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**Article**

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## Impact of the COVID-19 pandemic on sustainability knowledge and sustainable purchase decisions: the application of the theory of stimulus–organization–response

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# Impact of the COVID-19 pandemic on sustainability knowledge and sustainable purchase decisions: the application of the theory of stimulus–organization–response

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## ABSTRACT

The COVID-19 pandemic has significantly impacted human life, particularly consumer behavior and the purchase of products and services. This study intends to investigate the impact of the COVID-19 situation (COV) on sustainability knowledge (SK) and sustainable purchase decisions (SPD). It also examines the impact of sustainability knowledge (SK) on sustainable purchase decisions (SPD). In addition, the study analyzes how sustainability knowledge (SK) mediates the relationship between the COVID-19 situation (COV) and sustainable purchase decisions (SPD). The stimulus-organization-response theory was employed to create a theoretical foundation for the investigation. The proposed model was investigated, and hypotheses were evaluated using partial least squares structural equation modeling (PLS-SEM) on a survey sample of 257 Indonesian consumers. The findings imply that the situation during the COVID-19 pandemic significantly impacts people's comprehension and awareness of sustainability. Furthermore, learning about sustainability is critical for influencing sustainable purchase patterns. This study contributes to the current body of knowledge and offers insights into applying stimulus-organization-response theory among Indonesian consumers. Findings from this study are critical for understanding the factors that promote sustainable purchase decisions, particularly in the context of the COVID-19 pandemic. The findings could be a significant resource for governments and businesses in Indonesia looking to encourage and improve sustainable purchasing habits. Furthermore, the findings of this study can serve as a guide for producers in Indonesia to create and market products that adhere to sustainable standards.

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## Introduction

The COVID-19 pandemic has profoundly impacted economic dynamics and presented countries with novel issues (Cho, 2020; Kumar et al., 2023; Wang et al., 2022). Following the research conducted by Arduzzo et al. (2021), the lifestyle and psychological stress induced by the pandemic have resulted in notable alterations in consumption patterns. Consumers are more inclined to adopt behaviors that promote health and environmental sustainability while demonstrating a heightened awareness of the ecological consequences of their actions. The change in consumption patterns to sustainable consumption shows that consumers have reconsidered their consumption habits to become more sustainable (Batool et al., 2022; Berchin & Guerra, 2020; Brandão & Miranda, 2022; Xin et al., 2023).

One of the objectives of the Sustainable Development Goals is to achieve sustainable consumption by 2030 (United Nations Environment Programme & International Resource Panel, 2011; Upadhyay, 2021). Sustainable consumption refers to consumer behavior that places a high value on sustainability and strives to fulfill essential daily requirements while safeguarding the needs and interests of future

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generations (Brandão & Miranda, 2022; Perkins et al., 2021). The objectives of sustainable consumption encompass the mitigation of environmental issues, enhancement of security measures, attainment of equitable allocation of natural resources, promotion of welfare, cultivation of a wholesome lifestyle, and embracement of social accountability (Brandão & Miranda, 2022; Wang & Zhang, 2021). The COVID-19 pandemic has been a turning point that greatly influenced sustainable consumption practices, leading to a growing emphasis on the importance of making sustainable purchases across different items (Berchin & Guerra, 2020; Wang et al., 2022). In the initial stages of the pandemic, apprehension, and distress regarding the ramifications of COVID-19, including mortality and morbidity, prompted a surge in consumer behavior characterized by panic-driven supermarket purchases for amassing supplies. A noticeable shift in consumer behavior characterized by a more prudent attitude to shopping was attributed to the awareness of the consequences of COVID-19 (Perkins et al., 2021; Wang et al., 2022). The study conducted by Okur et al. (2022) determined that the COVID-19 pandemic has resulted in notable shifts in consumer attitudes and behaviors pertaining to the supply chain. This is primarily due to individuals' heightened awareness and sense of accountability towards themselves, acquaintances, society, and the environment. Consequently, consumers have made more conscious choices to navigate this crisis effectively. In response to the global COVID-19 pandemic, individuals have made significant alterations to their production and consumption patterns, prioritizing considerations of environmental effects. According to Khan and Thomas (2023), empirical evidence suggests that the establishment of pro-environmental awareness is the fundamental basis for sustainable consumerism. Cultivating pro-environmental consciousness is crucial in pursuing sustainable consumption, as it plays a pivotal role in shaping individuals' attitudes and behaviors towards the environment. Additionally, engaging in pro-environmental behavior further reinforces adopting sustainable consumption practices, contributing positively to the overall sustainability agenda (Mladenović et al., 2023; Wang & Zhang, 2021).

A comprehensive comprehension of the interplay between humans and the environment is crucial in shaping individuals' motivations for sustainable consumption practices (Kirsten & Biyase, 2023). Zeng et al. (2023) conducted a study demonstrating a positive relationship between individuals' environmental concerns and their engagement in pro-environmental activity. Furthermore, the study suggests that this engagement in pro-environmental behavior can catalyze the adoption of sustainable consumer behavior. The COVID-19 pandemic has given rise to knowledge, behavior, and environmental attitudes that have the potential to promote sustainable consumption (Vergura et al., 2023; Wang et al., 2022). Amidst the global pandemic, there has been a notable transition in consumption habits, wherein online alternatives have supplanted offline activities. This movement is particularly evident in the food delivery domain, where technology has facilitated enhanced flexibility in terms of both geographical reach and temporal convenience (Xin et al., 2023).

The COVID-19 pandemic has been seen to have six distinct implications on consumer behavior, as Mladenović et al. (2023) and Sheth (2020) noted. The first aspect to consider is inventory accumulation. In emergencies, such as the COVID-19 pandemic, individuals tend to augment their stockpiles to a greater extent than they would during normal circumstances. Furthermore, individuals under certain circumstances employ their ingenuity to acquire or produce goods instead of purchasing or utilizing services readily accessible in the marketplace. Furthermore, a phenomenon known as delayed demand arises when consumers opt to defer the acquisition of specific goods or services for a longer duration, such as purchasing a new automobile, due to the prevailing uncertainty brought about by the pandemic.

Furthermore, there has been a notable increase in the use of technology platforms by a fresh cohort of consumers. It is worth mentioning that a significant proportion of individuals, who were previously unacquainted with digital purchasing platforms, have resorted to utilizing these services during the pandemic to fulfill their requirements. Furthermore, the prevalence of store-to-home delivery services enables individuals to acquire nearly all their essential items without needing to visit a store, potentially fostering impulsive buying behavior physically—finally, the concept of remote work. Numerous individuals are compelled to adapt their home-based work environment, necessitating supplementary expenditures to facilitate these modifications.

The COVID-19 pandemic changed consumer behavior owing to unusual circumstances (Wang et al., 2022). The COVID-19 pandemic has also resulted in increased social isolation and a significant rise in

spending, attributed to the advancements in digital purchasing technology rather than encouraging sustainable consumption (Filho et al., 2022; Mladenović et al., 2023). However, a study conducted by Filho et al. (2022) reveals that most individuals prioritize sustainability factors when purchasing in the domains of food, cosmetics/hygiene items, textiles/clothing, and technology. The COVID-19 pandemic has presented empirical support for the growing body of research on promoting sustainable consumption (Perkins et al., 2021).

