CONSUMER STOCKPILING BEHAVIOUR WITHIN THE FACE OF COVID-19 PANDEMIC: SYSTEMATIC REVIEW

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Abstract

COVID-19 remains the most prominent pandemic disease since it spreads with a distinct composition with considerable intensity worldwide. Identifying the hidden antecedents on consumer behavior during a pandemic is worthwhile since the market psychology directly influences how consumers behave with the "fear of Pandemic." On the contrary, the consumer stockpiling in the face of the COVID-19 is viewed as unconventional inventory accumulation mainly meant to minimize a perceived threat of loss or fear of going without. The main objective of this paper is to systemize and organize the contemporary knowledge on stockpiling behavior during a pandemic. Herein, firstly the methodology is extensively discussed. Secondly, the analysis and discussion section is presented, with, a) citation analysis performed to evaluate the emerging research studies of stockpiling behavior and b) comprehensive analytical models within the literature. Articles were selected from well-reputed databases, including Web of Science, JStore, and Google Scholar. A total of 60 research papers were used for the analysis, whereas a limited number of studies were available in relation to the areas of "stockpiling behavior" and "Pandemic/disasters. Analysis was two folds, whereas (a) citation analysis was conducted with themes and (b) the comprehensive analytical models were identified. Citation analysis discovered five main themes: (1) Post-Switch Stockpiling, (2) Brand Switching and Stockpiling Behaviour. (3) Social Media and stockpiling behavior, (4) Predictors of Stockpiling Behaviour, and (5) Behaviour in Pandemic situations. Further, Within the analytical models proposed, the model by Ling & Ho (2020) has been identified to empirically test the hidden patterns, panic-buying behavior, and social context of consumer behavior. The authors suggest aligning the model to fill the empirical gap within the consumer behavior research context.

Keywords: Consumer Behaviour, COVID-19 Pandemic, Panic buying, stockpiling behavior

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Introduction

Historically, many viruses propagate with viral sources worldwide, affecting the human body and their impact varies and it largely depends on the individual's immunity. Coronavirus remains the most prominent pandemic disease in this respect since it spreads with a distinct composition with considerable intensity. However, different variants of the Coronavirus have arisen in the past two years and have caused significant harm to both humans and animals (Habes et al., 2020). Initially, Coronavirus began to spread from the market for seafood located in Wuhan- Hubei Province and this has affected many individuals all over China. But again, the standard strategies of overcoming the endemic were relied upon by the medical practitioners. Thousands of cases were reported from 58 different countries within three months since it emerged , and it became a terrifying pandemic for the entire world (Li et al., 2020). First reported in late-2019, then throughout the year 2020, the pandemic severely destroyed economies across the globe while isolating social activities of humans. Several studies have shown that it is particularly fatal for the elderly and those with a weaker immune system (Huang et al., 2020).

Research Gap and Significance

The novel Coronavirus has been circulating all over the world. This article is being written during the second wave in Sri Lanka, during which responsible citizens are expected to strictly adhere to social distancing measures (He & Harris, 2020). Moreover, a crisis is a disruptive and unpredictable event that has adversely affected ongoing operations, reputation, profitability, growth, and survival of business organizations (Lerbinger, 1997). Market psychology is a field of expertise exploring how human feelings, values, attitudes, and experiences shape how they consume and react to products and services (Cherry, 2020). According to Solomon (2004), market psychology refers to the study of individuals, groups, or organizations and the processes they use to select, secure, use, and dispose of products, services, experiences, or ideas to satisfy needs and the impacts that these processes have on the consumer and society. Herein, the antecedents behind consumer behavior during a Pandemic are worthwhile since the market psychology directly influences how consumers behave under the "fear of Pandemic."

Consumers accumulate goods for various reasons: It can be for profit-seeking or loss avoidance purposes, and the goods may be meant for conventional consumption or unconventional use (McKinnon et al., 1985). As the threat of the novel Coronavirus spreads, customers have been flocking to supermarkets to stockpile emergency supplies, resulting in empty shelves as retailers can't keep up with demand. This panic buying and the stockpiling phenomenon is complex and pernicious consumer behavior fueled by a set of multiple motivations and psychological processes (Dholakia 2020). On the contrary, the consumer stockpiling in the face of the COVID-19 pandemic can be viewed as unconventional inventory accumulation, mainly meant to minimize a perceived threat of loss or fear of going without (Wang et al., 2020).

Stockpiling behavior is dynamic consumer behavior, motivated by several multiple factors and psychological mechanisms (Dholakia, 2020). Psychology underlying consumer stockpiling shows that impulse buying can be understood as a part of our three fundamental psychological requirements of Autonomy, Competence, and Relatedness; it is about "taking control back" in a world where you feel out of control (Fraguela-Vale et al., 2020; Wang et al., 2020). Those who live in the Southeast U.S. may stockpile gasoline and water before hurricane season (Mathews, 2020). Therefore, stockpiling can be excessive. During a crisis, it can lead to national shortages of essential items (Zaboski et al., 2019). Ironically, the more the public attention towards stockpiling, the higher would be the level of stockpiling. People hearing about a likely shortage of hand sanitizers will be motivated to purchase as many as possible until it is no longer available for weeks or months (Zaboski et al., 2019). While people stockpile, panic buying is an impulsive and immediate solution to fear triggered by an inevitable crisis (Zaboski et al., 2019).

