

Decoding sustainable consumption behavior: A systematic review of theories and models and provision of a guidance framework

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ARTICLE INFO

Keywords:

Sustainable consumption
Behavior
Theories
Review

ABSTRACT

Sustainable consumption behavior (SCB) has gained increasing importance in addressing global challenges such as climate change and resource depletion. This paper presents a systematic review of theories and models applied to understanding SCB. A total of 64 studies, published between 2012 and 2022, were analyzed, utilizing 14 theories, models and subjects to identify key drivers of SCB. Among the theories, the Theory of Planned Behavior (TPB) was the most frequently employed, with 29 studies, highlighting the influence of attitudes, subjective norms, and perceived behavioral control on sustainable consumption. Other prominent frameworks include Social Cognitive Theory (SCT), used in 5 studies, and the Value-Belief-Norm (VBN) Theory, applied in 4 studies. The review identified a trend toward expanding TPB to include factors such as altruism and environmental concern to better capture SCB's complexity. Moreover, models like the Diffusion of Innovation Theory (used in 4 studies) emphasize the role of innovation adoption in promoting sustainability. Key findings also suggest that while internal motivations (e.g., personal values, attitudes) strongly influence SCB, external factors like social norms and policy interventions also play a crucial role. A notable challenge is the gap between intention and actual behavior, with several studies emphasizing the need for multi-dimensional approaches that integrate psychological, social, and contextual factors. This review consolidates diverse approaches into a guiding framework for future SCB studies, emphasizing the importance of contextual nuances and interdisciplinary collaboration to foster sustainable consumer behaviors across various domains.

1. Introduction

Sustainable consumption behavior (SCB) has emerged as a significant field of study, with increasing interest in recent years. This interest is driven by global challenges, such as climate change, resource depletion, and environmental degradation. SCB encompasses a wide range of activities and practices aimed at reducing the environmental impact of consumption. It involves not only the purchase of environmentally friendly products but also the responsible use and disposal of these products. The study of SCB is multidimensional, drawing on various theories and concepts from different disciplines. It examines the complex interplay of individual attitudes, social norms, demographic factors, and consumption practices in shaping sustainable consumption.

The world is at a crossroads, grappling with the far-reaching effects of relentless resource depletion and increasing waste generation at a

time of unprecedented economic expansion. As a result of these, sustainable production and consumption are now at the top of the international agenda. The 17 Sustainable Development Goals (SDGs) established by the United Nations (UN) in 2015 serve as a bold road map for the year 2030. At the heart of this ambitious agenda is SDG 12, "Responsible Production and Consumption", which aims to support a comprehensive vision that balances economic success, social well-being and environmental protection. Governments, the media, businesses, civil society and academia have all joined forces to work toward this objective, and each has an important part to play in setting the course for a sustainable future. Camilleri et al., [1], noted that businesses have started a comprehensive quest to match their strategy with sustainable goals. This transformation manifests itself in a number of ways, such as the adoption of environmentally friendly production techniques, expenditures in cutting-edge technology, observance of rigid quality

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standards and certifications, dedication to image and brand equity, and the development of novel sustainable products intended to target new market niches [1-4].

Whilst the onus is on industry to produce sustainably, many also agree that it is imperative to look at individuals consumption behavior [5,6]. Furthermore, the need to alter consumption patterns is urgent for reasons other than environmental protection. Wang et al., [7] noted that this assertion has its roots in the recognition that the problems caused by the persistent increase in consumption cannot be solved by the relentless pursuit of production-side technical efficiency. As a result, focusing on production-side technical efficiency presents a narrow perspective solely concerned with production. This has to change to a more comprehensive viewpoint that also covers every stage of the consumption process, from the initial realization of a want or need to the post-purchase and post-use behaviors. This would enable us to reconsider how we approach every aspect of this consumption continuum and include sustainability concepts at every phase of it.

