

The Impact of COVID-19 on Buying Behavior. A Systematic Literature Review on Determinant Conditions and Managerial Implications

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Abstract

A crisis context, as COVID-19 pandemic, is a situation in which maladaptive buying behaviors are irrationally born. In this context, vulnerability and resilience, as opposed states of being, are two variables that can influence the final behavioral outcome. In a pandemic case, panic buying, impulsive and compulsive behavior, hoarding, and stockpiling are the most common effects. The present paper is a systematic literature review aiming to underline the main theories and variables used in explaining abnormal buying behavior during the coronavirus pandemic, the place of vulnerability and resilience among them, and the managerial implications emphasized by the existing studies. The analyzed research papers (N=63) are selected from 2020-2022 time frame. The results show that Theory of planned behavior and the Stimulus-organism-response are the most frequently used models for understanding and explaining panic conduct. The variables affecting maladaptive consumer behavior are both external and internal, the range of factors being wide and complex. Vulnerability and resilience are believed to mediate the relationship between these factors and panic behavior. The managerial implications born from the analyzed studies include four stakeholders (i.e., retailers, policy makers, governments, and mass-media) that, during a crisis, are advised to improve their communication abilities and to better manage their resources.

Keywords: Systematic literature review; COVID-19 pandemic; consumer buying behavior; vulnerability; resilience

JEL classification: H12; I31; P46

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1. Introduction

Assuming that consumption is based on habit and routine, it is argued that there are four contexts that can change consumption habits: new life events, technology, regulations, and unpredictable situations as natural disasters or global pandemics (Sheth, 2020). This idea is reinforced by Liu et al. (2021), who explain that the major disruptions that occurred in people's daily lives led them to be more receptive to new lifestyles and changes in consumption patterns.

In their approach to identify consumer shopping behavior, Eger et al. (2021) claim that fear towards imminent risks is what drove, to a large extent, the changes in consumer behavior and attitudes during the COVID-19 pandemic.

The COVID-19 pandemic has undoubtedly generated an important shift in consumer preferences and behavior. Since the outbreak of the health crisis, people have been deeply concerned and worried about their health (Nguyen et al., 2021) and have quickly adopted new consumption and purchasing practices. Customers have become more reluctant and anxious (Mazza et al., 2020), purchasing in a different way than in the pre-pandemic period, buying in excess, especially staple foods (Eftimov et al., 2020; Rai et al., 2021) and hygiene products (Cambefort, 2020; Addo et al., 2020), building up stocks, and hoarding supplies. This fear of the unknown, uncertainty, social influences, as well as perceptions related to scarcity of goods have led to panic buying behaviors (Omar et al., 2021).

Thus, the pandemic has generated consumer vulnerability in several ways, exposing more the already vulnerable groups, but also creating new vulnerabilities (Yap et al., 2021). During a critical situation, such as the COVID-19 pandemic, consumers are exposed to vulnerabilities in their endeavor to satisfy different needs (e.g., basic, psychological, or self-fulfillment needs). Although difficult contexts can make individuals/consumers vulnerable, these can also push them to adjust to the new reality and identify opportunities to become resilient (Maurer, 2016; Kursan Milaković, 2021a).

Within this context, this paper aims to theoretically and systematically analyze the theories used in explaining abnormal buying behavior, the variables involved, and the place of vulnerability and resilience within this setup. Moreover, the managerial implications born from the existing studies are emphasized. The analyzed studies ($N=63$) are selected from the 2020-2022 COVID-19 time frame. The research questions of the study are the following:

RQ1. Which are the theories used to explain consumer behavior in the COVID-19 pandemic?

RQ2. Which are the main variables aiming to describe consumer behavior in the COVID-19 pandemic and which is the place of vulnerability and resilience among these variables?

RQ2. Which are the main managerial implications derived from the studies analyzing consumer behavior in times of pandemic?

Previous research following the broad impact of the COVID-19 pandemic on consumer behavior has focused on several directions. Some studies examine changes in behavior (Loxton et al., 2020), other studies have attempted to determine the causes that led to these changes (Laato et al., 2020). A large number of studies have focused on the effects on consumer behavior (Tao et al., 2022), leading to abnormal buying behaviors (Wang et al., 2022) such as panic buying (Laato et al., 2020; Hall et al., 2020; Omar et al., 2021; Chua et al., 2021), impulse buying (Naeem, 2020; Islam et al., 2021; Chauhan et al., 2021), hoarding and stockpiling (Kirk & Rifkin, 2020; Pantano et al., 2020; Zwanka & Buff, 2020), or compulsive buying (Islam et al., 2021). Vulnerability and resilience can find their places within all the three stages of the buying behavior, namely reaction, coping (DIY behaviors), and longer-term adaptation (Kirk & Rifkin, 2020).

The novelty of the paper is twofold. On the one hand, to our knowledge, this is one of the early attempts to offer a comprehensive map of the factors that should be considered when dealing with a crisis, like the COVID-19 pandemic. On the other hand, the present systematic review not only analyzes the variables aiming to explain maladaptive buying behavior but takes one step further by highlighting the managerial implications of the links between these variables. Thus, the relevance of the paper lies in emphasizing the lessons the main stakeholders (i.e., retailers, policy makers, governments, and mass-media) can learn from the existing studies.

These lessons are not important only in the case of the COVID-19 pandemic, but in the perspective of any crisis that is to come, regardless of its specificity.

2. A theoretical Review of COVID-19 Pandemic-Induced Consumer Behavior

The adjustment to a new stressful and uncertain life context, as the pandemic, has caused changes in consumption habits and behaviors (Watson & Popescu, 2021) and redefined individuals' values and expectations (Vătămănescu et al., 2021). Consumer needs and demands have shifted, becoming more complex and connected to new life situations (Pirc Barčić et al., 2021). The changes caused by the pandemic context on consumer behavior have led to new choices related to the products people buy (Guèvremont et al., 2022), such as essential items (Eftimov et al., 2020; Rai et al., 2021) or hygiene items that make them feel protected (Cambefort, 2020; Addo et al., 2020) by reducing the perception of danger. However, new patterns and habits of consumption have also emerged (Sheth, 2020). Gordon-Wilson (2022) highlights that, in addition to the newly acquired habits, people are concerned to reduce consumption overall, avoid non-essential purchases (Arora et al., 2020; Roșu et al., 2021) and focus on basic goods (Vázquez-Martínez et al., 2021). At the same time, pandemic-induced financial uncertainty has led consumers to save money (Gerlich, 2021).

In the context of the COVID-19 pandemic, consumer motivation has been to reduce and/or avoid 'contact' with the virus, leading to behavioral control, i.e., changing, for example, the shopping channel (from physical to online and/or vice versa) (Pantano et al., 2020) or self-isolation (Laato et al., 2020). Based on previous experience, social and behavioral norms, and information-derived expectations, the consumer outlines certain responses or reactions (Lavuri, 2023). Related to the pandemic background, these were buying behaviors such as stockpiling, hoarding (Naeem, 2020; Eger et al., 2021), panic buying (Ali et al., 2022), compulsive and impulsive buying (Güngördü Belbağ, 2021; Islam et al., 2021) or revenge shopping (Sheth, 2020).

The present context has also determined a new relationship of individuals towards technology, pushing them to digitalization (Gu et al., 2021; Sayyida et al., 2021), to the use of contactless delivery technologies (Kumar & Shah, 2021), or multi-channel shopping technologies (Guthrie et al., 2021; Eger et al., 2021). Thus, consumers are increasingly using mobile devices, e.g., mobile phones, to have more speed and efficiency (Seo et al., 2020) in the process of purchasing goods and products. The 2020 lockdown and the authorities' recommendations on social distancing have led consumers to switch to online shopping also for several products that were prior to the outbreak of the pandemic covered by face-to-face purchases, e.g., cleaning and hygiene products, beverages, and staple foods (Antonides & van Leeuwen, 2020). Hence, health concerns and dealing with the risks caused by the pandemic have motivated consumers to shift to online shopping (Truong & Truong, 2022).

Thus, throughout the entire pandemic time frame, vulnerability and resilience, as triggers of changing buying behavior, have interlaid. The term consumer vulnerability describes a difficult situation that consumers face (Yazdanparast & Alhenawi, 2022) as they temporarily lose control and make decisions determined by external factors (Baker, 2006; Yazdanparast & Alhenawi, 2022). According to Kursan Milaković (2021b), vulnerability is a complex, multifaceted, and context-specific concept. Hill and Sharma (2020) highlight the possible consequences of vulnerability on the consumer, explaining that, in their attempt to manage the

situation, consumers develop either non-defensive mechanisms of coping with the situation or defensive mechanisms of opposition to the situation. Both mechanisms reveal a modification in consumer behavior from the time before vulnerability arose.

In opposition to vulnerability and defined as a process of adaptation to crisis situations (Ang et al., 2018), resilience describes an individual's ability to respond positively to adverse experiences to which one is exposed (Kim et al., 2022), as well as to recover from these traumas (Southwick & Charney, 2012). Considered a personal characteristic that determines the degree of adaptation to an unfavorable context (Rittichainuwat et al., 2020), resilience is perceived as a protective, defensive mechanism (Bermes, 2021). Being resilient does not mean that the person may not perceive a threat, but it shows the ability to adapt quickly to the new context or even to understand these provocations in a positive way (Razzak & Yousuf, 2022). The concept of consumer resilience describes, according to Reivich and Shatté (2003), not only an individual's ability to recover from adverse moments, but also the attitude towards the situations he/she has experienced.

Resilience is an important factor in the decision-making process related to the act of buying, especially when the consumer is exposed to a crisis context (Skondras et al., 2020). Thus, consumers with a high level of resilience will better manage stressors, react more skillfully to the new situation, and find the resources to reach a state of balance faster (Peco-Torres et al., 2021). The research conducted by Amatulli et al. (2021) shows that during the COVID-19 pandemic lockdown, the resilient attitude of individuals helped them to overcome negative moments, to remain positive, optimistic, and to find solutions even in adverse circumstances. During COVID-19, resilient consumers demonstrated a greater capacity to adapt to this new reality (Kursan Milaković, 2020).