The compulsive buying or hoarding disorder might be related to stockpiling (Dammeyer, 2020). However, compulsive buying and hoarding are associated with depressive and anxiety disorders and impulse control difficulties (Frost et al., 2015), stockpiling seems different as consumer behavior changes differently in emergencies (Wang et al., 2020). Meanwhile. It was confirmed that there is a psychological pitfall of "the illusion of control" for consumers in COVID-19 (Wang et al., 2020). Consumer psychologists investigate how decision-making, social persuasion, and motivation influence shoppers when buying some things but not others (Cherry, 2020). Autonomy means that people are motivated when they experience a sense of choice and endorsement in a mission (McKinnon et al., 1985), and it can be translated as "taking back control" of the uncertainty complexities (Dowle et al., 2020); Relationship generates a sense of belonging by creating teams, and in this case, it implies that stockpiling is a crowd rather than an individual practice such that individuals do not feel that they are inappropriate or isolated. Competency stems from the belief that individuals choose to track performance, and this monitoring helps them master a task or a complex domain (Morrice et al., 2016). This can be done by buying in the stockpiling cases, giving customers a feeling that they are more intelligent and more robust than the rest (Chen et al., 2020).

There is a considerable need for organization and systemization of the extant stock of knowledge on the stockpiling, especially behaviour during a Pandemic**.** This is a timely need since the COVID-19 pandemic has become a worldwide disaster, whereas the depth of the studies catering to the pandemic might be limited.

Research Objective

Aligned with this requisite, the principal objective of this paper has been to systemize and organize the contemporary knowledge on stockpiling behavior during a Pandemic or a disaster, which will be immeasurably worthwhile for future research. Therefore the authors conducted a systematic literature review to achieve our aforementioned objective since the approach led us to observe diverse models based on disasters.

The rest of this paper is organized as follows: First, our methodology is extensively discussed, Second, analysis and discussion section is presented where a) citation analysis which was performed to evaluate the emerging research studies of stockpiling behavior and, b) comprehensive analytical models within the literature are presented and finally conclusions are provided.

Research Methodology

This study adopted a systematic approach to identify and review the relevant literature. The authors conducted the systematic search on November-December 2020, during the second wave of COVID-19 in Sri Lanka. Within the context, research articles were selected from the well-reputed databases, including Web of Science, JStore, and Google Scholar, covering the central theme of stockpiling behavior during a disaster/natural disaster or a Pandemic. Various search strings were developed dependent on the purpose of this study, and the searches were not constrained by time. There were limited research studies available to the study area. As the first step, the articles included were additionally screened depending on their title and keywords to filter out inappropriate articles. The second step involved an in-depth reading of the abstracts of the research papers to filter out inappropriate ones. The last stage involved analyzing the full paper of each of the articles by the researcher to filter out unnecessary research papers additionally. At the end of three steps, 60 research papers were used to analyze the study. In contrast, a limited number of studies were available in relation to the areas of "stockpiling behavior" and "Pandemic/disasters."

Findings and Discussion

The analysis was twofold: a) citation analysis and identification of main themes within the research context, and b) comprehensive analytical models within the existing literature caters to Stockpiling behavior.

Analysis part 1: Citation Analysis and themes develop

This analysis aimed at identifying the most influential papers with the themes in the respective study. After the comprehensive evaluation, 60 research papers were identified and the themes were developed by the authors. Herein, Table 1 classifies the identified research papers into diverse 5 clusters based on their content similarities in line with the objectives of this study. Further, the identified themes will be the way forward for future research areas, mainly to conduct an empirical analysis on stockpiling behavior. Identified five themes will be the foundation for future research based on empirical data with the second wave of the pandemic experienced by the economies worldwide.

Table 1: Citations Analysis and Themes developed (Source: Citation analysis from the literature)

Identified Themes	Authors	Published Year	Number of Citations
Theme 1 Post-Switch Stockpiling	Song, S., Yang, X., Yang, H., Zhou, P., Ma, H., Teng, C., Chen, H., Ou, H., Li, J., Mathews, C.A. and Nutley, S	2020	12
	Zaboski, B. A., Merritt, O. A., Schrack, A. P., Gayle, C., Gonzalez, M., Guerrero, L. A., Dueñas, J. A., Soreni, N., & Mathews, C. A.	2019	20
	Forbes, S. L.	2017	46
	Abe, N., Moriguchi, C., Inakura, N., & Risks, S.	2014	05
	Kurihara, S., Maruyama, A., & Luloff, A. E.	2012	22
	Van Asselt, M. B., & Vos, E.	2008	106
	Oly Ndubisi, N., & Tung Moi, C.	2006	118
	Peacock, W. G., Brody, S. D., & Highfield, W.	2005	428
	Wynne, B.	2003	553
	Bell, D. R., Chiang, J., & Padmanabhan, V.	1999	608
	Raju, J. S.	1992	293
Theme 2 Brand Switching and Stockpiling Behaviour	Pan, X., Dresner, M., Mantin, B., & Zhang, J. A.	2020	18
	Dowle, E. J., Powell, T. H., Doellman, M. M., Meyers, P. J., Calvert, M. B., Walden, K. K., & Ragland, G. J.	2020	01
	Lappeman, J., Kabi, T., Oglesby, H., & Palmer, O.	2017	11
	Ailawadi, K. L., Gedenk, K., Lutzky, C., & Neslin, S. A.	2007	156
	D'Haese, M., & Van Huylenbroeck, G.	2005	200
	Trivedi, M., & Morgan, M. S.	2003	52
	Trijp, H. C. V., Hoyer, W. D., & Inman, J. J.	1996	874