The COVID-19 pandemic presents a remarkable circumstance, thereby rendering research on this global health crisis conducive to garnering comprehensive perspectives on the conduct of individuals and various entities. Hence, it is imperative to undertake a scholarly inquiry into the correlation between the prevailing circumstances amidst a pandemic and the promotion of Sustainable Development Goals (SDGs) encompassing the realm of sustainable consumption (Perkins et al., 2021; Wang & Huang, 2021). The existing body of research about the correlation between the prevailing COVID-19 circumstances and alterations in human behavior has undergone significant advancements and has been examined from diverse vantage points.

However, a pressing need remains for further investigation into the impact of the COVID-19 pandemic on the development of sustainable practices and individual endeavors to enhance comprehension of sustainability-related facets. This inquiry is of utmost importance as it pertains to the acquisition of sustainability knowledge, which can shape individuals' attitudes toward procuring goods and services that align with sustainable principles (Batool et al., 2022; Wang & Huang, 2021). More comprehensive research findings about the genesis of consciousness and erudition surrounding sustainability should be needed in cultivating conscientious and sustainable consumption patterns after the COVID-19 pandemic. The diligent pursuit of furthering comprehension regarding this subject matter shall prove to be of utmost significance in discerning how corporations and policymakers may exploit the post-pandemic landscape of COVID-19 to foster a greater prevalence of sustainable societal conduct (Berchin & Guerra, 2020; Khan & Thomas, 2023).

As a result, this study adds to the literature on the impact of the COVID-19 pandemic on behavior change, focusing on sustainability (purchase, habits, and lifestyle). The study specifically investigates the impact of the COVID-19 pandemic on sustainability knowledge (efforts to obtain information and knowledge about sustainability) and the impact of sustainability knowledge on the sustainable pursuit of behavior. The context of this study will allow us to evaluate how much the research constructs, precisely the circumstances during the COVID-19 pandemic and sustainability knowledge, influence sustainable behavior in Indonesia.

## **Literature review and hypotheses development**

### ***The theory of stimulus-organization-response***

Previous studies have effectively utilized the theory of stimulus-organization-response (SOR) to get insights into consumer behavior. SOR theory was developed by Russell and Mehrabian (1977), which posits that environmental inputs elicit emotional reactions, which subsequently influence consumer behavior or serve as subjects of investigation. According to Jiang (2022), SOR theory comprises three main components: antecedents, intervening factors, and outcomes. Antecedents refer to the stimuli or environmental features that trigger a response. Intervening variables pertain to the organisms' emotional states, which mediate the relationship between antecedents and outcomes. Finally, outcomes represent the consequences or effects of the interaction between antecedents and intervening variables (Mladenović et al., 2023). The conclusion of the study is contingent upon the behavioral response, which is determined by the approach-avoidance concept (Pereira et al., 2023; Wang et al., 2022). Stimuli encompass the whole array of external elements that influence an organism.

Consequently, the approach or distance response is contingent upon the extent to which the preceding stimulus influences behavior, resulting in an impulsive reaction (Pereira et al., 2023). The term 'organism' pertains to the internal processes and structures that mediate between external stimuli and ultimate actions or responses. The initial investigations on the effects of in-store atmospheric cues on offline buying behavior were mostly conducted within SOR theory. However, subsequent

research expanded the use of this model to explore online shopping behavior as well (Arora et al., 2020).

Jiang (2022) posited that emotional states elicited by environmental stimuli can prompt individuals to engage in either approach or avoidance behaviors. The term stimulus pertains to external elements that impact an individual's physical and psychological state (Fu et al., 2021). Approach behavior can be conceptualized as a favorable behavioral reaction to external stimuli, while avoidance behavior can be conceptualized as an unfavorable behavioral reaction.

Approach behavior, as examined in the consumption and marketing literature, is typically assessed through two main dimensions: actual in-store approach behavior and intended approach behavior. Actual in-store approach behavior encompasses observable actions, such as increased time spent in the store, unplanned purchase behavior, and impulse buying behavior. On the other hand, intended approach behavior refers to individuals' expressed intentions, including repurchase intention, recommendation intention, and positive verbal evaluation. These dimensions have been explored in Jiang (2022) and Pereira et al. (2023) studies.

Majeed et al. (2022) argued that SOR provides a comprehensive framework for understanding the influence of external influences on an individual's mental state, subsequently affecting their behavior. Consequently, SOR is deemed appropriate for assessing specific contextual circumstances. The advantages of applying SOR to studying behavioral patterns and choice-making are discussed in Stephens et al. (2022). The initial component of the model, known as the stimulus component or extrinsic factors, can elucidate the behavioral and decision-making dimensions of a person or organization. Furthermore, 'organism' or 'internal process' pertains to the inherent disposition that ultimately culminates in a reaction predicated upon the stimulus. The response component of the model demonstrates the individual's inclination to react to alterations in their environment.

### ***COVID-19 situation and sustainability knowledge***

According to SOR theory, 'organism' pertains to individuals' internal processes that influence their behavioral responses based on their internal evaluation. Observable stimuli (S) in this research refer to phenomena and situations during the COVID-19 pandemic that contribute to existing knowledge about the source of the stimulus (O), specifically knowledge of sustainability principles, and subsequently influence desired behavior and actual (R), which is sustainable purchase decisions.

The COVID-19 situation refers to the health issues, fear, depression, anxiety, and stress caused by the presence of the SARS-CoV-2 virus, which has led to the spread of the Coronavirus disease (COVID-19) globally since the end of 2019. COVID-19 negatively impacted people's socio-economic well-being, including increased unemployment, reduced income, panic buying, food insecurity, declining education quality, and economic instability (Batool et al., 2022; Mladenović et al., 2023). Upon the onset of the pandemic, a pervasive sense of apprehension regarding the impacts of COVID-19 emerged, mostly centered around mortality concerns, and heightened worry regarding sickness. This collective unease subsequently precipitated a surge in panic-driven consumer behavior, characterized by extensive stockpiling of essential goods in supermarkets.

During the initial stages of the pandemic, a notable manifestation of shifts in consumer behavior was the adoption of a precautionary stance toward purchasing patterns, driven by consumer awareness of the ramifications of COVID-19 (Perkins et al., 2021; Vergura et al., 2023; Wang & Huang, 2021). For instance, individuals restrict their significant expenditures to items that fulfill essential requirements while refraining from superfluous acquisitions of luxurious goods. The scholarly discourse surrounding COVID-19 severity and the phenomenon of digital transformation pertains to the understanding and modification of behavior through digital means (Srisathan & Naruetharadhol, 2022).

The cultivation of prudential conduct is achieved through acquiring and assimilating knowledge. Knowledge is a collection of information imbued with significance and synthesized with other existing cognitive frameworks (Bates, 2015). Knowledge, in its essence, encompasses the intricate process of establishing profound associations within the human intellect, wherein individuals synthesize information and discern its practical relevance within specific contexts (Bates, 2015). Citing the scholarly work of Bolisani and Bratianu (2018), it is posited that knowledge can be understood as a synthesis of various

elements, including but not limited to personal experiences, deeply held values, contextual information, and the discerning perspectives of experts. This amalgamation of factors serves as a conceptual framework through which novel experiences and information can be assessed, assimilated, and integrated into one's existing knowledge base. This notion aligns with the seminal research conducted by Davenport and Prusak (1998). As per the scholarly work of Bolisani and Bratianu (2018), the knowledge construct is divided into three distinct categories. Experiential knowledge pertains to acquiring information through direct engagement with the surrounding environment, facilitated by the sensory system and subsequently processed by the intricate workings of the human brain.