Although vulnerability and resilience are closely related concepts, they differ in their perception of change (Miller et al., 2010). Consumer vulnerability can be caused by lack of information (Choudhury et al., 2019) or product-related experience (Shi et al., 2017), circumstances that can also lead to changes in consumer behavior (Kursan Milaković, 2021b). However, consumer vulnerability can also challenge consumers to adapt to new experiences, as they try to gain control by identifying new channels and pathways of consumption to fulfill their needs and desires (Hill & Sharma, 2020). According to Uekusa and Matthewman (2019), consumers can be both resilient and vulnerable.

3. Method

The present paper uses a systematic literature review to comprehensively describe and synthesize (Gough et al., 2012) the existing research on the consumer behavioral changes brought by the COVID-19 pandemic. The Preferred Items for Systematic Reviews and MetaAnalysis (PRISMA) is applied to guide the selection process of the references included in the review (Moher et al., 2009). The main steps of the analysis include: (1) defining the inclusion and exclusion criteria for studies selection; (2) designing the search strategy; (3) selecting and screening the studies; (4) analyzing and synthesizing the main findings.

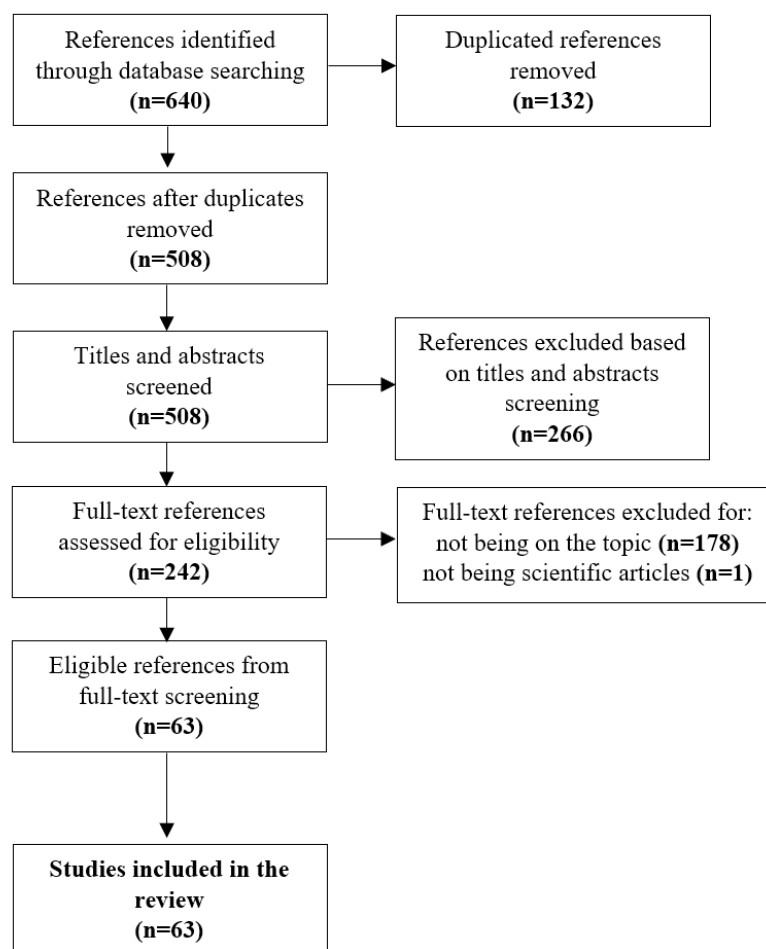
Eligibility criteria

The eligibility criteria for the present study are the following: data of the publication, language of the publication, type of research, topic of the publication, and transparency issue. The studies should be published in 2020, 2021, or 2022, while they represent the most affected years by the COVID-19 pandemic. Only the English language studies are included in the sample. The

studies assessed are journal articles, since they are the most credible and updated research (Wang et al., 2022). The topic of the publications should adhere to the aim of understanding consumer behavior driven by the COVID-19 pandemic. All the studies have been screened from a transparency perspective, only the studies explicitly and comprehensively describing the theory, the methodological design, and the results being included.

The excluded studies are the ones that are not scientific articles, the ones that do not meet the transparency criteria, and the studies that approach tangential topics as the effect of the pandemic on the supply chain, the explicit online shopping behavior, the eating habits, food related behavior, or food waste, the social media impact, or the effect of the pandemic on tourism or fashion.

Figure 1. PRISMA Flow Diagram on Study Selection Process for the Literature Review



Source: authors' conceptualization

Search strategy

Being an overview of the literature related to the COVID-19 pandemic and its immediate effect, the studies published between 2020 and 2022 are considered. The databases considered for searching are Google Scholar (371 initial sources), Web of Science (117 initial sources), and Scopus (152 initial sources). These databases have been used as they are considered the most comprehensive ones and increasingly used in literature reviews (Bhimani et al., 2019; Concari et al., 2020; Mohamed Shaffril et al., 2021; Taufik et al., 2021). The keywords used for

identifying the studies are the following: consumer resilience *AND* COVID-19 *OR* pandemic; consumer vulnerability *AND* COVID-19 *OR* pandemic; consumer behavior *AND* COVID-19 *OR* pandemic. These keywords have been searched in the title, abstract and keywords of the studies. The complete list of the studies included in the sample can be found in the table from Appendix 1.

Studies selection

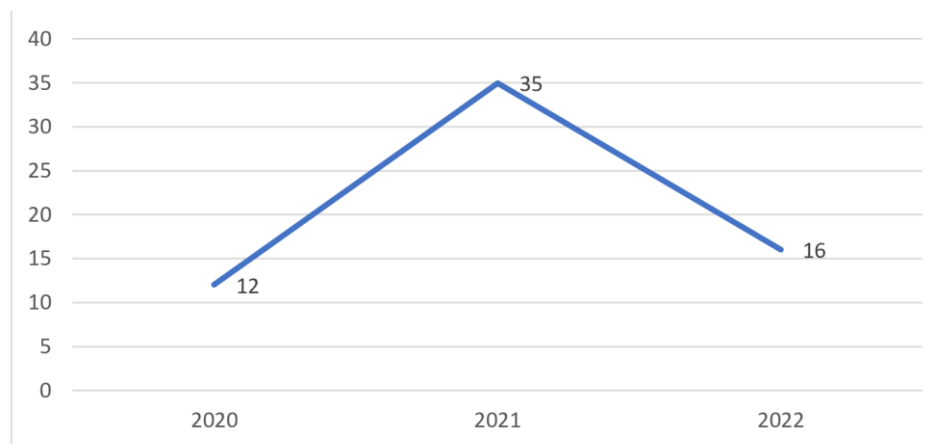
The initial number of studies found is 640 references, out of which 132 are duplicates. After removing the duplicates, 508 studies have been screened for the title and abstract. Both authors of the present study have screened all the studies. Emerged discrepancies have been solved by discussions until reaching a perfect agreement. Based on this assessment, 266 studies have been removed and 242 have remained in the sample and fully screened. After applying the exclusion criteria of topic and publication type, another 179 articles have been removed, while 63 final studies remain. Thus, as the PRISMA flow diagram shows in Figure 1, the final sample of analyzed studies is $N=63$.

4. Findings

Overview of the reviewed articles

Out of the 63 analyzed articles, most of them are published in 2021 ($n=35$). Figure 2 shows the research distribution per year. Most of the papers are empirical studies ($n=51$), while the rest of them are either literature reviews or systematic literature reviews ($n=12$).

Figure 2. The distribution of the analyzed studies, per year



Source: authors' research

Aiming to better understand perceptions, the largest number of studies use opinion surveys ($n=38$). The sample size varies between 189 and 3833 respondents for the opinion surveys and goes up to 24998 for the secondary data analysis. The sample selection strategy is, in most cases, a convenience one, thus leading to diverse age ranges. Few of the studies employ two research methods (e.g., netnography and interview; document analysis and interview). Table 1 provides information on the research methods used in the studies analyzed.

Table 1. The Research Designs and Methods used by the Analyzed Studies

Research design	Research method	Number of studies
Quantitative	Opinion survey	38
	Secondary data analysis	9
	Agent-based approach (mathematical simulation)	1
Qualitative	Document analysis	1
	Interview	6
	Netnography	1
Theoretical	Literature review	8
	Systematic literature review	4

Source: authors' research

The analysis has revealed a number of 22 theories. They are all briefly presented in Appendix 2. The most frequently discussed theory to explain the changes in consumer consumption and buying behavior is the Theory of planned behavior (Akter et al., 2021; Ali et al., 2022; Cruz-Cárdenas et al., 2021; Roşu et al., 2021; Singh et al., 2021; Huang et al., 2022; Jawad et al., 2022; Satish et al., 2021). According to the theory, the actual behavior and the behavioral intention are an effect of attitudes, subjective norms, and perceived behavioral control (Ajzen, 1991). Another repeatedly used theory is Stimulus-organism-response (S-O-R) (Güngördü Belbağ, 2021; Islam et al., 2021; Laato et al., 2020; Li et al., 2021; Satish et al., 2021). It is grounded in the seminal work of Mehrabian and Russell (1974) and has been widely used especially in marketing and retail industry research to explain different consumer behaviors. While the stimulus indicates external factors in the environment that affect an individual, the organism relates to the internal emotional responses of an individual, and the response stands for the final behavioral outcome of an individual.

Based on these theories, the most present abnormal buying behavior related to crisis situations is panic buying. Being defined as the action of buying excessive amounts of products due to uncertainty (Patiro et al., 2022), panic buying is usually associated with impulsive or compulsive buying (Islam et al., 2021; Huang et al., 2022). Moreover, it is conceptualized as an important cause of hoarding or stockpiling (Bausch et al., 2021; Dulam et al., 2021).