Theme 3 Social Media and stockpiling behaviour	Abdelsalam, S., Salim, N., Alias, R. A., & Husain, O.	2020	16
	Algharabat, R., Rana, N.P., Alalwan, A.A., Baabdullah, A., Gupta, A.	2020	119
	Collinson, P.	2020	1040
	Naeem, M.	2020	19
	Habes, M., Alghizzawi, M., Ali, S., Salihalnaser, A., & Salloum, S. A.	2020	55
	Alalwan, A.A., Algharabat, R.S., Baabdullah, A.M., Rana, N.P., Raman, R., Dwivedi, R., Aljafari, A.	2019	13
	Baker Qureshi, P.A., Murtaza, F., Kazi, A.G.,	2019	14
	Alalwan, A.A.	2018	350
	Aragoncillo, L., & Orus, C.	2018	110
	Gesser-Edelsburg & Shir-Raz	2017	25
	Shulman, J. D., Cunha, M., & Saint Clair, J. K.	2015	57
	Kahlor, L. A.	2010	319
	Huurne, E. Ter, & Gutteling, J.	2008	192
Theme 4 Predictors of Stockpiling Behaviour	Micalizzi, L., Zambrotta, N. S., & Bernstein, M. H.	2020	25
	Ling, G.H.T., & Ho, C.M.C	2020	39
	Fraguela-Vale, R., Varela-Garrote, L., Carretero-García, M., & Peralbo-Rubio, E. M.	2020	21
	Conway, III, L. G., Woodard, S. R., Zubrod, A., & Chan, L.	2020	42
	Kleinberg, B., van der Vegt, I., & Mozes, M.	2020	99
	Wang, E., An, N., Gao, Z., Kiprop, E., & Geng, X	2020	64
	Cherry, K.	2020	14
	Chen, N., Zhou, M., Dong, X., Qu, J., Gong, F., Han, Y., Qiu, Y., Wang, J., Liu, Y., Wei, Y., Xia, J., Yu, T., Zhang, X., & Zhang, L.	2020	17390

	Brizi, A., & Biraglia, A.	2020	32
	Dammeyer, J	2020	32
	Thielmann, I., Spadaro, G., & Balliet, D.	2020	170
	Li, X., Song, Y., Wong, G., & Cui, J.	2020	122
	Sterman, J. D., & Dogan, G.	2015	129
	Frost, R. O., Steketee, G., & Tolin, D. F.	2015	429
	Solomon, P.	2004	1149
	Tversky, A., & Kahneman, D.	1992	17293
	Brock, T. C.	1968	27
Theme 5 Behaviour in Pandemic situations	Arafat, S. Y., Kar, S. K., Marthoenis, M., Sharma, P., Apu, E. H., & Kabir, R.	2020	51
	He, H., & Harris, L.	2020	605
	Huang, C., Wang, Y., Li, X., Ren, L., Zhao, J., Hu, Y., Zhang, L., Fan, G., Xu, J., Gu, X., Cheng, Z., Yu, T., Xia, J., Wei, Y., Wu, W., Xie, X., Yin, W., Li, H., Liu, M., … Cao, B.	2020	36278
	Zhao, S., Lin, Q., Ran, J., Musa, S. S., Yang, G., Wang, W., Lou, Y., Gao, D., Yang, L., He, D., & Wang, M. H	2020	1623
	Painter, M., & Qiu, T.	2020	272
	Qiu, J., Shen, B., Zhao, M., Wang, Z., Xie, B., & Xu, Y.	2020	2593
	Thielmann, I., & Hilbig, B. E.	2014	87
	Balliet, D., & van Lange, P. A. M.	2013	477
	Balliet, D., Mulder, L. B., & Van Lange, P. A.	2011	677
	Benson, C., & Twigg, J.	2007	238
	Lerbinger, O.	1997	01
	McKinnon, G., Smith, M. E., & Keith Hunt, H.	1985	47

Given the citation analysis, the authors performed the analysis based on the most cited research papers and the latest research papers related to COVID-19. A limited number of scholarly articles are based on the topic, whereas altogether, 60 research papers were identified. From the citation analysis, five main themes were identified, namely: (1) Post-Switch Stockpiling, (2) Brand Switching and Stockpiling Behaviour. (3) Social Media and stockpiling behavior, (4) Predictors of Stockpiling Behaviour and (5) Behaviour in Pandemic situations

Interestingly, some research themes are more prominent than others, for instance, more citations for Theme 1 and Theme 5. Further, social media-related studies could also be identified as an emerging discipline, where some of the empirical research studies were observed within the COVID-19 Pandemic second wave. No such studies were found within the Sri Lankan context, therefore this has been identified as an empirical research gap within the discipline. Further, researches based on "behavior in Pandemic situations" (Theme 5) have been popular compared with other themes. In contrast, empirical studies based on the Asian context, especially China, the birthplace for COVID-19, are intensively popular, leading to more research studies on Asian consumer behavior. However, citation records demonstrate that Theme 2 is not much influential.