The concept of SCB draws from the sustainability framework, which is itself a complex and multifaceted concept that encompasses social, environmental, and economic dimensions. Within this broader framework, sustainable consumption has been increasingly explored by various scholars. It is generally understood as a concept closely tied to the environmental aspect of sustainable development and focusing on consumption patterns that do not deplete resources or cause ecological harm [8]. As presented by Nguyen et al. [9] and Visser et al. [10], the pursuit of sustainable consumption explores the complicated web of human behavior, using sociological and psychological theories to shed light on the intricate interaction of elements that affect consumer decisions. Whereas, at its foundation, consumer behavior research explores the complex mechanisms at work in customers' thoughts and behaviors as they traverse the vast array of products and services [11]. From a sociological point of view, a study on the disciplinary status of consumer research by MacInnis and Folkes [12], states that consumer behavior is neither an independent field of study nor an interdisciplinary field but consumer behavior stands out from other disciplines due to its concentration on the consumer's role, highlighting the process of acquiring, using, and discarding market products, services, and experiences. However, another paper by Ma et al. [13], notes that research on consumer behavior is essentially interdisciplinary, bringing together strands from a variety of disciplines like marketing, psychology, sociology, anthropology, economics, and management science. Corroborating this, Kardes et al., [14] states that consumer behavior includes all activities related to the purchase, use, and disposal of goods and services, along with the emotional, mental, and behavioral responses that precede or follow these activities. Furthermore, it is an amalgamation of theories and methodologies, each offering a unique piece to the intricate puzzle explaining consumer behavior [14].

As such the definitions of SCB focuses on the purchase of green products, recycling, ethical consumer conscience, or product characteristics etc. [15]. For example, In Thailand, the National Economic and Social Development Board defined SCB as consumption that meets basic needs and improves quality of life while considering the ecological system's capacity [16]. This definition emphasizes balancing self-sufficiency, sharing with others, and preserving the resource base for future production and consumption. Whereas, Seyfang [17] describes sustainable consumption behavior as the efficient use of goods and services. It can be noted that both of these definitions fail to underscore the various aspects of consumption such as purchase, use, and disposal. By recycling materials, not only is the need for extracting and processing virgin resources reduced, but it also ensures that materials, energy, and economic value are retained within the economy for as long as possible [18]. With the concept of circular economy emphasizing a closed-loop relationship of material use and reuse through recycling, the circular economy is therefore linked to the concept of SCB [19]. Recycling and reuse are integral components of the circular economy, serving as the foundation for transforming the current linear

"take-make-use-dispose" model into a more sustainable and circular system [20], and thus enhancing sustainable consumption behaviour. Just like sustainable consumption, the circular economy concept fundamentally rethinks how resources are utilized by emphasizing principles such as the continual use of materials. It challenges the traditional industrial paradigm, where products are disposed of after use, by promoting strategies such as product design for longevity, repairability, and recyclability. This "closing the loop" approach minimizes resource depletion and mitigates risks associated with supply disruptions and price volatility, while fostering innovation in waste management, resource efficiency, and sustainable business models [18, 21].

In our enquiry, we found the definition provided by Geiger et al., [21], which defines SCB as "individual acts of satisfying needs in different areas of life by acquiring, using and disposing goods and services that do not compromise the ecological and socioeconomic conditions of all people (currently living or in the future) to satisfy their own needs", to be most comprehensive as it not only underscores various facets of consumption but also attempts to include individual and social aspects of consumption with environmental sustainability.

As a result, a thorough investigation of sustainable consumer behavior demands a broad perspective that takes into account a variety of perspectives, methodologies, and dimensions. However, it has been noted that one of the obstacles to the development of a method to assess sustainable consumption behavior is the disagreement on the characterization of "sustainable consumption behavior" [22]. The other being frequency of research that concentrates on particular product categories is one of the difficulties researchers face in the field of sustainable consumption. While this specialization enables a thorough investigation of the effects of numerous sustainability characteristics on customer preferences, generalizability suffers as a result [23,24]. In essence, it is doubtful that the deciding variables driving the choice of eco-friendly clothing for instance will be similar to those influencing the purchase of agri-food items [25]. As a result, bringing together the abundance of knowledge from these disparate sectors becomes a difficult endeavor. It becomes clear that no one solution works for all situations as we make our way through the complex world of sustainable consumerism. Instead, the extant research on the subject emphasizes how complex consumer views of sustainable products are, with results depending on the context, the type of product, and contextual features. It becomes clear that no one solution works for all situations as we make our way through the complex world of sustainable consumerism. Instead, the extant research on the subject emphasizes how complex consumer views of sustainable products are, with results depending on the context, the type of product, and contextual features.