Factors influencing abnormal behavior

Many studies aiming to explain abnormal buying behavior claim that the influencing factors are both external (environmental) and internal (reflective thinking based) (Ali et al., 2022; Güngördü Belbağ, 2021; Ortega-Vivanco, 2020). Further on, maladaptive consumer behavior can have a significant negative effect on the supply chain (Dulam et al., 2021), shortage of supply and price hike being the main consequences (Ali et al., 2022).

The *external or environmental factors* that can influence abnormal buying behavior are mainly related to governmental measures and cultural factors, to the economic status quo, to the marketing strategies and media exposure, and to the social influence. Thus, a lack of strict regulations or a chaotic national crisis management at both political and economic levels can lead to panic (Ali et al., 2022; Anas et al., 2022; Güngördü Belbağ, 2021). Individuals concerned on job security, on economic stability, and on the lack of resources (Amaral et al., 2022; Di Crosta et al., 2021; Hill & Sharma, 2020; Islam et al., 2021; Verma & Neveen, 2021) are more likely to adopt an impulsive behavior. These variables are strongly related to the way retailers control their messages and their stocks. Products' availability and scarcity messages (e.g., empty shelves) are likely to induce insecurity (Kursan Milaković, 2021b; Naeem, 2020;

Li et al., 2021; Ahmad et al., 2022). Furthermore, the way the media manage their messages significantly affects individuals' reactions. Being more exposed to COVID-19 information implies a direct positive effect on panic buying (Sherman et al., 2021). The same pattern is followed when discussing mis- or disinformation. Rumors are believed to increase impulsive buying behavior (Naeem, 2020). Media in general and social media in particular enhance the scarcity messages, lead to increased stress and, thus, to impulsive buying behaviors (Islam et al., 2021; Kaur & Sharma, 2020; Gazali, 2020; Güngördü Belbağ, 2021; Laato et al., 2020). Besides the government, the retailers, and the media, the way other people act can significantly impact behavior. Social support (Im et al., 2021), social influence, and social norms (Li et al., 2021) seem to significantly and positively influence individuals' affective response (e.g., anxiety), consequently panic behavior.

The *internal factors* that can influence abnormal buying behaviors are related to attitudes, perceptions, and feelings. Most of the studies emphasize the role of fear and anxiety. All kinds of fears (of illness, of empty shelves and resource availability, of price increase, of mis- or disinformation, and rumors) increase the impulsive buying behavior (Naeem, 2020; Anas et al., 2022; Ali et al., 2022; Di Crosta et al., 2021; Güngördü Belbağ, 2021). The greater the fear the greater the change in the shopping patterns (Eger et al., 2021). However, other studies claim that panic buying is more guided by cognitive variables, as norms, than by affective ones, as negative emotions (Lindenmeier et al., 2021). Perceived severity of the pandemic, perceived lack of control, together with social influence and social norms are factors that stimulate scarcity and affective response and, thus, impulsive decisions (Li et al., 2021; Laato et al., 2020; Sobaih & Moustafa, 2022). The same effect seems to have risk perception (Akter et al., 2021), health security (Ali et al., 2022), perceived economic stability (Di Crosta et al., 2021), perceived lack of control in general and over resources (Li et al., 2021; Singh et al., 2021; Hill & Sharma, 2020), and perceived threat that directly impact panic buying (Razzak & Yousaf, 2022). The perceived scarcity of products is considered a mediator between perceived severity, perceived susceptibility, outcome expectations, cues to action, and self-efficacy, and panic behavior (Chua et al., 2021). Scarcity, together with the time constraints for shopping can positively influence the perceived competitiveness and, thus, panic buying (Singh et al., 2021; Jawad et al., 2022). Interestingly, by stockpiling and hoarding the essential products, the consumers begin to feel more confident, the resource shortage not being an issue anymore (Watson & Popescu, 2021). Negative attitudes and the behavior of others (i.e., social norms) are considered significant predictors for stockpiling (Roşu et al., 2021). As the alternative of online shopping is also examined, people that are more experienced with it and more open to practicing it are less influenced by panic intentions (Huang et al., 2022).

Besides all the above variables, the socio-demographic ones are also relevant. Variables as age, gender, income, or marital status are found to significantly impact shopping decisions. Thus, elderly, women, people with low levels of income, and single individuals seem to be more prone to panic behavior (Truong & Truong, 2022). However, there are studies that show a similar impact of fear among different generations (Eger et al., 2021). The income level of the consumers can also be a relevant variable that leads to panic development (Kaur & Sharma, 2020).

The relationship between external or internal factors and panic behaviors is frequently mediated by vulnerability and resilience. The literature shows that there is a significant difference between resilient and vulnerable consumers, the latter ones feeling the threat of the pandemic in a harsher way, thus developing a more prone panic behavior (Razzak & Yousaf, 2022). Although loneliness and anxiety contribute to panic buying and although emotions are believed to have the highest impact on abnormal buying behavior (Patiro et al., 2022), resilience seems to be an effective variable that protects consumers from maladaptive behaviors (Im et al., 2021).

At the same time, Kursan Milaković (2021b) claims that both resilience and vulnerability can influence purchase satisfaction, taking these variables beyond the purchasing behavior *per se*.

Studies emphasize that there are vulnerability perception differences between developed and developing countries, the former ones being more resilient, one of the main reasons being the resources abundance (Yazdanparast & Alhenawi, 2022). Similarly, consumers living in countries with high uncertainty avoidance and high individualism are more likely to stockpile (Ahmadi et al., 2022). The difference in stockpiling is also claimed regarding the product type. While countries like United States of America heavily consume sanitizers and masks, Turkish consumers prefer pasta, vegetables, oil, sugar, flour, or toilet paper (Güngördü Belbağ, 2021).

Managerial implications for reducing abnormal buying

Relying on the findings of the research included in the systematic literature review, the managerial implications listed in the analyzed studies have been assessed. The systematic data is presented in Table 2.

Table 2. Managerial Implications to Reduce Abnormal Buying, as Delivered by the Studies Included in the Systematic Literature Review

Stakeholders	Categories	Specific implications
Retailers / Supermarket managers	Information delivery	Provide updated information and transparency regarding available stocks (Anas et al. 2022; Islam et al., 2021; Anastasiadou et al., 2020; Kursan Milaković, 2021b; Razzak & Yousaf, 2022; Im et al., 2021; Amaral et al., 2022).
		Avoid messages like “only a few left” or “limited stock” (Razzak & Yousaf, 2022).
		Inform and educate consumers on the quality of products or services and the acquisition process during a crisis (Kursan Milaković, 2021b).
	Consumer knowledge	Get information on the consumer’s desires and challenges during the shopping process (Anas et al., 2022).
		Anticipate unusual consumer behavior and design back-up plans (Laato et al., 2020).
		Prioritize consumer trust, satisfaction, and well-being, apart from profit (Anas et al., 2022).
	Stock management	Prevent stockouts and increase the frequency of refilling the shelves, even in small amounts (Ahmadi et al., 2021; Chua et al., 2021).
		Implement quantity/quota restrictions on key products and design measures to prohibit bulk buying/over-purchasing (Amaral et al., 2022; Islam et al., 2021; Keane & Neal, 2021; Razzak & Yousaf, 2022).
		Hold extra stocks on key products (Keane & Neal, 2021).
		Restructure the supply chain by getting closer to the local and regional suppliers (Islam et al., 2021).
	Online marketing improvement	Improve online selling and home delivery system to minimize the perceived risk (Akter et al., 2021).
		Upgrade the online stores to evoke an increased sensation of touch and feel (Güngördü Belbağ, 2021; Roşu et al., 2021).
		Encourage online purchasing (Kursan Milaković, 2021b; Mason et al., 2020), including the strategy “buy online, pick up in store” (Güngördü Belbağ, 2021).
		Incorporate digital technology in the entire supply chain to ensure an effective communication flow (Islam et al., 2021).
	Price policy adaptation	Avoid unfair selling prices (Anas et al., 2022).
		Evaluate discount policies and their potential to reduce impulse buying proactively (Naeem, 2020).
	In-store measurements	Encourage pre-bookable shopping appointments outside the busiest time (Gordon-Wilson, 2022)

Stakeholders	Categories	Specific implications
		Re-design store layouts to improve efficiency of operation and decrease foot traffic (Mason et al., 2020).
	Business model adaptation	Assess short-term and long-term consequences of panic buying (increased revenues vs. shortage of supplies) (Islam et al., 2021).
		Companies that provide non-essential products/services must prepare contingency plans for crisis situations (e.g., no or limited sales) or change their business models (Vázquez-Martínez et al., 2021).
Policy makers (non-governmental organization)	Information delivery	Adapt communication/public announcements to avoid trigger for stockpiling (Ahmadi et al., 2021).
	Consumer knowledge	Consider the culture of the country, the demographic, socio-economic, and uncertainty avoidance characteristics when designing expectations of consumer purchase behavior (Ahmadi et al., 2021; Cervellati et al., 2022).
		Observe consumers and determine their vulnerability level (Hill & Sharma, 2020).
	Well-being management	Provide access to mental health support, as stockpiling is a coping mechanism for anxiety (Amaral et al., 2022).
		Educate the public on maintaining physical (exercising and getting a healthy sleeping routine), mental (stress management through meditation), and emotional (interacting with friends and family) well-being (Chua et al., 2021; Im et al., 2021) and self-control (Li et al., 2021).
Government	Information delivery	Communicate messages that decrease fear (Islam et al., 2021) and provide useful protection information (Li et al., 2021) in a proactive and reactive manner (Sherman et al., 2021).
		Involve celebrities and credible digital influencers to deliver positive messages (Islam et al., 2021).
		Advise consumers to avoid un-necessary information exposure (Sherman et al., 2021).
		Provide information on the exiting stocks on key products (Islam et al., 2021).
		Enhance the awareness of people to control rumors and, thus, panic and fear (Ali et al., 2022).
	Consumer knowledge	Assess the vulnerability level of the consumers (Yazdanparast & Alhenawi, 2022).
		Design panic-controlling strategies (Ali et al., 2022).
	Market monitoring	Monitor the market in terms of shortage of supply and unreasonably price hike (Ali et al., 2022).
	Market management	Establish a limit on the number of items one can buy for a certain product (Chua et al., 2021; Patiro et al., 2022).
	International cooperation	Cooperation with other countries and to learn from their experiences (Islam et al., 2021).
Mass-media	Accurate information delivery	Provide accurate information and avoid rumors (Ali et al., 2022; Li et al., 2021).
		Clarify any misinformation and ban fake news (Im et al., 2021).
	Positive information delivery	Show images of fully stocked selves instead of empty ones (Chua et al., 2021).
		Communicate that panic buying is not an effect of the food shortage, but of fear (Islam et al., 2021).
		Use social media to provide positive information (Li et al., 2021).