Analysis part 2: Comprehensive analytical models

Thematic analysis of the research papers was carried out to evaluate the comprehensive analytical models developed by the scholars. On the contrary, many scholars linked consumer stockpiling behavior with natural disasters, and the more recent researchers focused on the COVID-19. The analytical models are categorized based on the main themes, and finally, the authors have proposed a conceptual model.

(1) Natural disasters and consumer stockpiling behavior

The distorted psychological experience, consumer purchasing power, or a prior experience arising from natural disasters alter the consumer buying behavior, the most likely stockpiling behavior. The concern made by some researchers on how consumer stockpiling behavior varies before and after the natural disaster such as war, earthquake, cyclone, massive crimes. On the contrary, a natural disaster could be identified as a geophysical, atmosphere, or hydrological situation (e.g., earthquake, landslide, tsunami, windstorm, flood, or drought) that has the probability to cause harm or loss of individuals, animals, property. The occurrence of natural disasters is affected most probably by natural factors, not by human intervention. The damage, disruption caused by natural disasters make it harder for the community to function properly without the help of external support (Benson & Twigg, 2007). The Christchurch earthquake in 2011, close to the center of Christchurch, New Zealand caused a considerable destruction. The psychologically distorted experience faced by clients after the enormous earthquake may cause the augmented consumption of hedonic or potentially harmful products (Forbes, 2017). The scholars observe the post-disaster consumption behavior of products that serve utilitarian needs, hedonic needs, and this could have potentially dangerous effects. The demand for utilitarian

products necessary for subsistence improved significantly by buyers immediately after a disaster and in the ongoing weeks. After the earthquake struck people collected utilitarian product more and more whereas less availability of utilitarian product classes in superstores made them to stockpile in order to prepare for any forthcoming disaster events. But the need for hedonic or potentially harmful products was increased after the weeks following the disaster by customers.

Abe et al., (2014) investigated that what would be the short-run impact on commodity price and domestic purchasing behavior subsequent to a natural disaster. Commodity prices unexpectedly rise after the disaster and in trying to manage excess demand that arises through quantity adjustments, not through prices, created a vast mess in the market. Therefore, the demand-and-supply theory of economics is not accurate with these consumer behaviors influenced by the "fear of the disaster." Individuals with higher purchasing power dramatically increase their stockpiling on foodstuffs having shortages under the conditions created by a disaster. The stockpiling behavior of people who had lower purchasing power is negligable. Results concluded that variation in consumers' purchasing power results in substantial heterogeneity of stockpiling behavior in response to the natural disaster, and significant distributional consequence may have cause thereof (Abe et al., 2014).

Kurihara et al., (2012), qualitatively and quantitatively analyzed adult female residences of Chiba city one month after the earthquake. Individuals' excessive stockpiling persuade a superior deficiency in products, especially the necessities. The quantitative analysis determined that most problematic clients, such as young housewives unprepared for disasters, started to store the goods as they acknowledged the unavailability of products in the marketplace; finally, intensifier stockpiling caused to vicious cycle of demand. Even though stockpiling in necessary merchandise was prejudicial for a group of customers, consumers who had previous experience in crisis circumstances internally rationalized their stockpiling behavior of needed goods. Media administrations should cautiously analyze the crisis information since mass media enhance the sense of disaster among the public and act as the dominant trigger of stockpiling. Pan et al., (2020) conducted the study to identify the pre-cyclone consumers' precautionary stockpiling behavior and thereby impact of stockpiling behavior on in-store product obtainability in retail stores. The theoretical model is formed as figure 1 based on identified supply-side characteristics, demand-side characteristics, and disaster characteristics that significantly affect consumer stockpiling propensity as the approach of the hurricane.