In this inquiry, this review also acknowledges the critical function of environmental awareness, infrastructure, etc. as a motivator for environmentally friendly conduct [26]. It should be noted that the transition from awareness to action, though, is not always simple. According to some academics, for instance, Stern [26], there is still a disconnect between environmental awareness and sustainable consumption. Huang et al. [27], points to the idea of behavioral costs as one of the roadblock to the adoption of pro-environmental habits. For society to move in the direction of a more sustainable course, it is crucial to comprehend and address such challenges.

In light of the complexities surrounding sustainable consumption behavior and the diverse array of factors influencing it, the necessity for a robust framework to guide researchers in selecting appropriate theories becomes increasingly apparent. As we navigate the intricate landscape of sustainable consumerism, it becomes evident that no one-size-fits-all solution exists, and the contextual nuances of various products and consumption patterns necessitate a broader approach to its examination. The paper therefore employs a multifaceted approach by using a mix of diverse theoretical frameworks, models, and subject matter to examine SCB as a conceptual phenomenon. Recognizing this gap, this paper endeavors to fill this void by providing a thorough

examination of existing frameworks, theories and subjects and their applications in understanding sustainable consumption behavior. By synthesizing this wealth of knowledge and contextualizing it within the evolving landscape of sustainable consumerism, the study aims to offer a roadmap to navigate this complex terrain effectively.

Research Objective 1: To identify and examine the different theories, models and subjects utilized in the field of sustainable consumption behavior, and to appraise the contexts in which these theories and models have been applied.

Research Objective 2: To establish and examine the inherent characteristics of these theories and models, within the context of sustainable consumption behavior in the unique ways they have been utilized in explaining the rationale underpinning such behavior.

Research Objective 3: To develop a guidance framework, to aid researchers and practitioners in developing studies within the realm of examination of sustainable consumption behavior.

Numerous theories and models, such as the Theory of Planned Behavior, the Value-Belief-Norm Theory, and the Diffusion of Innovation Theory, each offer distinct insights into human behavior. Studies have applied these frameworks to study consumer behavior in the context of sustainability. However, the wide array of theories and models has led to fragmented research, as scholars approach sustainable consumption behavior from various perspectives. The plethora of existing frameworks and theories often leaves researchers and practitioners grappling with divergent perspectives and methodologies, hindering comprehensive understanding and generalizability. This review seeks to consolidate these diverse approaches into a comprehensive guide, helping future researchers understand how different theories and models have been applied and in what contexts. Through inquiry, this work aspires to contribute towards a more holistic understanding of sustainable consumption behavior, fostering informed decision-making and driving meaningful progress towards a more sustainable future. As such the objectives that this systematic literature review is to address the following. By doing so, it aims to clarify the current state of knowledge and work in the field of sustainable consumption behavior, ultimately facilitating a deeper understanding of the field's landscape and its future directions.

To address these issues, the rest of the paper is consequently structured as follows: The PICO (Population, Intervention, Comparison, Outcome) methodology deployed to undertake the research process and the systematic literature review is presented in [Section 2](#). In undertaking the systematic literature review (SLR) is presented in [Section 2](#). The results and analysis of the SLR including the descriptive statistics, the examination of the different theories and models utilized in the field of sustainable consumption behavior and the results of the thematic coding thematic of the research is presented in [Section 3](#). A critical interpretation of the results, which draws out theoretical and practical (managerial and policy) implications as well as opportunities for further research are presented in [Section 4](#). The succinct overview of the main findings, the main arguments and the key takeaways emanating for the study are presented in the concluding remarks in [Section 5](#).