Source: authors' research

The main stakeholders involved in the managerial implications' discussions are retailers, policy makers, government, and mass-media. The scholars consider that retailers or the supermarket managers should take the widest set of measures in case of a crisis. First, they need to have fluent and permanent communication with the consumers. On the one hand, they need to deliver the right messages at the right time. On the other hand, they need to listen to the consumers' needs and develop trust-based interactions. Second, retailers need to develop more efficient stock management, both offline and online. Finally, they need to control and to adapt price policies, in-store measures, and adapted business models. Policy makers, besides adapting communication based on the specific features of the targeted consumers, are believed to be responsible for the well-being management of the individuals by emotionally educating them. In the same way, governments can learn from the existing studies that mutual communication with the consumers is paramount. Likewise, collaborating with retailers and with other countries can help in developing effective crisis management measures. As a funnel between political and economic stakeholders, mass media's lesson highlights the need for accurate and positive information in times of crisis.

5. Conclusion

The COVID-19 pandemic has disrupted the normal life of all consumers. It has generated fears, it has induced vulnerability and, thus, panic-based decisions. Through a synthesized investigation of 63 studies, the present paper emphasizes important theories and variables used in explaining maladaptive buying behavior together with a set of managerial implications that can guide stakeholders in better manage future crisis.

Thus, the study firstly contributes to the consumer behavior literature by providing a comprehensive overview of the theories used to investigate buying behavior in times of COVID-19 pandemic (RQ1). Theories as Theory of planned behavior and Stimulus-organism-response help in structuring a map of paramount variables in explaining abnormal buying behavior, such as panic buying, hoarding, or stockpiling (RQ2). The external variables detected are related to governmental initiatives taken during pandemic, to cultural factors specific to the analyzed country, to economic conditions, to the marketing strategies and media exposure, and to the social influence. The internal variables refer to the way government and its measures are perceived, to the perceived scarcity of the national and personal resources, to the perceived severity and risks of the pandemic, to the perception on the shopping issues, to the capacity of filtering the received information, to all types of fear, and to socio-demographic variables. Consequently, as a second scientific contribution, it becomes clear that vulnerability and resilience are two key factors that interfere and can influence, in a positive or negative way, the outcome of an abnormal buying behavior. While a vulnerable consumer perceives all the environmental and internal variables as being harmful, a resilient consumer perceives them as being more like a challenge and, thus, developing a less prone panic behavior. Accordingly, the paper contributes to consumer studies with a list of both theories and variables that can be further used in designing and testing conceptual models.

Practically, by putting together the managerial implications of the existing studies, the paper offers a guide for a wide range of stakeholders (retailers, policy makers, governments, and mass-media). The way measures are implemented, and the way information is communicated are important issues that can reduce vulnerability and increase resilience. The lessons deducted from the analyzed studies emphasize the need to deliver accurate and positive information, to

better understand the needs, fears, and perceptions of the consumers, to better manage their well-being, to manage and adapt in-store stocks and price policies, to improve online marketing, and to develop international cooperations for best-practices application (RQ3).

The results of the present paper should be assessed in the light of their attached limitations but opening potential research perspectives. First, the sample is composed only of research papers. Other scientific documents (e.g., books, journal editorials etc.) were excluded and, for future perspectives, they might add valuable insights. Moreover, using different search keywords and strategies might help in diversifying the studies' sample, and thus the available information. Although the chosen databases are the most used ones in systematic literature reviews, supplementing this list might add studies conducted in very specific settings but yet not that visible. Second, the analysis focuses on a holistic approach, not considering specific timeframes and the differences between them. For instance, variables that are significant in one certain pandemic moment might not be that significant in another moment. Thus, future research should emphasize possible evolutions and changes in the relationship between external and internal variables and panic behavior. Moreover, the current analysis cannot prove that all variables are likely to work and be significant during crises, as maladaptive buying behavior can also be associated with different buying-shopping disorders (Leite et al., 2014). Third, although the initial aim was to design a comprehensive map with all the variables used in the analyzed studies to explain buying behavior in a crisis context, the complexity of the existing relationships made this endeavor unreasonable. The managerial implications of a crisis can be enlarged by comparing different types of emergency situations, the ultimate goal being that of developing a guide of actions useful for the stakeholders involved. Finally, although substantial efforts have been applied to guarantee objectivity, due to the qualitative analysis of the data, the results might be biased by the authors' personal understanding of the phenomena.

References:

- Abraham, C., & Sheeran, P. (2003). Acting on intentions: the role of anticipated regret. *British Journal of Social Psychology*, 42(4), 495-511. <http://doi.org/10.1348/014466603322595248>
- Addo, P. C., Jiaming, F., Kulbo, N. B., & Liangqiang, L. (2020). COVID-19: fear appeal favoring purchase behavior towards personal protective equipment. *The Service Industries Journal*, 40(7-8), 471-490. <https://doi.org/10.1080/02642069.2020.1751823>
- Ahmad, P., Khalifa, H., Kulkarni, S., Omer, E., Ahmad, A.R., Sharif, S., Singh, S., & Bali, A.O. (2022). An Empirical Study on Consumer Buying Behaviour during COVID-19 Pandemic. *Journal of Positive School Psychology*, 6(5), 7446-7465. <https://journalppw.com/index.php/jpsp/article/view/8807>
- Ahmadi, I., Habel, J., Jia, M., Lee, N., & Wei, S. (2021). Consumer stockpiling across cultures during the COVID-19 pandemic. *Journal of International Marketing*, 30(2), 28-37. <http://doi.org/10.1177/1069031X211037590>
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211. [http://doi.org/10.1016/0749-5978\(91\)90020-T](http://doi.org/10.1016/0749-5978(91)90020-T)
- Akter, S., Ashrafi, T., & Waligo V. (2021). Changes in Consumer Purchasing Behavior Due to COVID-19 Pandemic. *Journal of Marketing and Consumer Research*, 77. <http://doi.org/10.7176/JMCR/77-04>
- Ali, M.R., Khan, A.G., Islam, M.N., & Akram, U. (2022). Determinants of panic buying during COVID-19: causes and consequences. *International Journal of Quality and Service Sciences*, 15(1), 34-56. <https://doi.org/10.1108/IJQSS-12-2021-0187>
- Amaral, N.B., Chang, B., & Burns, R. (2022). Understanding consumer stockpiling: Insights provided during the COVID-19 pandemic. *Journal of Consumer Affairs*, 56(1), 211-236. <http://doi.org/10.1111/joca.12434>
- Amatulli, C., Peluso, A. M., Sestino, A., & Guido, G. (2021). New consumption orientations in the COVID-19 era: Preliminary findings from a qualitative investigation. In *Proceedings from 20th International Marketing Trends Conference. Paris-Venice: Marketing Trends Association*. <https://hdl.handle.net/11587/452074>
- Anas, M., Khan, M.N., Rahman, O., & Uddin, S.M.F. (2022). Why consumers behaved impulsively during COVID-19 pandemic?. *South Asian Journal of Marketing*, 3(1), 7-20. <https://doi.org/10.1108/SAJM-03-2021-0040>