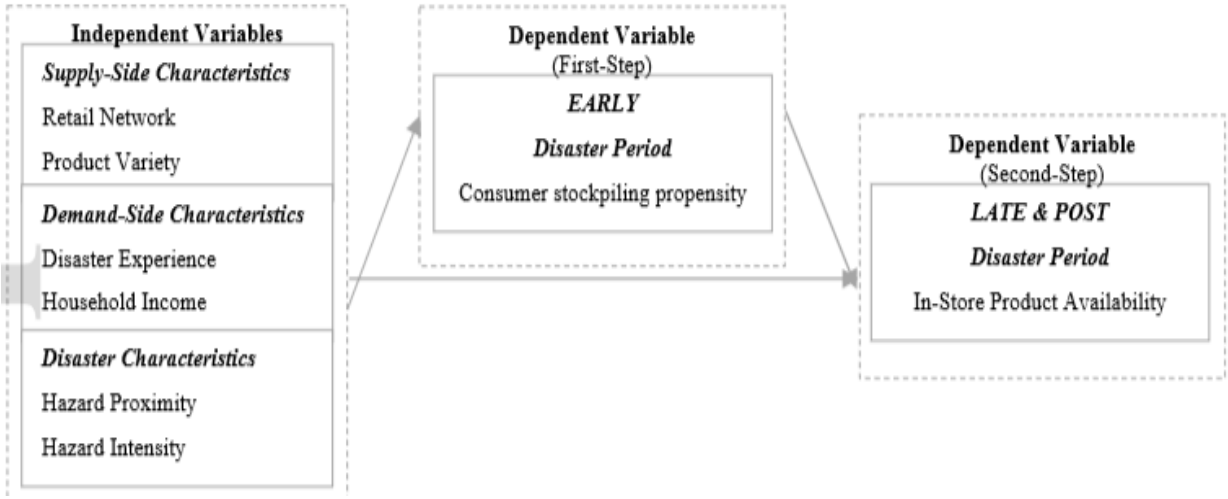

Figure 1. Theoretical Model for Pre-Hurricane Consumer Stockpiling and Post-Hurricane Product Availability (Source: Pan et al., 2020)

According to the scholar, the individual with a higher hurricane experience stockpiling a higher level of goods because of higher perceived risk or store a lower level of goods due to periodic preparation or psychological immunization. The higher purchasing power of wealthy consumers' root to stockpile more and more or less due to better ability to change the hurricane area. Figure 2 illustrate the consumer stockpiling propensity according to demand-side characteristics

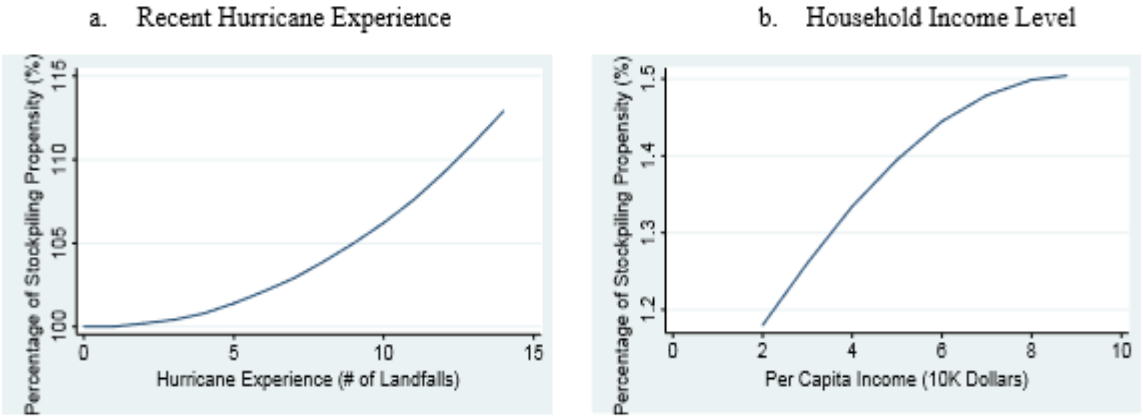

Figure 2. Consumer stockpiling propensity according to demand-side characteristics (Source: Pan et al., 2020)

According to scholars (Peacock et al., 2005), in contradiction with previous studies, the individuals who have a higher amount of wealth and belong to a higher social class may specify minor level stockpiling behavior throughout the tragedy. The ability triggers a discounting consequence of purchaser stockpiling behavior fleeing from the disaster area (Peacock et al., 2005).

(2) Post-Switch Stockpiling, Brand Switching, and Stockpiling Behaviour

Among the research base, the post-switching behavior includes increased purchases, repeat purchases, and stockpiling by the consumers. According to Ndubisi and Chiew (2006), when consumer purchases more of a product than they would have in the absence of a promotion, they are less likely to purchase a competitor's product (as they are temporarily taken out of the marketplace for that product). Bell, Chiang, and Padmanabhan (1999) found that the nature of a product category determines whether a consumer is likely to stockpile or not. Raju (1992) previously revealed that the magnitude of a sales promotion affected consumers' Behaviour to stockpile. Offering a discount of a more considerable degree was more likely to induce stockpiling. These signal the marketing to focus the promotions, quality enhances, and popularize the private label brands. On the contrary, some studies investigated whether the sales promotion affected consumers' likelihood of switching brands and then stockpiling (Raju, 1992). Therefore, specific arguments exist on Theme 2, whereas empirical research studies might fill the gap.

Branding is also a significant determinant of consumer behavior, leading to stockpiling behavior. According to the researchers, Brand switching has a non-directional influence on stockpiling (Lappeman et al., 2017). Several studies identified that even though customers demonstrate higher loyalty for a specific brand, they sometimes switch to another brand and express brand switching behavior (Trijp et al.1996; Trivedi & Morgan, 2003). Moreover, Relationship between Brand switching and stockpiling was positive and weak (Lappeman et al., 2017). This finding is supported by Ailawadi et al. (2007), whereas the consumers without a particular brand loyalty are more likely to stockpile.