Moreover, skills encompass the aptitude to proficiently execute a particular task or activity proficiently, cultivated through a systematic amalgamation of well-organized experiential knowledge and actions driven by knowledge-oriented intentions. Then, knowledge claims, in essence, encompass the assertions we make regarding our understanding or perceived understanding of a subject matter, encompassing explicit knowledge that can be articulated and tacit knowledge rooted in individual experiences.

The epistemological positivist methodology employs experience as a legitimate means of acquiring information. It recognizes human experience as a genuine source of knowledge that can contribute to attaining objectives (Srisathan & Naruetharadhol, 2022). This pertains to those now undergoing the effects of a pandemic, which has necessitated the transition to digital platforms for various activities. When behavior is intentionally premeditated and digitally manipulated, it might be conceptualized as deviations in individual behaviors or the interconnections among persons. The research conducted by Kawanami and Tabata (2023) demonstrates that the lifestyle modifications resulting from the COVID-19 crisis, influenced by knowledge and experience, continue to endure even following the official declaration of its conclusion. The ongoing acquisition of knowledge can enhance an individual's self-assurance and bolster their self-efficacy (Batool et al., 2022).

Understanding sustainability includes knowledge about products that are ecologically and socially responsible, as well as processes, attitudes, and behavior (Zhang & Chabay, 2020). Sustainability knowledge involves understanding the social, ethical, and environmental concerns related to sustainability (Martínez-Martínez et al., 2023). A person or organization with sustainability expertise demonstrates knowledge and concern for ecological challenges (Alnasser & Musallat, 2022). A human with sustainability knowledge has acquired data, information sources, and knowledge known as sustainability memory through knowledge structures (Martínez-Martínez et al., 2023).

The COVID-19 pandemic has generated experiences that have influenced the understanding of sustainability (Fiedler et al., 2021; Kumar et al., 2023; Wang & Huang, 2021). According to Batool et al. (2022), the COVID-19 pandemic can potentially induce significant transformations in consumer attitudes and behavior across supply chains. This is attributed to individuals' heightened worry and responsibility towards themselves, their colleagues, society, and the environment, leading to a greater inclination toward making educated consumption choices. The party involved bears responsibility for the occurrence of the issue. According to the research conducted by Okur et al. (2022), there exists a positive relationship between environmental knowledge and environmental attitudes, whereby the former serves as a contributing factor to the latter.

Consequently, these environmental attitudes subsequently influence individuals' engagement in environmentally responsible behavior. To comprehend the advantages of products and the perceived quality of sustainable products, it is vital to possess a foundation of sustainable knowledge (Okur et al., 2022; Wang & Zhang, 2021). Furthermore, disseminating sustainable knowledge considering the repercussions of the COVID-19 pandemic enables customers to acquire information about environmentally friendly labeling, organic and recycled products, carbon footprint, waterless technologies, and other related subjects. It, in turn, enhances the perceived worth of sustainable product quality. The COVID-19 pandemic has underscored the need for sustainable knowledge in promoting sustainable consumption (Kumar et al., 2023; Perkins et al., 2021).

The SOR theory serves as the foundation for comprehending the correlation between environmental stimuli and the development of an individual's knowledge (Mladenović et al., 2023). Kim et al. (2020) proposed that the SOR points out that a stimulus can impact an individual's internal cognition or affect, leading to a conscious or unconscious response. This response is comprised of two key components: cognitive and affective. Cognition pertains to the cognitive processes involved in an individual's

acquisition and comprehension of knowledge and their capacity for thinking, knowing, remembering, evaluating, problem-solving, and event analysis (Daradkeh, 2022). Cognitive ownership is relevant in individual decision-making (Kim et al., 2020). During the COVID-19 epidemic, many people looked to the internet for answers to questions concerning long-term viability (Fiedler et al., 2021; Zhao et al., 2020). The acquisition of information, particularly on online platforms, contributes to developing knowledge of sustainability, encompassing the sustainable utilization of goods and services (Hensher et al., 2020; Wang & Zhang, 2021).

### **COVID-19 situation and sustainable purchase decisions**

The objective of the Sustainable Development Goals (SDGs) includes the promotion of sustainable consumption, leading to sustainable purchasing decisions. Sustainable purchase decisions were defined to pertain to consumer conduct that prioritizes sustainability and endeavors to fulfill essential daily needs, considerably enhancing consumers' quality of life while safeguarding the needs and interests of future generations (Brandão & Miranda, 2022). Sustainable consumption aims to mitigate environmental challenges, enhance security, promote equitable allocation of natural resources, improve well-being, foster good health, and embrace social responsibility (Brandão & Miranda, 2022).

The Indonesian government is also working to promote sustainable consumption to help attain the SDGs. The sustainable consumption framework is formally included as a national policy in Indonesia's medium-term development guidelines, namely in Presidential Regulation Number 2 of 2015, which governs the National Medium-Term Development Plan 2015–2019. The goal of sustainable production and consumption patterns is one of the strategies for improving quality, making better use of resources, lowering the environmental burden of pollutants, and improving the quality of life for Indonesians (The Ministry of Environment and Forestry of the Republic of Indonesia, 2022).

In detail, the Indonesian government has established four stages to encourage sustainable consumption: the initiation stage (2013–2014), the systemic stage (2015–2019), the acceleration stage (2020–2024), and the mainstream/Delivered stage (2025–2030) (The Ministry of Environment and Forestry of the Republic of Indonesia, 2022). During the imitation stage, the government attempts to encourage the development and implementation of sustainable consumption in Indonesia by raising SCP awareness. At the systemic stage, the government modifies government operations and commercial and community activities in public buildings. During the acceleration stage, government policies are implemented to address resource efficiency, low-carbon development strategy, green economy, and circular economy. The measures implemented at the mainstream/delivered stage include long-term growth and investment in public facilities.

In response to the COVID-19 pandemic, individuals have significantly altered their production and consumption practices about environmental sustainability. According to the research conducted by Khan and Thomas (2023), it has been demonstrated that the fundamental basis for sustainable consumption is in the cultivation of pro-environmental awareness. Hence, a prerequisite for embracing sustainable consumption is the presence of pro-environmental attitudes and awareness. It can be inferred that a favorable association exists between elements related to pro-environmental behavior and sustainable consumption (Khan & Thomas, 2023). Their views of environmental concerns influence the behavior of individuals toward the intent for sustainable consumption. As suggested by Kirsten and Biyase (2023), to foster such behavior, it is crucial to possess a comprehensive awareness of the complex dynamics between humans and the environment.

The significance of comprehensively comprehending sustainability attitudes and engaging in environmentally conscious conduct is further reinforced by scholarly investigations (Zeng et al., 2023). The study presents empirical evidence suggesting that individuals with a heightened sense of environmental consciousness are more likely to participate in behaviors promoting environmental well-being actively. Consequently, this inclination towards pro-environmental conduct catalyzes the adoption of sustainable consumption practices. The acquisition of knowledge can facilitate the cultivation of sustainable consumption, the modification of behavioral patterns, and the development of environmental attitudes, all of which have been observed to emerge because of the COVID-19 pandemic (Kirsten & Biyase, 2023; Zeng et al., 2023). During the era of the COVID-19 pandemic, there was a notable shift in the

consumption patterns of individuals, transitioning from offline to online platforms. Consequently, the demand for online food service delivery experienced a rapid surge, owing to the enhanced convenience and flexibility offered by advanced technological solutions, as expounded upon by Xin et al. (2023).

