disadvantage other customers. The present study noted that while personal expected outcomes may augment and result in expected community-related benefits, the results were not consistent with Danziger (2020). Danziger (2020) found that community responses with regards to COVID-19 were positive as communities offered help to the less privileged. For instance, volunteer groups were formed to endow services such as grocery shopping, assisting disabled people and their families and introducing legislative changes to accommodate such an impact. Expected community-related benefits may likely depend on local environmental factors. Fiji has encountered a limited number of COVID-19 cases; thus, panic buying was witnessed to a minimum compared to Australia and New Zealand (Kumar, 2020; Schultz, 2020).

Our empirical results also indicate that attitude (H3) has a significant and positive relationship in determining panic buying behavior. This implies that an individual’s attitude towards a certain activity will influence its uptake (Ajzen, 1991). This study highlighted that in the context of a pandemic, the concern for security, health, and ability to cater to the needs of themselves and their family members' rests upon the customer. Customers perceive that the pandemic has shaped their attitudes in purchasing more essential products for their benefits than that of the community (Laroche et al., 2001). The present study's empirical findings are consistent with the preceding studies, namely, Kim et al. (2021a, b), Liu et al. (2021), Yadav and Pathak (2016). These studies demonstrated that there is a positive relationship between attitude and customer behavior in food service delivery during COVID-19, post-pandemic outbound travel for Chinese travelers, and organic food in a developing nation.
The subjective norms (H4) have shown a positive yet weak significant relationship in defining panic buying behavior. Prior research indicates that people engage in activities that are deemed acceptable by society (San-Martín et al., 2015; Slade et al., 2015). However, our empirical results indicate that Fiji’s panic purchases are likely triggered by personal concern (i.e. expected personal outcomes) compared to subjective norms. The empirical evidence has shown that perceived behavioral control has a negative impact on panic buying intentions. Customers act irrationally in a pandemic. Fijian customers purchased more products than they needed, which later resulted in customers requesting excess products bought to be returned to the supermarkets.

Scarcity (H6b) had been demonstrated to have a positive and strong impact on panic buying intentions. During pandemics, there is a lingering thought of a lack of resources to cater to every individuals’ needs and wants. The feeling of urgency rises among customers as customers procure products immediately. Hence, regulating customers’ freedom in purchasing decisions (Aggarwal et al., 2011). Not only does it embeds fear of losing out on items in a pandemic, it also facilitates the need for customers to make prompt decisions. Stringent measures to normalize how products are purchased can reduce scarcity and equalize the distribution of goods and services among customers. Unlike the impact on panic buying intentions, scarcity has recorded a positive yet slight significant impact on the perceived competition (H6a). Scarce resources were recognized as the major influential factor in leading competition (Nichols, 2012). The customers’ sentimental and behavioral can be affected by the retail store’s scarcity situations (Byun and Sternquist, 2008; Nichols, 2010). As such, retailers could urge customers to stimulate competition among customers, allowing customers, to procure scarce products instantly (Byun and Sternquist, 2008; Gupta and Gentry, 2016). It is anticipated that faced with limited time and quantity offers, or customers developing uncertainty about a product, customers could engage in impulsive buying (Byun and Sternquist, 2008; Gupta and Gentry, 2016). Studies such as Islam et al. (2021) and Lehberger et al. (2021) illustrate that scarcity embeds fear in customers, causing them to purchase impulsively and obsessively during a COVID-19 situation. These findings were consistent with our present study’s empirical results.

Empirical evidence illustrates that time pressure (H7b) has a positive and significant relationship with panic buying intentions. Prior research has indicated that when customers are being conflicted with time pressure, they normally avoid researching about a product (Konus et al., 2008; Reutskaja et al., 2011; Silayoi and Speece, 2004). Regarding the present study, customers will simply make purchasing decisions without considering whether their act is accurate. It can be noted that customers feel they have to be quick to make purchases to secure necessary items.

Similarly, time pressure also has a positive and significant relationship with perceived competition (H7a), and this study’s empirical findings are consistent with preceding studies (Godinho et al., 2016; Javed and Javed, 2015). The preceding studies illustrated that time pressure constrains customer decisions; mandating customers to make decisions within a stipulated time frame. Further to this, Javed and Javed (2015) research discovered that customers under time pressure are more inclined towards attractive product packaging and competition.