Further, scholars mentioned the respondents' household size as one determinant of stockpiling once the brand is switched. D'Haese and Van Huylenbroeck (2005) further suggested that a large portion of survivors purchase their groceries in bulk, and stockpiling allows consumers to take full advantage of the sales promotion and maximize the benefits offered by the promotions. Therefore, the research caters to brand switching and stockpiling is considerably low, whereas there is a gap to investigate brand loyalty and brand switching during the COVID-19 pandemic.

(3) Social Media and Stockpiling behavior

Social media plays a significant role in shaping consumer behavior to an earlier planned direction in the present context. Today's consumers and businesses engage in online purchasing behavior through higher usage of social media that always simplify the rational buying and selling process. (Alalwan, 2018; Alalwan et al., 2019; Baker Qureshi et al., 2019). How social media facilitate social and global engagement and information exchange ultimately leads to the development of the customer psychology of stockpiling. Uncertainty theories and social proof theories can help understand socially generated fear, uncertainty, risk, sensationalism, which have occurred due to socially and globally engaged people. Studies highlighted that the Institutional communication and social public interpretation of uncertainties and risk enhanced misinformation and sensationalism through social media platforms; therefore, stockpiling Behaviour increased during the COVID-19 pandemic (Naeem, 2020). According to

Aragoncillo and Orus, 2018; Abdelsalam et al., 2020; Algharabat et al., 2020 the usage of social commerce causes the development of consumer buying behavior in a complex manner distinctive from person to person.

The fear of items being out of stock, illness, misinformation, family fear, and going out were possible causes of the development of panic stockpiling behavior (Naeem, 2020). Consumers' panic buying behavior in COVID- 19 pandemic can be determined according to the report consumption of grocery items in the U.K. increased approximately by 15% linked with the earlier year (Collinson, P.2020). The global uncertainty proof and a public social consensus for staying at home and protecting the future also increased customers' intention to buy in bulk for their future. Although social media played an essential role in transferring relevant and timely information, it also increased uncertainty and social proof, leading to stockpiling of retail products.

Naeem, (2020) study aims at developing a research framework on Stockpiling Behaviour that helps determine which factors contribute to the development of Stockpiling Behaviour among U.K. customers. The findings show that social media play an important role in creating perceived risk through social interaction, global and local institutional communication, and interpretation of general public opinion. This has increased the importance of "social proof theory" as it is believed that the risk of COVID-19 is being seemed and stockpiling behaviors are being developed via a social proof created through social media (Naeem, 2020). Further, Naeem, (2020) contributed to the existing literature by offering a stockpiling behavior model based on social proof and uncertainty theories which may help to understand the customers' social consensus on Stockpiling Behaviour which shows how and why uncertainties, perception of risks, institutional communication and global uncertainty proof through social media platforms can engage customers and lead to the development of Stockpiling Behaviour.

The theory of uncertainty may be helpful to understand customers' Stockpiling Behaviour during a global pandemic. Some studies confirmed that when people have insufficient information and perceive high risk, then they have more negative feelings and uncertainties (Gesser-Edelsburg & Shir-Raz, 2017;Huurne & Gutteling, 2008; Kahlor, 2010; Shulman et al., 2015) which can force them to take help from those who are credible, experienced and have better knowledge for future decisions. Some studies highlighted that when people have inadequate information to deal with uncertain challenges and risks (Van Asselt and Vos, 2008; Einhorn and Hogarth, 1985; Wynne, 2003), then they gather evidence and follow others to either avoid risk or take optimal purchase decisions. Figure 3 illustrate how Stockpiling Behaviour is developed during the COVID-19 pandemic