Individuals who make online food purchasing are more inclined to exhibit prudent decision-making and are less susceptible to potential hazards. According to Filho et al. (2022), a significant proportion of the respondents showed a sustainability-oriented mindset in their purchasing decisions. Specifically, 84% of the participants expressed a sustainability viewpoint when acquiring food items, while 34% exhibited such a perspective when purchasing cosmetics and hygiene products. Moreover, 30% of the respondents demonstrated a sustainability perspective when acquiring textiles and clothes, and 18% exhibited this when purchasing technology products. A mere 8.3% of individuals should have considered a sustainability standpoint. However, recent findings have indicated that the COVID-19 pandemic has increased wasteful consumption due to the social isolation measures implemented and the advancements in digital purchasing technology. This trend contradicts the principles of sustainable consumption, as highlighted by Filho et al. (2022).

### ***COVID-19 situation, sustainability knowledge and sustainable purchase decisions***

Continuous knowledge is a broad psychological construct influencing consumer interests, attitudes, and behavior (Dangelico et al., 2022; Pu et al., 2022). According to Longo et al. (2019), understanding the qualities and attributes of sustainable products is crucial for influencing consumers to make ecologically and socially responsible decisions. Along the same line, according to the Food and Agriculture Organization (FAO), sustainable consumption positively impacts the environment, contributes to food and nutrition security, and provides a healthy life for present and future generations. Consumption habits, such as eating locally and seasonally, decreasing food, and packaging waste, and eating fish and seafood from sustainable sources can all help lessen the food system's environmental effects.

The study conducted by Alnasser and Musallat (2022) indicates that a lack of sufficient awareness regarding food security and a limited understanding of the negative repercussions linked to food production on the environment will inevitably hinder the development of sustainable consumption patterns. Acquiring a comprehensive understanding of sustainability necessitates recourse to specific outlets, particularly the scholastic milieu encompassing secondary and post-secondary education. Furthermore, contemporary founts of sustainability knowledge should fully comprehend the ecological, financial, and societal spheres (Michel & Zwickle, 2021; Vergura et al., 2023).

Longo et al. (2019) emphasized the importance of knowledge-building based on four separate sources of information: performance achievement, representative experience, verbal persuasion, and physiological states. Furthermore, it is worth noting that online communication platforms have been widely acknowledged as a highly efficacious mechanism for disseminating sustainable knowledge, with the primary objective of fostering and promoting sustainable purchases. This is primarily because individuals and organizations alike can acquire and exchange valuable knowledge through various social media platforms, as highlighted by the research conducted by Huang et al. (2019). However, sustainable knowledge can also be a source of negative dilemmas or disturbances in daily dynamics in efforts to consume sustainably (Longo et al., 2019). These negative dilemmas and disruptions can be seen as potential signals of a self-inflicted paradox of continued consumption, in which consumers feel emotionally challenged and feel their level of personal achievement decreases.

The COVID-19 pandemic is widely acknowledged as an exceptional occurrence in scholarly literature (Berchin & Guerra, 2020; Filho et al., 2022). During the onset of the pandemic, a significant level of apprehension arose around the potential ramifications of COVID-19, including mortality rates and heightened concerns for personal health, resulting in a surge of panic-driven consumer behavior characterized by stockpiling essential goods in supermarkets. Following the initial month of the pandemic, a prominent manifestation of shifting consumer behavior has been the adoption of a prudent stance toward purchasing patterns. For instance, individuals restrict their significant expenditures to items that fulfill essential requirements while refraining from superfluous acquisitions of luxurious goods. The COVID-19 pandemic has compelled consumers to modify their prior consumption patterns, causing

disruptions in unsustainable supply networks. Nevertheless, the post-pandemic scenario raises uncertainty regarding the potential persistence of reduced consumption patterns and altered consumer behavior.

Sustainable consumption encompasses the deliberate selection, acquisition, utilization, and disposal of items to facilitate individuals' ability to satisfy their essential requirements both presently and in the long term (Coman et al., 2022). Nevertheless, the widespread fear induced by the global pandemic has significantly influenced consumer behavior patterns. Considering the ongoing pandemic, manufacturers and distributors of products have been increasingly aware of the need to enhance their business models to attain sustainable fashion and ecological progress (Xu et al., 2022).

The study conducted by Bhuwandeep and Das (2021) revealed that in the aftermath of the pandemic, individuals exhibited a heightened consciousness regarding the significance of a high-quality environment and the adoption of sustainable consumption practices in their forthcoming endeavors. The quality under consideration is subject to various influences, including the quality of the surrounding environment and natural elements, consumption patterns that promote the reuse of commodities, such as paper, bottles, and plastic, and human conduct that contributes positively to the preservation of living ecosystems.

The COVID-19 pandemic has given rise to sustainable knowledge, subsequently impacting individuals' perspectives on sustainable purchase decisions. According to recent research conducted by Dangelico et al. (2022), there is evidence to suggest that consumers have exhibited a heightened inclination toward purchasing sustainable products and demonstrated more significant concern for environmental issues since the onset of the COVID-19 pandemic. This finding underscores the notion that individuals have increased the frequency of their purchases and have also displayed a greater willingness to pay for sustainable goods, thereby exhibiting more sustainable behaviors (Figure 1).

This present study proposes the following hypotheses based on the preceding discussion:

*H1. The COVID-19 situation has a significant impact on sustainability knowledge.*

*H2. The COVID-19 situation has a significant impact on sustainable purchase decisions.*

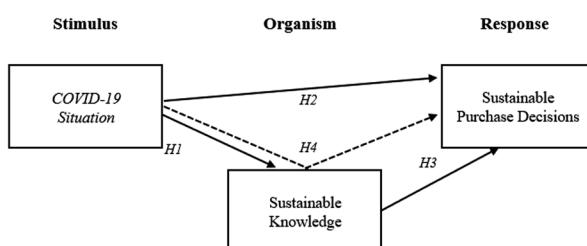
*H3. Sustainability knowledge has a significant impact on sustainable purchase decisions.*

*H4. Sustainability knowledge mediates the impact of the COVID-19 situation on sustainable purchase decisions.*

## Methods

### Measures, respondents, and data collections

This research carefully selected variables for study based on established theory, literature, and empirical research. The COVID-19 situation, sustainability knowledge, and sustainability purchase decision variables were selected based on their alignment with SOR theory, a framework frequently utilized to comprehend consumer behavior as evidenced by various studies (Arora et al., 2020; Berchin & Guerra, 2020; Okur et al., 2022; Zeng et al., 2023). Thus, the constructs utilized in this research model have been derived from preexisting research scales. The present discourse pertains to a compilation of scholarly works that have delved into assessing the prevailing circumstances surrounding the COVID-19



**Figure 1.** The proposed model.

pandemic. Specifically, the studies conducted by Perkins et al. (2021), Zeng et al. (2023), as well as Srisathan and Naruetharadhol (2022), have contributed significantly to the body of knowledge in this domain.

The scholarly works of Batool et al. (2022), Longo et al. (2019), and Perkins et al. (2021) provide invaluable insights into the realm of sustainability knowledge. These esteemed researchers have contributed to the intellectual discourse surrounding this subject matter, offering many items that warrant our attention. By delving into the works of Perkins et al. (2021), we can glean a deeper understanding of the intricate web of sustainability. Their research sheds light on the multifaceted nature of this concept, exploring its various dimensions and implications. Their rigorous analysis elucidates the importance of adopting sustainable practices to mitigate environmental degradation and promote long-term ecological balance.