- Anastasiadou, E., Chrissos Anestis, M., Karantza, I., & bVlachakis, S. (2020). The coronavirus' effects on consumer behavior and supermarket activities: insights from Greece and Sweden. *International Journal of Sociology and Social Policy*, 40(9/10), 893-907. <https://doi.org/10.1108/IJSSP-07-2020-0275>
- Ang, S. Y., Uthaman, T., Ayre, T. C., Mordiffi, S. Z., Ang, E., & Lopez, V. (2018). Association between demographics and resilience – a cross-sectional study among nurses in Singapore. *International Nursing Review*, 65(3), 459-466. <https://doi.org/10.1111/inr.12441>
- Antonides, G., & van Leeuwen, E. (2021). Covid-19 crisis in the Netherlands: “Only together we can control Corona”. *Mind & Society*, 20(2), 201-207. <https://doi.org/10.1007/s11299-020-00257-x>
- Arora, N., Charm, T., Grimmelt, A., Ortega, M., Robinson, K., Sexauer, C., Staack, Y., Whitehead, S., & Yamakawa, N. (2020). A global view of how consumer behavior is changing amid COVID-19. *McKinsey and Company*. Retrieved from <https://www.mckinsey.com/~media/McKinsey/Business%20Functions/Marketing%20and%20Sales/Our%20Insights/A%20global%20view%20of%20how%20consumer%20behavior%20is%20changing%20amid%20COVID%2019/20200707/covid-19-global-consumer-sentiment-20200707.pdf>
- Baker, S. M. (2006). Consumer normalcy: Understanding the value of shopping through narratives of consumers with visual impairments. *Journal of Retailing*, 82(1), 37-50. <https://doi.org/10.1016/j.jretai.2005.11.003>
- Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes*, 50(2), 248-287. [https://doi.org/10.1016/0749-5978\(91\)90022-L](https://doi.org/10.1016/0749-5978(91)90022-L)
- Bandura, A., (2019). The social learning theory of aggression. In R. Falk and S. Kim (Eds.), *The war system. An interdisciplinary approach* (pp. 141-158). Routledge.
- Bareja-Wawryszuk, O., Pajewski, T., Çakaröz, K.M., & Kavas, B. (2022). Changes in Consumer Behavior during the COVID-19 Pandemic: A Comparative Analysis between Polish and Turkish Consumers. *Sustainability*, 14(16), 10276. <https://doi.org/10.3390/su141610276>
- Bausch, C.L., Milan, G.S., Graciola, A.P., Eberle, L., & Bebbler, S. (2021). The Covid-19 Pandemic and the Changes in Consumer Habits and Behavior. *Revista Gestão E Desenvolvimento*, 18(3), 3-25. <https://doi.org/10.25112/rgd.v18i3.2846>
- Berezka, S., Rebiagina, V., & Muravskaia, S. (2021). Changes in consumer behavior in the BRICS countries during the COVID-19 pandemic: The role of trust and anxiety. *BRICS Journal of Economics*, 2(1), 53-73. <https://doi.org/10.38050/2712-7508-2021-29>
- Bermes, A. (2021). Information overload and fake news sharing: A transactional stress perspective exploring the mitigating role of consumers' resilience during COVID-19. *Journal of Retailing and Consumer Services*, 61, 102555. <https://doi.org/10.1016/j.jretconser.2021.102555>
- Bhimani, H., Mention, A.-L., & Barlatier, P.-J. (2019). Social media and innovation: A systematic literature review and future research directions. *Technological Forecasting and Social Change*, 44, 251-269. <http://doi.org/10.1016/j.techfore.2018.10.007>
- Brehm, J.W. (1966). *A Theory of Psychological Reactance*. Academic Press.
- Cambefort, M. (2020). How the COVID-19 pandemic is challenging consumption. *Markets, Globalization & Development Review*, 5(1). <http://doi.org/10.23860/MGDR-2020-05-01-02>
- Cervellati, E.M., Stella, G.P., Filotto, U., & Maino, A. (2022). How COVID-19 changed Italian consumers' behavior. *Global Finance Journal*, 51, 100680. <https://doi.org/10.1016/j.gfj.2021.100680>
- Chauhan, S., Banerjee, R., & Dagar, V. (2021). Analysis of Impulse Buying Behaviour of Consumer During COVID-19: An Empirical Study. *Millennial Asia*, 14(2), 278-299. <http://doi.org/10.1177/09763996211041215>
- Choudhury, N., Mukherjee, S., & Datta, B. (2019). Constrained purchase decision-making process at the base of the pyramid. *Journal of Consumer Marketing*, 36(1), 178-188. <https://doi.org/10.1108/JCM-01-2017-2065>
- Chua, G., Yuen, K. F., Wang, X., & Wong, Y. D. (2021). The determinants of panic buying during COVID-19. *International Journal of Environmental Research and Public Health*, 18(6), 3247. <https://doi.org/10.3390/ijerph18063247>
- Concari, A., Kok, G., & Martens, P. (2020). A Systematic Literature Review of Concepts and Factors Related to Pro-Environmental Consumer Behaviour in Relation to Waste Management Through an Interdisciplinary Approach. *Sustainability*, 12(11), 4452. <http://dx.doi.org/10.3390/su12114452>
- Cruz-Cárdenas, J., Zabelina, E., Guadalupe-Lanas, J., Palacio-Fierro, A., & Ramos-Galarza, C. (2021). COVID-19, consumer behavior, technology, and society: A literature review and bibliometric analysis. *Technological Forecasting & Social Change*, 173, 121179. <http://doi.org/10.1016/j.techfore.2021.121179>

- Culnan, M. J., & Armstrong, P. (1999). Information privacy concerns, procedural fairness, and impersonal trust: An empirical investigation. *Organization Science*, 10(1), 104-115. <https://doi.org/10.1287/orsc.10.1.104>
- Di Crosta, A., Ceccato, I., Marchetti, D., La Malva, P., Maiella, R., Cannito, L., Cipi, M., Mammarella, N., Palumbo, R., Verrocchio, M.C., Palumbo, R., & Di Domenico, A. (2021). Psychological factors and consumer behavior during the COVID-19 pandemic. *PLoS ONE*, 16(8), e0256095. <https://doi.org/10.1371/journal.pone.0256095>
- Dulam, R., Furuta, K., & Kanno, T. (2021). Consumer Panic Buying: Realizing Its Consequences and Repercussions on the Supply Chain. *Sustainability*, 13(8), 4370. <https://doi.org/10.3390/su13084370>
- Eftimov, T., Popovski, G., Petkovic, M., Seljak, B. K., & Kocev, D. (2020). COVID-19 pandemic changes the food consumption patterns. *Trends in Food Science & Technology*, 104, 268-272. <https://doi.org/10.1016/j.tifs.2020.08.017>
- Eger, L., Komárková, L., Egerová, D., & Mičík, M. (2021). The effect of COVID-19 on consumer shopping behaviour: Generational cohort perspective. *Journal of Retailing and Consumer Services*, 61, 102542. <https://doi.org/10.1016/j.jretconser.2021.102542>
- Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*. Addison-Wesley.
- Gazali, H.M. (2020). The Covid-19 pandemic: Factors triggering panic buying behaviour among consumers in Malaysia. *Labuan Bulletin of International Business and Finance (LBIBF)*, 18(1), 84-95. <https://doi.org/10.51200/lbibf.v18i1.2690>
- Gerlich, M. (2021). COVID-19 Induced Changes in Consumer Behavior. *Open Journal of Business and Management*, 9(5), 2425-2451. <https://doi.org/10.4236/ojbm.2021.95131>
- Gordon-Wilson, S. (2022). Consumption practices during the COVID-19 crisis. *International Journal of Consumer Studies*, 46(2), 575-588. <https://doi.org/10.1111/ijcs.12701>
- Goswami, S., & Chouhan, V. (2021). Impact of change in consumer behaviour and need prioritization on retail industry in Rajasthan during COVID-19 pandemic. *Materials Today: Proceedings*, 46, 10262-10267. <https://doi.org/10.1016/j.matpr.2020.12.073>
- Gough, D., Oliver, S., & Thomas, J. (2012). Introducing systematic reviews. In D. Gough, S. Oliver, & J. Thomas (Eds.), *An Introduction to Systematic Reviews* (pp. 1-16). Sage.
- Grzywińska-Rapca, M. (2022). Consumer Purchasing Behaviour during the COVID-19 Epidemic: A Case Study for Poland. *Economy of Regions*, 18(2), 595-608. <https://doi.org/10.17059/ekon.reg.2022-2-21>
- Gu, S., Slusarczyk, B., Hajizada, S., Kovalyova, I., & Sakhibieva, A. (2021). Impact of the COVID-19 Pandemic on Online Consumer Purchasing Behavior. *Journal of Theoretical and Applied Electronic Commerce Research*, 16(6), 2263-2281. <https://doi.org/10.3390/jtaer16060125>
- Guèvremont, A., Boivin, C., Durif, F., & Graf, R. (2022). Positive behavioral change during the COVID-19 crisis: The role of optimism and collective resilience. *Journal of Consumer Behaviour*, 21(6), 1293-1306. <http://doi.org/10.1002/cb.2083>
- Güngördü Belbağ, A. (2021). Impacts of Covid-19 pandemic on consumer behavior in Turkey: A qualitative study. *The Journal of Consumer Affairs*, 56(1), 339-358. <https://doi.org/10.1111/joca.12423>
- Guthrie, C., Fosso-Wamba, S., & Arnaud, J.B. (2021). Online consumer resilience during a pandemic: An exploratory study of e-commerce behavior before, during and after a COVID-19 lockdown. *Journal of Retailing and Consumer Services*, 61, 102570. <https://doi.org/10.1016/j.jretconser.2021.102570>
- Hall, M.C., Prayag, G., Fieger, P., & Dyason, D. (2020). Beyond panic buying: consumption displacement and COVID-19. *Journal of Service Management*, 32(1), 113-128. <http://doi.org/10.1108/JOSM-05-2020-0151>
- Hartono, A., Ishak, A., Abdurrahman, A., Astuti, B., Marsasi, E. G., Ridanasti, E., Roostika, R., & Muhammad, S. (2021). COVID-19 Pandemic and Adaptive Shopping Patterns: An Insight from Indonesian Consumers. *Global Business Review*, 25(5), 1382-1400. <https://doi.org/10.1177/09721509211013512>
- Helisz, P., Gwóźdź, W., Kaczmarczyk, N., & Całyniuk, B. (2021). Consumer behaviour during COVID-19 pandemic. *Roczniki Państwowego Zakładu Higieny [Annals of the National Institute of Hygiene]*, 72(4), 403-408. <https://doi.org/10.32394/rpzh.2021.0185>
- Higgins, E. T. (2012). Regulatory focus theory. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (pp. 483-504). Sage Publications Ltd. <https://doi.org/10.4135/9781446249215.n24>