The present study highlights that customers wish to attain items, creating a demand for items in a pandemic. While the supply may be limited due to border restrictions, as we had noticed during the COVID-19 pandemic, such restrictions can put customers in jeopardy, triggering fear of losing out on essential commodities during a crisis. Time pressure also affects purchase decisions (Moon and Lee, 2013). Augmentation in purchasing hastening and intention can seep from time restrictions (Aggarwal and Vaidyanathan, 2003), resulting in customers making hasty decisions. Better management of such practices can be developed if governments place restrictions in supermarkets on the quantity purchased by individual
customers. Not only this practice will reduce panic buying, but it will also help to stimulate the economy to avoid scarcity and competition and create a form of food security.

Perceived social risk has shown a negative impact on customers’ panic buying intentions (H9). Empirical findings of existing studies (Almousa, 2011; Prentice et al., 2020a, b) have acknowledged that customers who are not aware of how to engage in such a crisis may mimic other individuals. The present study illustrates that often perceived social risks do not result in panic buying. The COVID-19 pandemic may result in social embarrassment due to the customers’ poor choices to sustain themselves. Since reference groups’ recommendations can result in customers feeling either humiliated or content about their purchases (Amin and Mahasan, 2014), customer believe that purchasing during the pandemic may result in social risks. The thoughts of reference groups become a concern for the customer, which later determines his/her actions.

Empirical evidence shows that perceived competition (H8) positively and significantly relates to customers’ panic buying intentions. Existing literature indicates that human crowding in shops often leads to the perception of competition (Byun and Mann, 2011; Nichols, 2010), upholding a positive relation. The present study depicts that the perception of the scarcity of goods and services may result in competition. Customers felt that they were in competition with other shoppers, but they believed that customers should pay attention to the buying patterns of other customers.

5.1 Theoretical implications
This paper has made several theoretical contributions. First, this research contributes to the preceding literature by endowing a comprehensive insight into customers’ panic buying during a pandemic. Despite organizations and businesses interested in disaster response, limited knowledge and research is available on the consequences of disaster and crisis on customer buying behavior (Hall et al., 2020). Researchers have highlighted that studies relating to obsessive buying behavior remain scarce, inconsistent and inconclusive (Islam et al., 2021; Iyer et al., 2020). With the TPB, the theory can shed light on how retailers and researchers can forecast customer behaviors in such situations and cater for their unusual demands. The COVID-19 has left many supermarket shelves empty across the world, leaving the retail markets with a looming question of how prepared are their counteractive responses.

Second, the impact of scarcity on customers’ consumption patterns brought about through promotional messages (Islam et al., 2021). This study offers unique insights by exploring the impact of scarcity brought about due to a global pandemic. This study is the first to investigate this behavior by integrating scarcity and time pressure on competitive customer behavior to purchase items before stock runs out. Most researchers (Islam et al., 2021; Laatoh et al., 2020; Lehberger et al., 2021) found that such an area opens up to more discussion for retail markets to consider, namely, whether the unusual purchases impacted customers financial buying power or why do certain products go out of stock (should there be redevelopment of policies to mold customers attitudes, subjective norms and perceived behavioral control).

Third, the majority of studies on crisis and disaster have been done in developed countries like New Zealand (Hall et al., 2020), China, US, Pakistan and India (Islam et al., 2021), Australia (Prentice et al., 2020a, b), Italy, US, UK, China. This study is also the first to look at customers’ panic buying behavior in a developing country like Fiji. The theory developing literature has shed light and underpinned testing research models and instruments in diverse context as crucial (Sharma et al., 2020a, b, c, d; Venkatesh et al., 2012). Such an undertaking makes it imperative to consider whether the impact suffered by developed nations is similar to that of the developing nation with fewer cases of COVID-19. This research provides insight that managers and state players can use to strengthen customer, financial and health relations.
Further to this, this study can be used as a guideline for many Pacific Island nations that share similar characteristics to Fiji, for example Papua New Guinea, Solomon Islands and Vanuatu (Slack et al., 2020b). It would be impractical to apply developed nations retail market practices to that of developing nations. Panic buying had resulted in customers spending unnecessarily on items that were not immediately required. Unlike most countries, many customers in Fiji had requested if they could return the products in exchange for money (Kumar, 2020).