Similarly, the scholarly contributions of Batool et al. (2022) offer a valuable perspective on sustainability knowledge. Their work del The notion of sustainable consumption has been derived from the scholarly works of Batool et al. (2022), Bhuwandeep and Das (2021), and Filho et al. (2022). The comprehensive elucidation of the measurement items is summarized in **Table 1**. All the items within the questionnaire employ a 5-point Likert Scale, where the numerical values assigned to each point range from (1) representing complete disagreement to (5) signifying complete agreement. A self-administered questionnaire was formulated and disseminated to a sample of ten individuals as a preliminary measure to ascertain their comprehension of the questionnaire's inquiries. The outcomes derived from the preliminary assessment survey led to enhancements in the questionnaire, ultimately culminating in the definitive iteration. The data acquisition process was executed through a comprehensive electronic questionnaire survey, disseminated to participants via electronic mail, Google forms, social media platforms, and the popular messaging application WhatsApp. This endeavor spanned the temporal domain from August to October 2022. The participants for this research were gathered by non-probability sampling, explicitly using the non-probabilistic snowball method as referenced by Abbas and Khan (2023) and Khoa and Huynh (2022). A total of 257 questionnaires were duly completed and returned, encompassing comprehensive information.

**Table 1.** Self-administered questionnaire.

Variables	Measures	Code	Sources
COVID-19 situation	The COVID-19 pandemic has compelled me to adopt a more environmentally conscious approach.	CVD1	Zeng et al. (2023); Perkins et al. (2021); Srisathan and Naruetharadhol (2022).
	The COVID-19 pandemic offers valuable insights into the potential for accomplishing sustainable development goals.	CVD2	
	The COVID-19 pandemic has catalyzed my decision to mitigate pollution levels actively.	CVD3	
	The COVID-19 pandemic has catalyzed for me to minimize my consumption waste actively.	CVD4	
	The COVID-19 pandemic has generated a realization inside me that my consumption patterns significantly impact the ecosystem.	CVD5	
Sustainability knowledge	I am knowledgeable about climate change (climate change).	SK1	Perkins, et al. (2021); Batool et al. (2022); Longo, et al. (2019).
	I am knowledgeable about global warming.	SK2	
	Purchasing sustainable products is vital.	SK3	
	The 3R principle (reduce, reuse, refine) is essential.	SK4	
	The goal of the Sustainable Development Goals is clear to me.	SK5	
Sustainable purchase decisions (SPD)	I purchase products that are produced sustainably (sustainable production).	SPD1	Filho et al. (2022); Bhuwandeep and Das (2021); Batool et al. (2022).
	I prefer to purchase sustainable products.	SPD2	
	I prefer to purchase products whose manufacturing process does not negatively impact the environment.	SPD3	
	When purchasing a product, I am committed to preserving the lives of present and future generations.	SPD4	
	To accomplish the Sustainable Development Goals (SDGs), I support sustainable consumption patterns.	SPD5	

### **Pilot studies**

A pilot study was conducted to confirm that the questionnaire's questions were correct (Teijlingen & Hundley, 2002). In this investigation, the pilot study was carried out by sending questions to 30 respondents who met all requirements. The pilot study's findings that performed a reliability test to evaluate the internal consistency of the measuring items used show that all constructs have a Cronbach Alpha of 0.7, indicating that the internal consistency reliability is met (Cheah et al., 2021).

### **Data analysis**

The present study employs structural equation modeling (SEM), employing SmartPLS 3.0 (version 3.3.3), to assess the relationship among variables of the COVID-19 pandemic situation, sustainability knowledge, and sustainable purchase decisions. SEM is a powerful instrument commonly used to validate measurements and path models, accepted as a practical method for evaluating model progress and forming hypotheses about the structural connections between variables. SEM is accomplished by analyzing measurement and structural models (Hair et al., 2022; Sarstedt et al., 2022). The reflecting measurement paradigm, as described by Hair et al. (2022), includes incorporating the size concept, representing a significant construct's influence. SEM analysis consists of two main stages. The first stage involves assessing the measurement model, the outer model. The second stage involves evaluating the structural model, sometimes called the inner model (Hair et al., 2022; Sarstedt et al., 2022). Arora et al. (2020), Okur et al. (2022), and Srisathan and Naruetharadhol (2022) applied SEM to investigate the association between variables associated with sustainable consumption.

## **Findings**

### **Respondents' socio-demographics**

The present study involved 257 respondents, with 91 individuals identifying as male (35.41%) and 166 as female (64.59%). Most participants were 21–30 ( $n=166$ ; 64.6%) and 31–40 years ( $n=50$ ; 19.4%). Out of the total sample size of 257 participants, it was found that 99.61% of them, namely 256 individuals, demonstrated comprehension of the concept of sustainable development goals. Furthermore, it is worth noting that most participants, precisely 98.05%, reported having encountered a COVID-19 pandemic. This data is based on a sample size of 252 individuals. Regarding the procurement of environmentally sustainable goods during the COVID-19 pandemic, a significant majority of participants, constituting 93% ( $n=239$ ), responded affirmatively, while a minority of 7% ( $n=18$ ) provided a negative response. Approximately 40.46% of the participants, totaling 104 individuals, reported being employed. Conversely, most of the remaining respondents identified themselves as students, including 24.90% ( $n=64$ ), while 20.62% ( $n=53$ ) indicated being self-employed (Table 2).

### **Measurement model**

Table 3 highlights the measurement model, including the reliability of factor loading as determined by Cronbach's alpha, composite reliability (CR), average variance extracted (AVE), and convergent validity. According to Hair et al. (2022), Cronbach's Alpha value above 0.80 for each construct indicates that the reliability criteria have been satisfied. The obtained CR value is greater than the threshold value of 0.70, so it can be concluded that the reliability value of each indicator for each investigated construct has been met. Moreover, based on the AVE value as a measure of convergent validity, it is concluded that convergent validity has also been fulfilled, as the AVE value is  $>0.5$  (Fornell & Larcker, 1981).

The examination of the measurement model is furthered by assessing the loading factor, which elucidates the relationship between the indicators and the constructs. The loading factor values span the range of 0 to 1, with the anticipated loading factor values  $>0.7$  (Hair et al., 2022). Table 4 displays the outer loading values for all indicators except for SPD4. However, due to the fulfillment of the criteria of

**Table 2.** Demographic details of the respondents.

Category	n	%
Gender		
Male	91	35.41
Female	166	64.59
	257	
Age		
<17	7	2.7
17–20	28	10.9
21–30	166	64.6
31–40	50	19.4
>40	6	2.3
Are you familiar with the concept of sustainable development goals?		
Yes	256	99.61
No	1	0.38
Have you encountered a COVID-19 outbreak?		
Yes	252	98.05
No	5	1.94
Have you ever purchased environmentally responsible goods during the COVID-19 pandemic?		
Yes	239	93
No	18	7
Profession		
Student/student	64	24.90
Self-employed	53	20.62
Civil servant	36	14
Private employee	104	40.46

Source: Author's calculation.

**Table 3.** Validity and reliability results.

Constructs	Cronbach's alpha	Composite reliability (CR)	Average variance extracted (AVE)
COVID-19 situation	0.933	0.948	0.751
Sustainability knowledge	0.920	0.943	0.769
Sustainable consumption decision	0.808	0.872	0.595

Source: Author's calculations using SMARTPLS 3.0.