- Hill, R. P., & Sharma, E. (2020). Consumer vulnerability. *Journal of Consumer Psychology*, 30(3), 551-570. <https://doi.org/10.1002/jcpy.1161>
- Hofstede, G. (2011). Dimensionalizing Cultures: The Hofstede Model in Context. *Online Readings in Psychology and Culture*, 2(1), <https://doi.org/10.9707/2307-0919.1014>
- Huang, H.-L., Chen, Y.-Y., & Sun, S.-C. (2022). Conceptualizing the Internet Compulsive-Buying Tendency: What We Know and Need to Know in the Context of the COVID-19 Pandemic. *Sustainability*, 14(3), 1549. <https://doi.org/10.3390/su14031549>
- Im, H., Kim, N.L., & Lee, H.K. (2021). Why did (some) consumers buy toilet papers? A cross-cultural examination of panic buying as a maladaptive coping response to COVID-19. *The Journal of Consumer Affairs*, 56(1), 1-23. <https://doi.org/10.1111/joca.12426>
- Islam, T., Pitafi, A. H., Arya, V., Wang, Y., Akhtar, N., Mubarik, S., & Xiaobei, L. (2021). Panic buying in the COVID-19 pandemic: A multicountry examination. *Journal of Retailing and Consumer Services*, 59, 102357. <https://doi.org/10.1016/j.jretconser.2020.102357>
- Janz, N., & Becker, M. (1984). The Health Believe Model: A Decade Later. *Health Education Quarterly*, 11(1), 1-47. <https://doi.org/10.1177/109019818401100101>
- Jawad, M., Rizwan, S., Ahmed, S., Khalid, H.B., & Naz, M. (2022). Discovering panic purchasing behavior during the COVID-19 pandemic from the perspective of underdeveloped countries. *Cogent Business & Management*, 9(1), 2141947. <http://doi.org/10.1080/23311975.2022.2141947>
- Jo, H., Shin, E., & Kim, H. (2021). Changes in Consumer Behaviour in the Post-COVID-19 Era in Seoul, South Korea. *Sustainability*, 13(1), 136. <https://doi.org/10.3390/su13010136>
- Joshi, C.S., & Chaudhary, T. (2021). Changing Paradigm of Consumer Behaviour amid Covid-19. *Pacific Business Review International*, 13(12). Retrieved from <https://www.proquest.com/scholarly-journals/changing-paradigm-consumer-behaviour-amid-covid/docview/3109499998/se-2>
- Kaur, R., & Sharma, B. (2020). Impulsive buying behavior for essential goods: COVID-19. *Journal of Critical Reviews*, 7(8), 1326-1335. <http://www.jcreview.com/fulltext/197-1601010082.pdf>
- Kay, A. C., Whitson, J. A., Gaucher, D., & Galinsky, A. D. (2009). Compensatory Control: Achieving Order Through the Mind, Our Institutions, and the Heavens. *Current Directions in Psychological Science*, 18(5), 264-268. <https://doi.org/10.1111/j.1467-8721.2009.01649.x>
- Keane, M., & Neal, T. (2021). Consumer panic in the COVID-19 pandemic. *Journal of Econometrics*, 220(1), 86-105. <https://doi.org/10.1016/j.jeconom.2020.07.045>
- Kirk, C. P., & Rifkin, L. S. (2020). I'll trade you diamonds for toilet paper: Consumer reacting, coping and adapting behaviors in the COVID-19 pandemic. *Journal of Business Research*, 117, 124-131. <https://doi.org/10.1016/j.jbusres.2020.05.028>
- Kim, J., Yang, K., Min, J., & White, B. (2022). Hope, fear, and consumer behavioral change amid COVID-19: Application of protection motivation theory. *International Journal of Consumer Studies*, 46(2), 558-574. <http://doi.org/10.1111/ijcs.12700>
- Khayru, R. K. (2021). Opinions about Consumer Behavior during the Covid-19 Pandemic. *Journal of Social Science Studies*, 1(1), 31-36. <https://doi.org/10.56348/jos3.v1i1.6>
- Komonen, P., & Seisto, A. (2022). Consumers anticipating futures beyond the pandemic: A qualitative study. *Futures*, 142, 103019. <https://doi.org/10.1016/j.futures.2022.103019>
- Ku, G., Malhotra, D., & Murnighan, J. K. (2005). Towards a competitive arousal model of decision-making: A study of auction fever in live and Internet auctions. *Organizational Behavior and Human Decision Processes*, 96(2), 89-103. <https://doi.org/10.1016/j.obhdp.2004.10.001>
- Kumar, S., & Shah, A. (2021). Revisiting food delivery apps during COVID-19 pandemic? Investigating the role of emotions. *Journal of Retailing and Consumer Services*, 62, 102595. <https://doi.org/10.1016/j.jretconser.2021.102595>
- Kursan Milaković, I. (2020). Croatian Purchase Experience During Covid-19: The Role of Company's Media Presence for Consumer Vulnerability, Resilience and Buying Behaviour. In *MIC 2020: The 20th Management International Conference* (pp. 207-218). University of Primorska Press. <https://urn.nsk.hr/urn:nbn:hr:124:595066>
- Kursan Milaković, I. (2021a). Exploring Consumer Resilience during COVID-19: Demographics, Consumer Optimism, Innovativeness and Online Buying. *Economic and Business Review*, 23(4), 260-272. <https://doi.org/10.15458/2335-4216.1291>

- Kursan Milaković, I. (2021b). Purchase experience during the COVID-19 pandemic and social cognitive theory: The relevance of consumer vulnerability, resilience, and adaptability for purchase satisfaction and repurchase. *International Journal of Consumer Studies*, 45(6), 1425-1442. <https://doi.org/10.1111%2Fijcs.12672>
- Laato, S., Islam, A. N., Farooq, A., & Dhir, A. (2020). Unusual purchasing behavior during the early stages of the COVID-19 pandemic: The stimulus-organism-response approach. *Journal of Retailing and Consumer Services*, 57, 102224. <https://doi.org/10.1016/j.jretconser.2020.102224>
- Lavuri, R. (2023). Intrinsic factors affecting online impulsive shopping during the COVID-19 in emerging markets. *International Journal of Emerging Markets*, 18(4), 958-977. <https://doi.org/10.1108/IJOEM-12-2020-1530>
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer publishing company.
- Leite, P. L., Pereira, V. M., Nardi, A. E., & Silva, A. C. (2014). Psychotherapy for compulsive buying disorder: A systematic review. *Psychiatry Research*, 219(3), 411-419. <https://doi.org/10.1016/j.psychres.2014.05.037>
- Leko Šimić, M., & Pap, A. (2021). Generation Z buying behavior change in the Covid-19 pandemic context. *Ekonomski vjesnik/Econviews - Review of Contemporary Business, Entrepreneurship and Economic Issues*, 34(2), 361-370. <https://doi.org/10.51680/ev.34.2.9>
- Li, X., Zhou, Y., Wong, Y.D., Wang, X., & Yuen, K.F. (2021). What influences panic buying behaviour? A model based on dual-system theory and stimulus-organism-response framework. *International Journal of Disaster Risk Reduction*, 64, 102484. <https://doi.org/10.1016/j.ijdrr.2021.102484>
- Liberman, N., & Trope, Y. (1998). The role of feasibility and desirability considerations in near and distant future decisions: A test of temporal construal theory. *Journal of Personality and Social Psychology*, 75(1), 5-18. <http://doi.org/10.1037/0022-3514.75.1.5>
- Lindenmeier, J., Hodges, H.M., & Saliterer, I. (2021). Drivers of consumers' panic purchase behaviour in the Covid-19 crisis: validation of an affective and cognitive channel model. *Journal of Marketing Management*, 37(17-18), 1712-1735. <https://doi.org/10.1080/0267257X.2021.1997290>
- Liu, C., Xia, S., & Lang, C. (2021). Clothing consumption during the COVID-19 pandemic: evidence from mining tweets. *Clothing and Textiles Research Journal*, 39(4), 314-330. <https://doi.org/10.1177/0887302X211014973>
- Loxton, M., Truskett, R., Scarf, B., Sindone, L., Baldry, G., & Zhao, Y. (2020). Consumer behaviour during crises: Preliminary research on how coronavirus has manifested consumer panic buying, herd mentality, changing discretionary spending and the role of the media in influencing behaviour. *Journal of Risk and Financial Management*, 13(8), 166. <http://doi.org/10.3390/jrfm13080166>
- Maddux, J.E., Rogers, R.W. (1983). Protection motivation and self-efficacy: A revised theory of fear appeals and attitude change. *Journal of Experimental Social Psychology*, 19(5), 469-479. [https://doi.org/10.1016/0022-1031\(83\)90023-9](https://doi.org/10.1016/0022-1031(83)90023-9)
- Mason, A., Narcum, J.A., & Mason, K. (2020). Changes in consumer decision-making resulting from the COVID-19 pandemic. *Journal of Customer Behaviour*, 19(4), 299-321. <https://doi.org/10.1362/147539220X16003502334181>
- Maurer, A. (2016). Introduction: New perspectives on resilience in socio-economic spheres. In A. Maurer (Ed.), *New perspectives on resilience in socio-economic spheres* (pp. 1-5). Wiesbaden: Springer VS.
- Mazza, M.G., De Lorenzo, R., Conte, C., Poletti, S., Vai, B., Bollettini, I., Melloni, E.M.T., Furlan, R., Ciceri, F., & Rovere-Querini, P., COVID-19 BioB Outpatient Clinic Study group, & Benedetti, F. (2020). Anxiety and depression in COVID-19 survivors: role of inflammatory and clinical predictors. *Brain, Behavior, and Immunity*, 89, 594-600. <https://doi.org/10.1016/j.bbi.2020.07.037>
- Mehrabian, A., & Russell, J. A. (1974). *An approach to environmental psychology*. The MIT Press.
- Miller, F., Osbahr, H., Boyd, E., Thomalla, F., Bharwani, S., Ziervogel, G., Walker, B., Birkman, J., der Leeuw, S., Rockstrom, J., Hinkel, J., Downing, T., Folke, C., & Nelson, D. (2010). Resilience and vulnerability: Complementary or conflicting concepts? *Ecology and Society*, 15(3), 11. <https://doi.org/10.5751/es-03378-150311>
- Mohamed Shaffril, H.A., Samsuddin, S.F., & Abu Samah, A. (2021). The ABC of systematic literature review: the basic methodological guidance for beginners. *Quality & Quantity*, 55, 1319-1346. <https://doi.org/10.1007/s11135-020-01059-6>
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Medicine*, 6(7), e1000097. <http://dx.doi.org/10.1371/journal.pmed.1000097>
- Mullainathan, S., & Shafir, E. (2013). *Scarcity: Why having too little means so much*. Henry Holt and Company.