Fourth, it is useful to note that the expected community-related outcomes depicted a negative relation in determining attitude, unlike the expected personal outcomes. While the literature has supported community members having similar concerns (Chung, 2011; Evans et al., 2012) and engaging in particular behaviors to reap benefits, this study had illustrated otherwise. It makes it noteworthy to consider that Fijian citizens had reacted differently to the rise of COVID-19. Several countries have witnessed that panic buying had left many supermarket stores empty (Chen, 2020). However, Fiji had witnessed a few items running temporarily low but did not encounter any shortages (Kumar, 2020). This makes a noteworthy difference that stands out in this research. It can be purported that the manner in which the customers and the nation reacts to panic buying influences customer behavior.

5.2 Managerial implications

The following managerial and practical implications can be derived from the findings of this study. This study confirms that customers’ attitude towards panic buying is a key factor influencing such behavior. Government and retailers need to implement strategies and policies to ensure such attitudes towards panic buying are changed. Messages to reduce panic buying must be well thought out to not further exacerbate the problem. Ideally, all messages should be pilot tested before being released to the public at large. Instead of “Do not panic about grocery shopping!” customers could be presented with messages that do not contain negations; for example, “Shop sensibly for groceries.” Public education is also critical. Government should ensure that facts about panic buying be presented to customers. Customers should be advised to avoid large crowds because of panic buying by simply waiting for a few days. Government can also work with retailers to ensure that online shopping and delivery options are available to customers. Such strategies will eliminate the time pressure motivator of panic behavior identified in this study. Large crowds gathering in supermarkets will be avoided, and the risk of COVID-19 transmission is reduced.

The confirmation of subjective norms shows significant others’ actions on an individual’s panic buying actions. Social influencers and family leaders highlight the negative consequences of panic buying on less fortunate members of society. Feeling of kinship and altruism must be emphasized to ensure that competition among shoppers is reduced and cooperation fostered. The expected personal outcome was considered the most influential factor in this study. This result highlights how customer behavior driver my self-interest leads to customers engaging in hoarding behavior. Despite it being a natural tendency for individuals to capitalize on opportunities with the fear of missing out on not purchasing essential items in the future. Therefore, the government and retailers need to work together to give customers assurance about stock availability and strategies that are in place to ensure that all individuals have access to necessary items. False news or rumors about stock outage circulating on social media sites needs to be quickly corrected by the government making public statements to make facts clear for customers. Retailers should also provide customers with honest information about stock arrival to put customers more at ease. By eliminating the fear of missing out on customers, panic buying behavior can be prevented.

The results demonstrated that the expected community outcomes had a negative relationship with customers’ panic buying. This finding highlights the need for government
and policymakers to ensure that customers know the consequences of their panic buying behavior. Particularly, panic buying in metropolitan areas can lead to a lack of necessities and food shortage for remote communities. Smaller stores are faced with “supply challenges” due to being unable to secure items for sale. Awareness can be created of these issues through advertisements and media coverage of the issues faced by members of society who are unable to make purchases of necessary items due to customers hoarding behavior. This will also create a situation where customers are hesitant to engage in panic buying behavior due to the presence of social detection risk.

6. Research limitations and future directions
Despite this study being conducted meticulously, some limitations need to be highlighted. These limitations provide a strong basis for future studies. First, this study adopted a cross-sectional design that is based on responses that are self-reported and subject to biases arising due to the methodology and lack of information needed to confirm causality. Future studies can address this limitation by adopting an experimental or longitudinal research design. Second, despite this study’s resulting model having a high predictive power (57%), there is still room to improve this. Other factors can be added to understand customer panic buying intention better and improve the model’s predictive power. Third, generalization of the results should be made with caution as data collection for this study employed a non-probability base sampling technique. Future studies can attempt to employ a mix-methodological approach to research to gain more valuable insights. Additionally, culture has been found to significantly behavior (Sharma et al., 2020b). Future studies can incorporate Hofstede’s theory of culture to explore the impact of cultural dimensions (individualism/collective and uncertainty avoidance) to investigate the impact on panic buying behavior.