**Table 4.** Constructs reliability.

Constructs	Items	Loadings	Conclusion
COVID-19 (CVD)	CVD1	0.781	Reliable
	CVD2	0.853	Reliable
	CVD3	0.906	Reliable
	CVD4	0.860	Reliable
	CVD5	0.885	Reliable
	CVD6	0.911	Reliable
Sustainability Knowledge (SK)	SK1	0.928	Reliable
	SK2	0.897	Reliable
	SK3	0.954	Reliable
	SK4	0.910	Reliable
	SK5	0.663	Reliable
Sustainable purchase decisions (SPD)	SPD1	0.817	Reliable
	SPD2	0.786	Reliable
	SPD3	0.425	Reliable
	SPD4	0.887	Reliable
	SPD5	0.893	Reliable

Source: Author's calculations using SMARTPLS 3.0.

composite reliability (CR) and average variance extracted (AVE) for SPD, SPD4 is retained within the model. Nevertheless, the outer loading should not exceed 0.4 to ensure it remains within acceptable limits, provided that the Average Variance Extracted (AVE) and Composite Reliability (CR) criteria are satisfied. This is particularly important for a component or item that is considered (salient) prominent in the construct, as discussed by Cattell (1990), Comrey and Lee (1992), and DeVellis (2003).

The next step in the assessment of the measurement model examines discriminant validity, which involves determining if the constructs exhibit no significant relationships with one another. This analysis ensures that each idea within each latent model is distinct from other variables (Hair et al., 2022; Sarstedt et al., 2022). The Heterotrait-Monotrait ratio is recommended to assess the significance of differences

between correlations among variables within the model. According to Hair et al. (2022), an HTMT ratio value below 0.9 signifies the absence of a relationship between the constructs and confirms the presence of discriminant validity. The findings from the discriminant validity tests, as indicated by the HTMT ratio presented in [Table 5](#), demonstrate that the structural equation model under analysis satisfies the discriminant validity criterion.

### **Structural model**

The association between constructs or latent variables was investigated using four analyses: (1) collinearity analysis, (2) analysis of the coefficient of determination ( $R^2$ ) or explained variance, (3) predictive relevance analysis ( $Q^2$ ), and (4) effect size ( $f^2$ ). The collinearity test is performed by computing the variance inflation factor (VIF), which determines whether the independent variables in the SEM under consideration have a solid correlation (Benitez et al., 2020; Hair et al., 2022). A VIF value  $>5$  shows collinearity between independents, whereas a VIF value  $<5$  indicates no collinearity concern (James et al., 2013; McElreath, 2020).  $R^2$  measures the magnitude of the independent variable's influence on the dependent variable and is a function of the model's explanatory PLS-SEM.  $R^2$  ranges from 0 to 1, with three levels: 0.75 (significant), 0.5 (moderate), and 0.25 (weak). The lower of  $R^2$ , the greater the potential of external variables to explain endogenous variables (Garson, 2016; Hair et al., 2022).

The structural model involves the examination of the  $Q^2$  value, which serves as a measure of the exogenous variables' capacity to predict the outcomes of endogenous variables (Hair et al., 2022; Sarstedt et al., 2022). A  $Q^2$  serves as an evaluative measure for assessing the predictive performance quality of the PLS-SEM model.  $Q^2$  value  $\geq 0.35$  signifies a substantial model, while a  $Q^2$  value between 0.15 and 0.35 indicates a moderate model. On the other hand, a  $Q^2$  value ranging from 0.02 to 0.15 suggests a weak model (Hair et al., 2022; Sarstedt et al., 2022). The final examination involves a bootstrapping analysis to examine the research hypothesis, precisely determining the causal relationship and statistical significance between variables using t-table values and t-statistics (Hair et al., 2022; Henseler et al., 2009).

Based on the VIF values presented in [Table 6](#), it can be observed that all VIF variables are below the threshold of 5. The figures suggest that no significant influence or collinearity exists between the exogenous and endogenous factors. Consequently, the analysis can proceed to investigate the intended outcomes further.

The COVID-19 situation variable (COVID) and sustainability knowledge (SK) are exogenous variables for sustainability purchase decisions (SPD) in this study. [Table 7](#) indicates that the COVID-19 situation variable explains 69.6% of the variance in sustainability knowledge (SK), while variables outside the estimated model explain the remaining 30.4%. In the meantime, sustainability knowledge (SK) is explained by the variables COVID-19 (VID) and sustainability knowledge (SK) to the extent of 64.9%, with the remaining 35.1% explained by variables not included in this study. The two obtained  $R^2$  values are classified as moderate, indicating that the exogenous variables in the model have a moderate effect on the endogenous variables compared to factors from outside the model.

**Table 5.** Heterotrait-Monotrait (HTMT) results.

	CVD*SK	CVD	SK	SPD
CVD*SK				
COVID 19 Situation	0.758			
Sustainability Knowledge	0.796	0.888		
Sustainability Purchase Decisions	0.690	0.778	0.916	

Source: Author's calculations using SMARTPLS 3.0.

**Table 6.** Variance inflation factor value.

Construct	Sustainable purchase decisions
CVD*SK	2.649
COVID-19 situation	3.570
Sustainability knowledge	3.948
VIF value $< 5.0$ =No collinearity	

Source: Author's calculations using SMARTPLS 3.0.

The  $Q^2$  statistic indicates the efficacy of the PLS path model in terms of its quality. Criterion  $Q^2$  suggests that the conceptual model can forecast endogenous latent constructs accurately. In structural equation modeling (SEM), the measured  $Q^2$  value must be  $>0$  to validate specific endogenous latent components. The  $Q^2$  value for cardiovascular disease (COVID) and moderation in explaining subjective well-being (SK) is 0.532. Similarly, the  $Q^2$  value for COVID, SK, and moderation in social and psychological capital (SPD) is 0.362. Both  $Q^2$  values above 0.00 indicate that the structural model under analysis demonstrates consistency and sufficient predictive significance.

Hair et al. (2022) employed the effect size ( $f^2$ ) to analyze the relative impact of predictor components on endogenous constructs. The value of  $f^2$  is equal to 0.02, indicating that the influence is modest (small effect), 0.15, indicating that the effect is moderate, and 0.35, indicating that the effect is substantial. Table 8 depicts each independent variable's effect size values.

The findings of the path coefficient values, which depict the link between exogenous and endogenous latent variables, are presented in Table 9. Hypothesis 1, which suggests that there was a case in which COVID-19 had a positive impact on sustainability knowledge, is deemed acceptable based on the statistical analysis. This conclusion is supported by a t-value of 24.323, which exceeds the critical t-value of 1.651 at a significance level of  $\alpha$ : 5%. Furthermore, the observed effect size of COVID-19 on sustainability knowledge ( $\beta=0.834$ ) is positive. In addition, it is worth noting that sustainability knowledge (SK) substantially impacts sustainable purchase decisions (SPD), as evidenced by a t-value of 4.244,  $\beta=0.612$ , which exceeds the critical value of 1.651 at a significance level of 5%, leading to the acceptance of hypothesis 3. Contrary to hypotheses 1 and 3, hypothesis 2 is rejected as the current COVID-19 situation did not substantially impact the sustainable purchase decisions (SPD), with a calculated value of 1.187, which is less than the critical value of 1.651. For hypothesis 4, the mediating effect evaluation was examined using bootstrap 5000 resampling approaches. The findings indicate that the effect of the COVID-19 pandemic on sustainable purchase decisions, when mediated by sustainability knowledge, does not make a substantial contribution, as evidenced by a t-value of 0.683, which is less than the critical value of 1.651 ( $\alpha$ : 5%).