- Naeem, M. (2020). Understanding the customer psychology of impulse buying during COVID-19 pandemic: implications for retailers. *International Journal of Retail & Distribution Management*, 49(3), 377-393. <http://doi.org/10.1108/IJRDM-08-2020-0317>
- Nguyen, J., Le, Q.V., & Ha, J.T. (2021). Impacts of health and safety concerns on e-commerce and service reconfiguration during the COVID-19 pandemic: Insights from an emerging economy. *Service Science*, 13(4), 227-242. <https://doi.org/10.1287/serv.2021.0279>
- Omar, N.A., Nazri, M.A., Ali, M.H., & Alam, S.S. (2021). The panic buying behavior of consumers during the COVID-19 pandemic: Examining the influences of uncertainty, perceptions of severity, perceptions of scarcity, and anxiety. *Journal of Retailing and Consumer Services*, 62, 102600. <https://doi.org/10.1016/j.jretconser.2021.102600>
- Ortega-Vivanco, M. (2020). Efectos del Covid-19 en el comportamiento del consumidor: Caso Ecuador. *RETOS. Revista de Ciencias de la Administración y Economía*, 10(20), 233-247. <https://doi.org/10.17163/ret.n20.2020.03>
- Pantano, E., Pizzi, G., Scarpi, D., & Dennis, C. (2020). Competing during a pandemic? Retailers' ups and downs during the COVID-19 outbreak. *Journal of Business Research*, 116, 209-213. <https://doi.org/10.1016/j.jbusres.2020.05.036>
- Patiro, S., Budiyantri H., Hendarto, K.A., & Hendrian, H. (2022). Panic-Buying Behavior During the Covid-19 Pandemic in Indonesia: A Social Cognitive Theoretical Model. *Gadjah Mada International Journal of Business*, 24(1), 25-55. <http://doi.org/10.22146/gamaijb.64578>
- Peco-Torres, F., Polo-Peña, A. I., & Frías-Jamilena, D. M. (2021). The effect of COVID-19 on tourists' intention to resume hotel consumption: The role of resilience. *International Journal of Hospitality Management*, 99, 103075. <https://doi.org/10.1016/j.ijhm.2021.103075>
- Pieters, R., & Zeelenberg, M. (2007). A Theory of Regret Regulation 1.1. *Journal of Consumer Psychology*, 17(1), 29-35. http://doi.org/10.1207/s15327663jcp1701_6
- Pirc Barčič, A., Kitek Kuzman, M., Vergot, T., & Grošelj, P. (2021). Monitoring Consumer Purchasing Behavior for Wood Furniture before and during the COVID-19 Pandemic. *Forests*, 12(7), 873. <https://doi.org/10.3390/f12070873>
- Rai, P., Singh, S. N., Sharma, S., Bharti, S., & Shukla, K. (2021). Consumers buying behaviour and challenges faced by consumers during COVID-19 pandemic regarding FMCG products (during Indian lockdown). *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, 12(10), 3403-3412. <https://doi.org/10.17762/turcomat.v12i10.5015>
- Razzak, A., & Yousaf, S. (2022). Perceived Resilience and Vulnerability during the Pandemic-Infused Panic Buying and the Role of COVID Conspiracy Beliefs. Evidence from Pakistan. *Journal of Global Marketing*, 35(5), 368-383. <https://doi.org/10.1080/08911762.2022.2051156>
- Reivich, K., & Shatté, A. (2003). *The resilience factor: 7 keys to finding your inner strength and overcoming life's hurdles*. Harmony
- Rittichainuwat, B., Laws, E., Maunchontham, R., Rattanaphinanchai, S., Muttamara, S., Mouton, K., Lin, Y., & Suksai, C. (2020). Resilience to crises of Thai MICE stakeholders: a longitudinal study of the destination image of Thailand as a MICE destination. *Tourism Management Perspectives*, 35, 100704. <https://doi.org/10.1016/j.tmp.2020.100704>
- Rogers, R.W. (1975) A protection motivation theory of fear appeals and attitude change. *Journal of Psychology*, 91(1), 93-114. <http://doi.org/10.1080/00223980.1975.9915803>
- Roșu, M.-M., Ianole-Călin, R., Dinescu, R., Bratu, A., Papuc, R.-M., & Cosma, A. (2021). Understanding Consumer Stockpiling during the COVID-19 Outbreak through the Theory of Planned Behavior. *Mathematics*, 9(16), 1950. <https://doi.org/10.3390/math9161950>
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>
- Samson, A., & Voyer, B. G. (2012). Two minds, three ways: dual system and dual process models in consumer psychology. *AMS review*, 2, 48-71. <https://doi.org/10.1007/s13162-012-0030-9>
- Satish, K., Venkatesh, A., & Manivannan, A.S.R. (2021). Covid-19 is driving fear and greed in consumer behaviour and purchase pattern. *South Asian Journal of Marketing*, 2(2), 113-129. <https://doi.org/10.1108/SAJM-03-2021-0028>
- Sayyida, S., Hartini, S., Gunawan, S., & Nur Husin, S. (2021). The Impact of the Covid-19 Pandemic on Retail Consumer Behavior. *Aptisi Transactions on Management (ATM)*, 5(1), 79-88. <https://doi.org/10.33050/atm.v5i1.1497>

- Seo, K., Go, S., & Kim, B. (2020). Pricing strategies under markets with time gap between purchase and consumption. *Journal of Business Research*, 120, 312-320. <https://doi.org/10.1016/j.jbusres.2020.01.066>
- Sherman, C.E., Arthur, D., & Thomas, J. (2021). Panic buying or preparedness? The effect of information, anxiety and resilience on stockpiling by Muslim consumers during the COVID-19 pandemic. *Journal of Islamic Marketing*, 12(3), 479-497. <https://doi.org/10.1108/JIMA-09-2020-0309>
- Sheth, J. (2020). Impact of Covid-19 on consumer behavior: Will the old habits return or die?. *Journal of Business Research*, 117, 280-283. <https://doi.org/10.1016/j.jbusres.2020.05.059>
- Shi, H. Y., Jing, F. J., Yang, Y., & Nguyen, B. (2017). The concept of consumer vulnerability: Scale development and validation. *International Journal of Consumer Studies*, 41(6), 769-777. <https://doi.org/10.1111/ijcs.12390>
- Singh, G., Aiyub, A.S., Greig, T., Naidu, S., Sewak, A., & Sharma, S. (2021). Exploring panic buying behavior during the COVID-19 pandemic: a developing country perspective. *International Journal of Emerging Markets*, 18(7), 1587-1613. <https://doi.org/10.1108/IJOEM-03-2021-0308>
- Skondras, N.A., Tsesmelis, D.E., Vasilakou, C.G., & Karavitis, C.A. (2020). Resilience-Vulnerability Analysis: A Decision-Making Framework for Systems Assessment. *Sustainability*, 12(22), 9306. <https://doi.org/10.3390/su12229306>
- Sobaih, A.E.E., & Moustafa F. (2022). Panic Food Purchasing amid COVID-19 Pandemic: Does the Impact of Perceived Severity, Anxiety and Self-Isolation Really Matter? *International Journal of Environmental Research and Public Health*, 19(22), 15277. <http://doi.org/10.3390/ijerph192215277>
- Southwick, S.M., & Charney, D.S. (2012). The science of resilience: implications for the prevention and treatment of depression. *Science*, 338(6103), 79–82. <https://doi.org/10.1126/science.1222942>
- Stern, H. (1962). The significance of impulse buying today. *Journal of Marketing*, 26(2), 59-62. <http://doi.org/10.1177/002224296202600212>
- Sweller, J. (2011). Cognitive load theory. In J.P. Mestre & B.H. Ross (Eds.), *The psychology of learning and motivation: Cognition in education* (pp. 37-76). Elsevier Academic Press. <https://doi.org/10.1016/B978-0-12-387691-1.00002-8>
- Tao, H., Sun, X., Liu, X., Tian, J., & Zhang D. (2022). The Impact of Consumer Purchase Behavior Changes on the Business Model Design of Consumer Services Companies Over the Course of COVID-19. *Frontiers in Psychology*, 13, 818845. <https://doi.org/10.3389/fpsyg.2022.818845>
- Taufik, D., Kunz, M. C., & Onwezen, M. C. (2021). Changing consumer behaviour in virtual reality: A systematic literature review. *Computers in Human Behavior Reports*, 3, 100093. <http://doi.org/10.1016/j.chbr.2021.100093>
- Truong, D., & Truong, M.D. (2022). How do customers change their purchasing behaviors during the COVID-19 pandemic?. *Journal of Retailing and Consumer Services*, 67, 102963. <https://doi.org/10.1016/j.jretconser.2022.102963>
- Trzebiński, W., Baran, R., & Marciniak, B. (2021). Did the COVID-19 Pandemic Make Consumers Shop Alone? The Role of Emotions and Interdependent Self-Construal. *Sustainability*, 13(11), 6361. <https://doi.org/10.3390/su13116361>
- Uekusa, S., & Matthewman, S. (2019). Vulnerable or resilient? Vulnerable and resilient! A study of two disasters. Guest blog post for Migrants in Countries in Crises (MICIC). *International Organization for Migration (IOM)*.
- Vázquez-Martínez, U.J., Morales-Mediano, J., & Leal-Rodríguez, A.L. (2021). The impact of the COVID-19 crisis on consumer purchasing motivation and behavior. *European Research on Management and Business Economics*, 27(3), 100166. <https://doi.org/10.1016/j.iedeen.2021.100166>
- Vătămănescu, E.-M., Dabija, D.-C., Gazzola, P., Cegarro-Navarro, J.G., & Buzzi, T. (2021). Before and After the Outbreak of Covid-19: Linking Fashion Companies' Corporate Social Responsibility Approach to Consumers' Demand for Sustainable Products. *Journal of Cleaner Production*, 321, 128945. <http://doi.org/10.1016/j.jclepro.2021.128945>
- Verma, M., & Naveen, B. R. (2021). COVID-19 Impact on Buying Behaviour. *Vikalpa*, 46(1), 27-40. <https://doi.org/10.1177/02560909211018885>
- Wang, X., Shi, W., & Yuen, K.F. (2022). A synthesised review of pandemic-driven consumer behaviours and applied theories: Towards a unified framework. *International Journal of Disaster Risk Reduction*, 77, 103104. <https://doi.org/10.1016/j.ijdrr.2022.103104>
- Watson, R., & Popescu, G.H. (2021). Will the COVID-19 Pandemic Lead to Long-Term Consumer Perceptions, Behavioral Intentions, and Acquisition Decisions?. *Economics, Management, and Financial Markets*, 16(4), 70-83. <http://doi.org/10.22381/emfm16420215>

Yap, S.F., Xu, Y., & Tan, L. (2021). Coping with crisis: The paradox of technology and consumer vulnerability. *International Journal of Consumer Studies*, 45(6), 1239-1257. <https://doi.org/10.1111/ijcs.12724>

Yazdanparast, A., & Alhenawi, Y. (2022). Impact of COVID-19 pandemic on household financial decisions: A consumer vulnerability perspective. *Journal of Consumer Behaviour*, 21(4), 806-827. <https://doi.org/10.1002/cb.2038>

Yin, B., Yu, Y., & Xu, X. (2021). Recent Advances in Consumer Behavior Theory: Shocks from the COVID-19 Pandemic. *Behavioral Sciences*, 11(12),171. <http://doi.org/10.3390/bs11120171>

Zwanka, R.J., & Buff, C. (2020). COVID-19 generation: A conceptual framework of the consumer behavioral shifts to be caused by the COVID-19 pandemic. *Journal of International Consumer Marketing*, 33(1), 58-67. <https://doi.org/10.1080/08961530.2020.1771646>.