7. Conclusion
The purpose of this paper is to identify factors that influence customer panic buying behavior during the COVID-19 crisis. Through the participation of 357 respondents in the survey, this study confirmed that perceived personal outcome is positively associated while the expected community-related outcome is negatively associated with customers’ attitude towards panic buying. Scarcity and time pressure were found to be positively associated with customers’ perceptions of competition with other customers. The study also confirmed the positive association of attitude, subjective norms, perceived behavioral control, scarcity, time pressure and perceived competition on customers’ panic buying intention. Perceived social detection risk was found to be negatively associated with customers’ panic buying intention. This study’s resulting model has a high predictive power (57%) in predicting customers’ panic buying behavior. These findings contribute to the scarce literature on customer behavior during pandemic times and provide valuable insights to retailers and policymakers in devising strategies to avoid panic buying situations. Despite these contributions made by this study, more studies are needed on understanding customer behavior when faced with unprecedented challenges.

References


Panic buying behavior during the COVID-19 pandemic.


Appendix

Perceived scarcity
Products that I need will often be scarce during the COVID-19 crisis
I find that I need to have limited availability during the COVID-19 crisis
I feel that the store sells out fast and rarely restock their merchandise during the COVID-19 crisis
I feel that the retailer will intentionally limit product quantity during the COVID-19 crisis
I feel that the government would ration products during the COVID-19 crisis

Expected personal outcomes
Buying more items than I need during the COVID-19 crisis would be helpful for me
Buying more items than I need during the COVID-19 crisis is good for my well-being
The personal benefits of buying more items than I need during the COVID-19 crisis would be significant
There are advantages to me in buying more items than I need during the COVID-19 crisis

Expected community-related outcomes Chiu et al. (2006)
Buying more items than I need during the COVID-19 crisis will harm other customers
Buying more items than I need during the COVID-19 crisis will disadvantage other customers
Buying more items than I need during the COVID-19 crisis would be insensitive for other customers
Buying more items than I need during the COVID-19 crisis will restrict other customers

Attitude
Buying more items than I need during the COVID-19 crisis is a good idea
Buying more items than I need during the COVID-19 crisis is a wise idea
I like the idea of buying more items than I need during the COVID-19 crisis
Buying more items than I need during the COVID-19 crisis is a pleasant idea
Buying more items than I need during the COVID-19 crisis is appealing

Subjective norm
Most people who are important in my life would understand my decision to buy more items than I needed during the COVID-19 crisis
Most people who are important in my life would agree with my decision to buy more items than I needed during the COVID-19 crisis
Most people who are important in my life would approve of me buying more items than I needed during the COVID-19 crisis
Most people who are important in my life would support me in buying more items than I need during the COVID-19 crisis
Most people who are important in my life would encourage me to buy more items than I need during the COVID-19 crisis

Perceived behavioral control
During the COVID-19 crisis, I could easily buy more items than I need
During the COVID-19 crisis, it would not be difficult for me to buy more items than I need
During the COVID-19 crisis, there are no barriers to prevent me from buying more items than I need

Time pressure
I need to be quick if I am to complete my shopping on time during the COVID-19 crisis
I feel pressured to complete my shopping quickly during the COVID-19 crisis
I do not have enough time to shop during the COVID-19 crisis

Perceived competition
I will be conscious of other customers’ behaviors during the COVID-19 crisis
I feel like I am competing with other shoppers for products during the COVID-19 crisis
I feel in competition with other shoppers for limited products during the COVID-19 crisis

Perceived social detection risk
The important people around me will sense when I am buying more items than I need during the COVID-19 crisis
The important people around me will be able to recognize when I am buying more items than I need during the COVID-19 crisis
The important people around me can detect when I am buying more items than I need during the COVID-19 crisis

Panic buying intention
I intend to buy more items than I need during the COVID-19 crisis
I predict that I would buy more items than I need during the COVID-19 crisis
I plan to buy more items than I need during the COVID-19 crisis
I will always try to buy more items than I need during the COVID-19 crisis
I will recommend to others to buy more items than they need during the COVID-19 crisis

Table A1. Survey items
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