## Discussions

Sustainability knowledge can be formed because of a pandemic situation because one of the positive aspects of COVID-19 is that it encourages people to act with the necessary strength when necessary, including seeking information and knowledge about sustainability (Cohen, 2020; Mahmood & Sanchez, 2020). Sensory interfaces with the natural world produce knowledge, which is then processed by the human mind (Zaytseva et al., 2019). The availability of sustainability knowledge is critical in altering consumption habits and purchasing sustainable products and services. According to an empirical study, knowledge and conduct have a positive association (Henrich, 2021). This occurs because knowledge, along with other factors, is essential in motivating changes in one's behavior to engage in general pro-environmental behavior, such as purchasing goods and services that are produced with the principle of sustainability and have no negative impact on the environment (Grube, 2023).

**Table 7.** Value of  $R^2$  and  $Q^2$ .

Endogenous constructs	$R^2$	$Q^2$
Sustainability Knowledge (SK)	0.696	0.532
Sustainable Purchase Decisions (SPD)	0.649	0.362

Source: Author's calculations using SMARTPLS 3.0.

**Table 8.** Effect size.

Constructs	$f^2$	Effect size
CVD -> SK	2,291	Large effect
CVD -> SPD	0.024	Small effect
SK -> SPD	0.271	Medium effect
CVD -> SK>SPD	0.003	No effect

Source: Author's calculations using SMARTPLS 3.0.

**Table 9.** Hypotheses testing.

Hypotheses	Path	Coefficient	T-statistic	Prob	Conclusion
H1	CVD -> SK	0.834	24.325	0.000	Hypothesis accepted
H2	CVD -> SPD	0.172	1.187	0.236	Hypothesis rejected
H3	SK -> SPD	0.612	4.244	0.000	Hypothesis accepted
H4	SK Mediating CVD -> SPD	-0.035	0.683	0.495	Hypothesis rejected

Note:  $p$ -value  $\leq 0.05$ .

This study expands the previous study on the factors that influence sustainable purchasing decisions, which relate to the COVID-19 situation with sustainability knowledge. A conceptual framework was developed by conducting a thorough literature review and using SOR theory to achieve the study's objectives. The utilization of this theory is deemed suitable due to its capacity to furnish a robust framework for comprehending consumer behavior and the several determinants that influence it (Pereira et al., 2023; Wang et al., 2022). A unique circumstance might serve as a catalyst within the literature, arising from abrupt alterations in the surrounding environment, subsequently impacting individuals' psychological state, emotional well-being, and behavioral patterns (Kumar et al., 2023).

The primary objective of this study is to examine the potential for altering consumer behavior to promote sustainability. The primary focus of this research is to investigate the influence of the COVID-19 pandemic on persons' inclination to adopt more sustainable behaviors. This investigation examines how individuals actively seek information and develop an understanding of sustainability in their day-to-day actions, enhancing their knowledge of sustainability (Henrich, 2021). This study makes a valuable contribution to the existing body of literature and provides managerial insights by successfully attaining its stated aims. To accomplish the research aims, a conceptual framework was established by a comprehensive analysis of existing literature and incorporating SOR theory. A unique circumstance might be catalyzed within the literature, arising from abrupt alterations in the surrounding environment and subsequently influencing individuals' psychological state, emotions, and behavioral patterns (Kumar et al., 2023).

Figure 2 presents a comprehensive overview of the outcomes from examining the causative relationship model involving the circumstances experienced during the COVID-19 pandemic, the level of sustainability knowledge, and the propensity for making sustainable purchases. The present study successfully validated the hypothesis (H1), positing a positive and significant association between the COVID-19 situation and sustainability knowledge.

Consistent with other scholarly investigations, this finding elucidates the impact of the COVID-19 pandemic on the sustainability of knowledge, as evidenced by the works of Kawanami and Tabata (2023), Perkins et al. (2021), and Srisathan and Naruetharadhol (2022), among others. The alignment of the positive impact of the COVID-19 pandemic on sustainability knowledge (H1) with the SOR theory and previous research is evident. These studies have demonstrated that an abrupt event like the COVID-19 pandemic serves as a stimulus for consumers, leading to increased exposure to information among many individuals. Furthermore, the significance of adopting a healthy and environmentally conscious lifestyle is a subject of interest in consumer knowledge of sustainability concerns (Peluso et al., 2021; Zwanka & Buff, 2021). The findings of this study, therefore, suggest that the COVID-19 pandemic situation serves as a stimulus that affects psychological well-being and motivates individuals to acquire knowledge about healthier lifestyles while also considering environmental factors in their consumption of goods and services (Murphy et al., 2021; Peluso et al., 2021).

In contrast to the extant body of literature, this investigation could not substantiate the second hypothesis. The impact of the COVID-19 pandemic on sustainable purchase decisions is not a significant factor within the scope of this research sample. Other scientists corroborated these findings (Filho et al., 2022). Furthermore, Filho et al. (2022) highlighted how the COVID-19 condition can influence consumption and purchasing behavior toward sustainable commodities. However, the extent of this impact is contingent upon individuals' ecological knowledge and pro-environmental behavior. Hence, COVID-19 is anticipated to influence sustainable purchase decisions, contingent upon consumers' level of environmental consciousness.

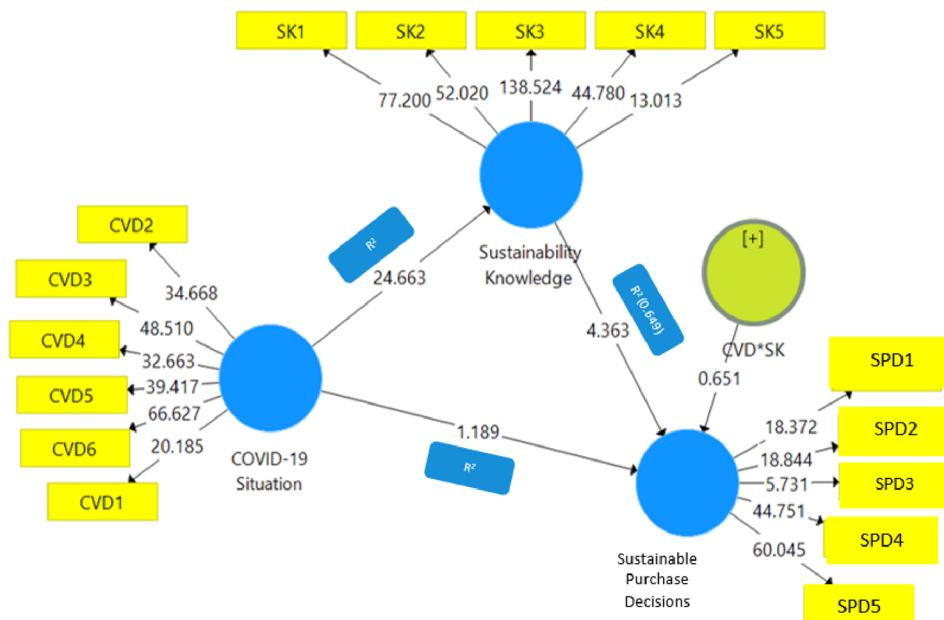


Figure 2. The PLS-SEM diagram.