Appendices

Appendix 1. The list of the studies included in the systematic literature review

Journal	Number of articles	Source
Behavioral Sciences	1	Yin et al., 2021
BRICS Journal of Economics	1	Berezka et al., 2021
Cogent Business & Management	1	Jawad et al., 2022
Economic and Business Review	1	Kursan Milaković, 2021a
Economics, Management, and Financial Markets	1	Watson & Popescu, 2021
Economy of Regions	1	Grzywińska-Rapca, 2022
Ekonomski Vjesnik/Econviews - Review of Contemporary Business, Entrepreneurship and Economic Issues	1	Leko Šimić & Pap, 2021
European Research on Management and Business Economics	1	Vázquez-Martínez et al., 2021
Futures	1	Komonen & Seisto, 2022
Gadjah Mada International Journal of Business	1	Patiro et al., 2022
Global Business Review	1	Hartono et al., 2021
Global Finance Journal	1	Cervellati et al., 2022
International Journal of Consumer Studies	3	Gordon-Wilson, 2022; Kursan Milaković, 2021b; Yap et al., 2021
International Journal of Disaster Risk Reduction	2	Li et al., 2021; Wang et al., 2022
International Journal of Emerging Markets	1	Singh et al., 2021
International Journal of Environmental Research and Public Health	2	Chua et al., 2021; Sobaih & Moustafa, 2022
International Journal of Retail & Distribution Management	1	Naeem, 2020
International Journal of Sociology and Social Policy	1	Anastasiadou et al., 2020
International Journal of Quality and Service Sciences	1	Ali et al., 2022
Journal of Business Research	2	Kirk & Rifkin, 2020; Sheth, 2020
Journal of Critical Reviews	1	Kaur & Sharma, 2020
Journal of Customer Behavior	1	Mason et al., 2020
Journal of Consumer Behavior	1	Yazdanparast & Alhenawi, 2022
Journal of Consumer Psychology	1	Hill & Sharma, 2020
Journal of Econometrics	1	Keane & Neal, 2021
Journal of Global Marketing	1	Razzak & Yousaf, 2022
Journal of International Marketing	1	Ahmadi et al., 2022
Journal of International Consumer Marketing	1	Zwanka & Buff, 2020
Journal of Islamic Marketing	1	Sherman et al., 2021
Journal of Marketing and Consumer Research	1	Akter et al., 2021
Journal of Marketing Management	1	Lindenmeier et al., 2021

Journal	Number of articles	Source
Journal of Social Sciences Studies	1	Khayru, 2021
Journal of Positive School Psychology	1	Ahmad et al., 2022
Journal of Risk and Financial Management	1	Loxton et al., 2020
Journal of Retailing and Consumer Services	4	Eger et al., 2021; Islam et al., 2021; Laato et al., 2020; Truong & Truong, 2022
Labuan Bulletin of International Business & Finance	1	Gazali, 2020
Materials Today, Proceedings	1	Goswami & Chouhan, 2021
Mathematics	1	Roşu et al., 2021
Pacific Business Review International	1	Joshi & Chaudhary, 2021
PLoS One	1	Di Crosta et al., 2021
Revista de Ciencias de la Administración y Economía	1	Ortega-Vivanco, 2020
Revista Gestão e Desenvolvimento	1	Bausch et al., 2021
Roczniki Państwowego Zakładu Higieny [Annals of the National Institute of Hygiene]	1	Helisz et al., 2021
South Asian Journal of Marketing	2	Anas et al., 2022; Satish et al., 2021
Sustainability	5	Bareja-Wawryszak et al., 2022; Jo et al., 2021; Trzebiński et al., 2021; Dulam et al., 2021; Huang et al., 2022
Technological Forecasting & Social Change	1	Cruz-Cárdenas et al., 2021
The Journal of Consumer Affairs	3	Amaral et al., 2022; Güngördü Belbağ, 2021; Im et al., 2021
VIKALPA: The Journal for Decision Makers	1	Verma & Neveen, 2021

Appendix 2. Theories used in the analyzed studies

Studies	Theory used	Brief description of the theory	Total studies
Akter et al., 2021; Ali et al., 2022; Cruz-Cárdenas et al., 2021; Roşu et al., 2021; Singh et al., 2021; Huang et al., 2022; Jawad et al., 2022; Satish et al., 2021	Theory of planned behavior	Refers to behavioral intention as an effect of attitudes, subjective norms, and perceived behavioral control. The actual behavior is mainly developed from behavioral intention (Ajzen, 1991).	8
Güngördü Belbağ, 2021; Islam et al., 2021; Laato et al., 2020; Li et al., 2021; Satish et al., 2021	Stimulus-organism-response theory	Describes the connection between the external factors (stimulus), the internal emotional reactions (organism), and the final behavioral outcome (response) of an individual (Mehrabian & Russell, 1974).	5
Gordon-Wilson, 2022; Singh et al., 2021; Jawad et al., 2022; Sobaih & Moustafa, 2022	Protection motivation theory	Is employed to understand an individual's social behavior and reaction to fear. It emphasizes two main factors individuals use to protect themselves: threat appraisal and coping appraisal (Rogers, 1975).	4
Kursan Milaković, 2021b; Patiro et al., 2022	Social cognitive theory	Assumes that the individual's behavior is motivated by three factors: personal goals, outcome expectations, and self-efficacy (Bandura, 1991).	2
Satish et al., 2021; Yazdanparast & Alhenawi, 2022	Psychological reactance theory	Claims that obstacles that occur to consumers prevent them from performing the desired behavior. Accordingly, people respond with a defensive change in behavior and attitude when their freedom to control their own actions is threatened (Brehm, 1966).	2
Eger et al., 2021; Truong & Truong, 2022	Theory of fear appeal	States that a fear appeal is a message that seeks to change people's behavior by threatening them with imminent risk or danger (Maddux & Rogers, 1983).	2
Anas et al., 2022; Naeem, 2020	Theory of impulse buying	Stresses that external drivers and different circumstances can activate and motivate customers to impulse and immediate buying decisions (Stern, 1962).	2
Ali et al., 2022	Social learning theory	Accepts that learning takes place in a social context through dynamic and reciprocal interactions between people, environment, and behavior. New behaviors and knowledge can be gained by observing and imitating others (Bandura, 2019).	1
Razzak & Yousaf, 2022	Cognitive load theory	States that individuals possess a limited capacity to store information at the working memory level and overloading should be avoided (Sweller, 2011).	1
Razzak & Yousaf, 2022	Compensatory control theory	Asserts that individuals with a low perceived control try to overcome it by engaging in countermeasures to reduce panic and fear (Kay et al., 2009).	1
Islam et al., 2021	Competitive arousal model	Focuses on how factors as rivalry, social facilitation, time pressure, or the need of being first influence arousal within the decision-making process (Ku et al., 2005).	1
Ahmadi et al., 2022	Cultural dimension theory	Explains differences in consumer behavior based on their cultural features and relying on variables such as power distance, uncertainty avoidance, masculinity/femininity, and individualism/collectivism (Hofstede, 2011).	1

Studies	Theory used	Brief description of the theory	Total studies
Li et al., 2021	Dual system theory	Argues that individuals' behavior is guided by two parallel systems: the impulsive system, which is intuitive and unconscious, and the reflexive system, which is controlled and conscious (Samson & Voyer, 2012).	1
Chua et al., 2021	Health belief model	Claims that behavior depends on both the value of a certain goal and the perceived likelihood of achieving the goal (Janz & Becker, 1984).	1
Chua et al., 2021	Anticipated regret theory	Drawn for the regret regulation theory (Pieters & Zeelenberg, 2007), it refers to the feeling of regret followed from inaction (Abraham & Sheeran, 2003).	1
Chua et al., 2021	Scarcity theory	Claims that poverty or scarcity can induce a scarcity mindset that imposes suboptimal decisions and behaviors (Mullainathan & Shafir, 2013).	1
Singh et al., 2021	Privacy calculus theory	Highlights that, within a decision-making process, an individual examines the benefits and risks associated with the action (Culnan & Armstrong, 1999).	1
Razzak & Yousaf, 2022	Regulatory focus theory	Emphasizes how individuals define their goals and strive to achieve them accordingly (Higgins, 2012).	1
Gordon-Wilson, 2022	Self-determination theory	Explores both intrinsic and extrinsic motivations to explain consumer behavior in different situations (Ryan & Deci, 2000).	1
Gordon-Wilson, 2022	Temporal construal theory	Underlines that consumers build different representations of the same situation according to the perceived proximity of an event in a time context (Liberman & Trope, 1998).	1
Satish et al., 2021	Theory of reasoned action	Assumes that individuals are more likely to perform a behavior when they have a positive attitude on it, and when they think others want them to perform it (Fishbein & Ajzen, 1975).	1
Im et al., 2021	Transactional theory of stress and coping	Describes the way individuals respond to stressful situations using two processes, namely cognitive appraisal and coping (Lazarus & Folkman, 1984).	1