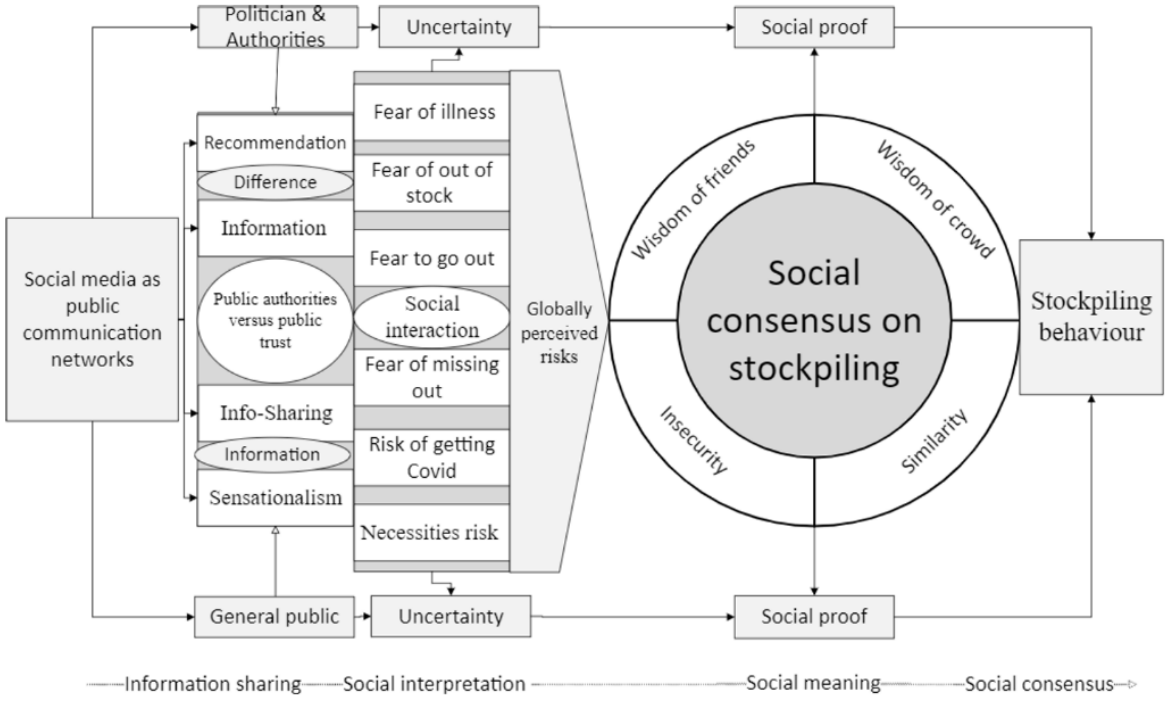

Figure 3. Stockpiling behavior model (Source: Naeem, 2020)

(4) Predictors of Stockpiling Behavior

Researchers have attempted to investigate the individual predictors of stockpiling during the COVID-19 pandemic. As per Micalizzi, Zambrotta, and Bernstein (2020), individual predictors of stockpiling include political affiliation, worry for COVID-19, and social distancing. Political affiliations investigated relating to the polarizing landscape of U.S. politics.

The threat of COVID-19 is viewed differently by conservatives versus liberals (Conway et al., 2020). The types of COVID-19-related Twitter messages among U.S. congresspeople varied according to their political party of U.S. politics. This suggests that citizens from predominantly Democratic regions heard different messages than those from mostly Republican areas. Scholars (Kleinberg et al., 2020) conducted a study from the U.K. and suggested that "COVID-19 worry" was the most common negative emotion among the consumers (Kleinberg et al., 2020). Association between social distancing and stockpiling suggests that there is evidence that political beliefs impact compliance to social distancing orders and engage in in-person purchasing (Painter & Qiu, 2020). This pattern may be driven by trait agreeableness, collective consciousness (i.e., a shared understanding of social norms surrounding COVID-19).

Further, it is investigated that Stockpiling and hoarding stem from a human's response to scarcity, either rationally or emotionally. Absence may cause stress, anxiety, and fear or panic, leading people to build private stocks or place orders for more than they need (Sterman

& Dogan, 2015). In addition to scarcity, the experience of COVID-19 itself is linked to psychological distress (Qiu et al., 2020), which may confer additional motivation to stockpile or panic buy supplies. This is substantiated theoretically by both commodity theory (Brock, 1968) and prospect theory (Tversky & Kahneman, 1992), which link how scarcity and risk aversion, respectively, may explain why consumers stockpile or hoard essential items.

According to existing literature, researchers have investigated how Personality and Individual Differences influence stockpiling. Particularly how individuals' levels of need for cognitive closure relate to food stockpiling during the COVID-19 pandemic, they have explored whether individuals with a high (vs. low) need for cognitive closure react to the uncertainty brought by COVID-19 by perceiving having less food and therefore stockpiling more than required. Individuals with a high need for cognitive closure prefer to avoid risky situations and thereby engage more in stockpiling behaviors. Individuals who need cognitive closure have a higher perception of lacking food in their household, which also leads them to stockpile more (Brizi & Biraglia, 2020).

Scholars investigated the psychological traits that might lead people to hold back on hoarding. According to (Thielmann, Spadaro, & Balliet, 2020), among the broad personality traits, Honesty-Humility has been most consistently and most strongly linked to Pro-Social Behaviour. As proposed in the H.E.X.A.C.O. model of personality, Honesty-Humility represents a tendency to forego opportunities for personal gain when they come at a cost to others. According to their investigations of Thielmann, Spadaro, and Balliet (2020), High Honesty-Humility may also lead people to refrain from stockpiling because they expect others to do the same; conversely, low Honesty-Humility may be associated with distrust and lead people to buy up goods, so they are not left without. A reason that Honesty-Humility may drive people to behave pro-social during a crisis is the Relationship between Honesty-Humility and trust (Balliet & van Lange, 2013; Thielmann & Hilbig, 2015). Those high in Honesty-Humility expect others to be more cooperative (Thielmann & Hilbig, 2014), which may motivate them to behave pro-socially themselves. Thus, high Honesty-Humility may also lead people to refrain from stockpiling because they expect others to do the same; conversely, low Honesty-Humility may be associated with distrust and lead people to buy up goods so they are not left without.