The lack of significant impact of the COVID-19 status on sustainable buying decisions in this study may be attributed to the absence of gender differentiation in the analysis conducted by Li et al. (2022). In their study on the consumer context in Italy, Dangelico et al. (2022) discovered that women are more inclined towards ecological consumption and behavior than men. Abdullah et al. (2020) discovered that women exhibit higher concern regarding COVID-19 infection, boosting the moral need to purchase sustainable products (Dangelico et al., 2022). Li et al. (2022) discovered that women in China were more inclined to purchase sustainable food than males during the COVID-19 pandemic, showcasing gender sensitivity in consumer behavior.

Furthermore, this study provides empirical evidence supporting hypothesis H3, which suggests that knowledge about sustainability impacts individuals' sustainable purchasing and consumption behaviors. The available empirical evidence strongly indicates that knowledge about sustainability influences individuals' decisions to engage in sustainable purchasing and consuming behaviors. The discovery suggests that sustainability knowledge is a significant element in influencing sustainable buying and consumption behaviors. The present study examines the relationship between sustainability knowledge and sustainable purchase and consumption. Specifically, it explores how individuals' understanding of sustainability has influenced their decision to engage in sustainable purchasing and consumption behaviors. This investigation is motivated by the observation that the COVID-19 pandemic has induced fear and subsequently led to substantial alterations in individuals' lifestyles and daily routines (Zwanka & Buff, 2021).

Consequently, individuals are inclined to purchase sustainable products and services (Dangelico et al., 2022). Instances, such as the COVID-19 pandemic can heighten consumer consciousness regarding the environmental consequences of human activities and foster the adoption of more sustainable consumption patterns (Kumar et al., 2023; Mainardes et al., 2021). These findings are consistent with the research conducted by Dangelico et al. (2022), which validates that the circumstances arising from the COVID-19 pandemic have fostered consumers' inclination and capacity to purchase sustainable goods and products.

Finally, the indirect influence of the COVID-19 pandemic scenario on sustainable buying and consumption, as proposed in H4, was not validated; the mediating effect of the COVID-19 pandemic situation on sustainable purchase and consumption has a positive but non-significant path value. The direct effect of the COVID-19 pandemic situation on sustainable purchases and consumption is significant, as demonstrated in H1. However, the indirect effect is insignificant when sustainability knowledge is included as an intervening, thus the mediator variable, leading to the conclusion that there is direct-only non-mediation (Hair et al., 2022). Because direct-only non-mediation (i.e. no mediation) has a significant relationship only with a direct relationship between the COVID-19 pandemic situation and sustainable

purchase and consumption rather than an indirect relationship (mediation), it can be concluded that sustainability knowledge is an ideal mediating variable.

### **Conclusion, policy implication, limitation, and future research**

The COVID-19 pandemic has become an extraordinary incident that has forced many individuals to take action outside normal conditions. The occurrence of a pandemic has prompted human actions to be more careful and act pro-environmentally. Actions like this include trying to understand sustainability and applying it in everyday life. Efforts to understand sustainability are carried out by seeking information on sustainability, why it is important, and how to do it. The COVID-19 pandemic has also brought changes to consumer behavior in consuming goods and services, and this has changed the landscape of sustainable consumption. Consumers are increasingly aware that limited resources and the ability of the environment to support human needs are decreasing, this makes consumers have a higher level when consuming and purchasing goods and services, namely buying, and consuming with sustainability in mind.

Several studies have underlined the link between the COVID-19 pandemic and sustainable consumption. Even though the COVID-19 outbreak seems to have ended, studies on the COVID-19 pandemic situation with sustainable consumption in Indonesia are still not well understood, partly because there are not many studies on this matter. SOR theory is used to explore the relationship between the COVID-19 pandemic, sustainability knowledge, and sustainable consumption with Indonesian consumer respondents.

The first conclusion of this study on the COVID-19 pandemic situation has a direct and positive effect on sustainability knowledge, indicating that the conditions and situation during the pandemic made Indonesian consumers try to gain knowledge about sustainability practices in their daily lives. Second, the COVID-19 pandemic situation does not have a direct impact on sustainable consumption. Third, sustainability knowledge has a positive direct effect on sustainability consumption, this finding is an indication that an important determinant of sustainable consumption is knowledge regarding sustainability. Fourth, sustainability knowledge has no indirect effect on the association of the COVID-19 situation with sustainable consumption. To conclude, this study confirms that the COVID-19 situation may have prompted a change in behavior regarding the importance of consumers in Indonesia to carry out sustainable consumption, but an important determinant of sustainable consumption is the formation of sustainability knowledge among Indonesian consumers.

This study has theoretical implications that validate the SOR theory, which postulates that attitudes toward conduct are crucial factors that can forecast an individual's actions. The key theoretical implications of this study are stated. When people feel the situation is scary, full of worry, and the importance of consuming healthy and environmentally friendly products when the COVID-19 pandemic occurs, people tend to feel the importance of equipping themselves with knowledge about sustainability, after the knowledge is formed, then they then decide to do it sustainably. The practical implication of this study is the importance of various stakeholders' efforts to further build sustainability knowledge for consumers in Indonesia. These stakeholders include the government and the private sector, government support, and private sectors especially businesses to increase sustainability awareness. This is something important because the Indonesian government and the private sector also need to achieve sustainable development goals, which can be done with sustainable consumption among Indonesian consumers. Thus, the results of this study can guide policy makers and marketers in using experiences that occurred during the pandemic to inspire sustainable consumption among Indonesian consumers.

In terms of limitations, this study was conducted using cross-sectional data so that the temporal effects have not been analyzed. Therefore, future studies may consider longitudinal studies. In addition, the moderating effect needs to be considered in future studies, for example by considering the demographic characteristics of Indonesian consumers which include age, gender, and educational background or income level. Lastly, this study only provides research results with a quantitative approach, the level of comprehensiveness of this study can be increased by combining it with a qualitative research design.

Several policy implications can be drawn from the results of this study. The fact that the COVID-19 situation has motivated consumers to develop an understanding of sustainability has policy

consequences for the government. As a result, policymakers must work to increase awareness of sustainability in terms of consumption and production so that it becomes a part of people's daily lives.

These findings can also be used to establish managerial or practical consequences, as they demonstrate that when consumers have high sustainability knowledge, they will purchase products that meet sustainability criteria. As a result, businesses and producers can adopt more sustainable marketing strategies by capitalizing on the formation of sustainability knowledge as a byproduct of the COVID-19 pandemic to begin carrying out more sustainable production because the preference for purchasing sustainable products is formed due to sustainability knowledge. As a result, producers and the private sector must promote features of their products that meet sustainability criteria. Developing sustainable knowledge expands companies' potential to reach a big market for products produced using sustainable principles.

The study has some things that could be improved. Approximately 66% of the respondents in this survey were between the ages of 21 and 30. As a result, it is recommended to assume that the findings of this study apply to only some Indonesian consumers. Furthermore, because this study is cross-sectional, the impact will be determined by the causal relationship between the factors examined, namely the COVID-19 pandemic scenario, sustainability knowledge, and sustainable purchasing decisions, which may differ if conducted in other countries or at various times.

As a future research direction, this study might be conducted in other countries and incorporate variables specific to that country. Moderating variables can also be added to the analyzed model to investigate the link between the variables under consideration further. Furthermore, because this study is cross-sectional, it can benefit from longitudinal studies and comparisons with age groups other than most respondents, particularly those aged 21–30. This expansion and comparison across age groups can help us better understand how sustainability knowledge influences sustainable purchasing decisions.

## Disclosure statement

No potential conflict of interest was reported by the author(s).

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