Moreover, scholars have attempted to explain the effects of COVID-19 on social attitudes and behaviors. As per the findings of Ling & Ho (2020), fear, uncertainty, greed, self-interest, and opportunistic (defective/unethical) behaviors of most individuals prevail over collective societal interest amid the pandemic. Individuals' non-cooperative behaviors create inconveniences, dissatisfaction, and other forms of negative externalities; they also incentivize others to act selfishly. These behavioral reactions of individuals are associated with the social dilemmas theories and concepts, focusing on conscious or unconscious self-interest and opportunistic behaviors. These socio-psychological considerations are essential to address what and why individuals' behaviors are shown during the coronavirus crisis. According to the model, fear, uncertainty, and greed cause self-interest behaviors such as panic buying (Ling & Ho, 2020). Figure 4 illustrates the model proposed by Ling & Ho, (2020).

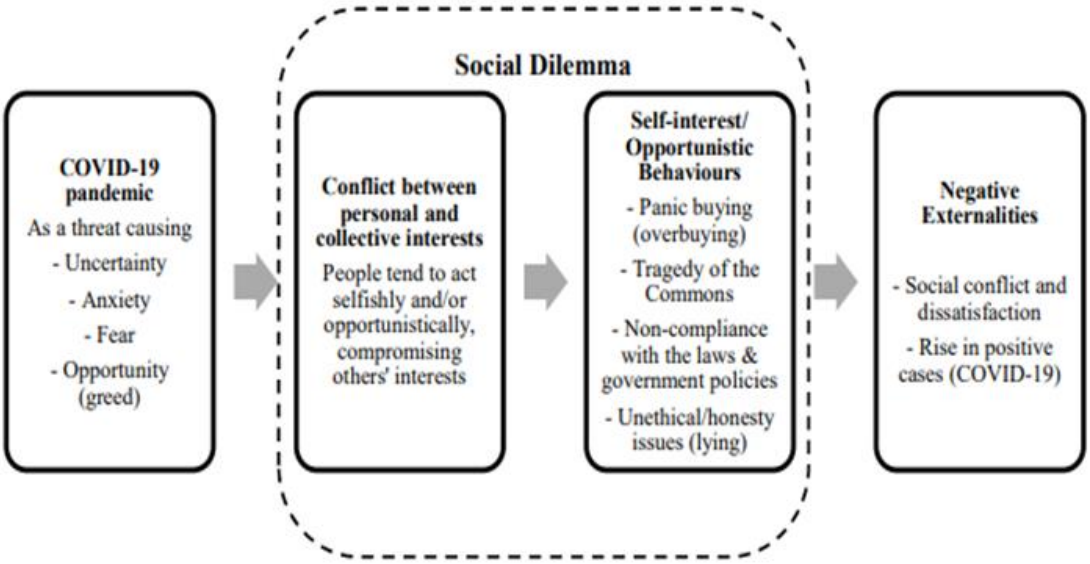

Figure 4. Effects of the Coronavirus (COVID-19) Pandemic on Social Behaviours: From a Social Dilemma Perspective (Source: Ling & Ho, 2020)

Therefore, each of these analytical models contributes to the literature based on stockpiling behavior within a disaster or Pandemic situation. The research gap exists for an empirical analysis based on the local consumer context to identify the real and hidden motives behind the stockpiling Behaviour.

Therefore the authors propose the model developed by Ling & Ho, (2020) as a viable conceptual model to test the COVID-19 pandemic on the social behavior of the society from the perspective of Social Dilemma. Further, this model would be better as a quantitative approach to identify the social behavior related to stockpiling behavior during a Pandemic situation in a more realistic environment.

Conclusions

This paper intended to critically review the literature on stockpiling behavior of the consumers during a disaster or a Pandemic extensively within the research domain. In other words, this paper intended to explore to which degree the investigations have attempted to understand the "stockpiling behavior during the panic caused by a disaster or a Pandemic" within the research setting.

The research area is an emerging state and 60 research papers have been reviewed to achieve the objectives of the study. Towards this (a) Citation analysis and Themes were developed and (b) comprehensive analytical models was adopted.

From the analysis, five main themes were identified, namely (1) Post-Switch Stockpiling, (2) Brand Switching, and Stockpiling Behaviour. (3) Social Media and stockpiling behavior, (4) Predictors of Stockpiling Behaviour, and (5) Behaviour in Pandemic situations. Contributing to the extant body of knowledge further, the number of research gaps were identified which could be addressed by the future researchers through empirical studies. Additionally, few analytical models have been determined based on defined themes, whereas the empirical studies on the stockpiling behavior within the COVID-19 pandemic need to be further conducted. Within the analytical models proposed, the model by Ling & Ho, (2020) could be empirically tested with the second wave of the COVID-19 pandemic to identify the hidden patterns, panic-buying behavior and social context of the consumer behavior. Therefore aligning the model proposed by the scholars (Ling & Ho, 2020) could be a better analytical tool to fill the empirical gap within the consumer behavior and marketing research context. In the concluding remarks, the authors highly recommend the empirical testing of the Ling & Ho, (2020) model based on Social Behavior during the second wave of the pandemic in the local context.

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