2. Methodology

This paper utilizes the Population, Intervention, Comparison, Outcome (PICO) approach as detailed by Schardt et al. [28] which is a specialized framework used to define the research questions and the direction of literature review; refer to [Table 1](#).

The paper aims to provide a systematic review of the theories and models that have been utilized in the field of sustainable consumption behavior. The inclusion and exclusion criteria set for this review is summarized in [Table 2](#), which follows that by Mora et al., [29].

The selection process for papers included in this review is depicted in [Fig. 1](#), divided into Parts A and B. Given the plethora of models and theories developed for assessing human attitudes, intentions, and behaviors, it was imperative to catalog which of these have been employed

Table 1
Structure of the study (PICO).

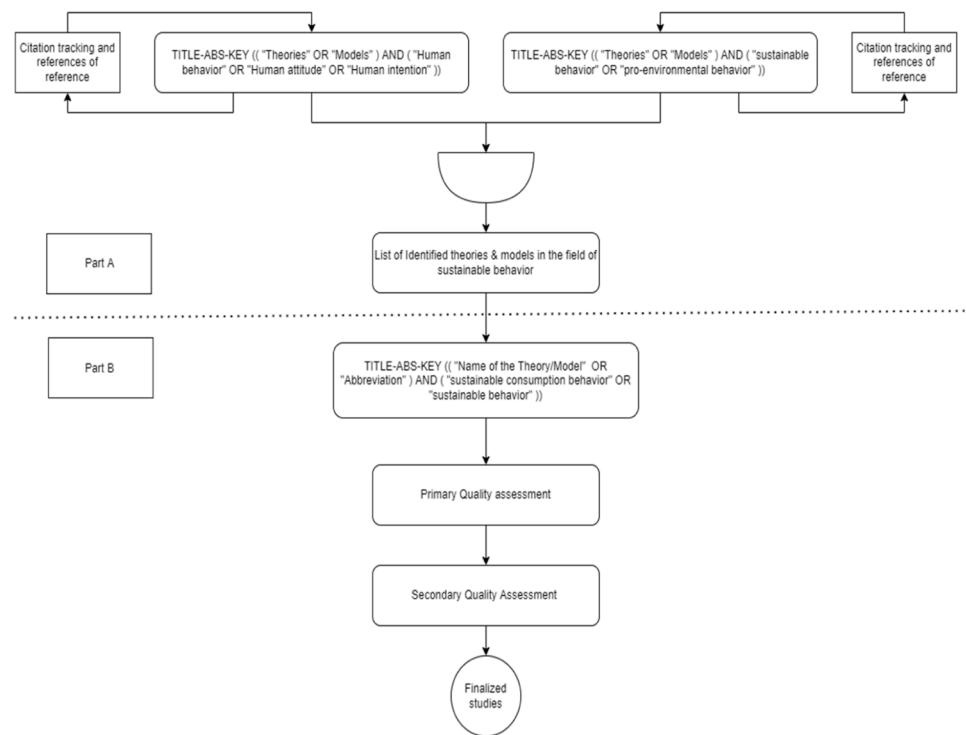
Criteria	Description	Implementation in the Study
Population	This refers to the group of people or participants on whom the research inquiry is focused. It entails defining the target population's characteristics.	Articles in the field of examination of sustainable consumption behavior.
Intervention	This component defines the activity under consideration. It describes what is being done.	Different theories and models that have been utilized to explain various factors in the field of sustainable consumption behavior.
Comparison	The comparison component specifies the intervention to which it is being compared. It might be a variety of approaches, algorithms, or control groups.	To examine the different variables utilized under various theories and models for the examination of sustainable consumption behavior.
Outcome	This component outlines the intervention's intended or measurable result or outcome. It defines what researchers want to accomplish or see as a result.	Identification of various theories and models and context under which they have been utilized Identification of variables that are utilized to explain the consumption behavior.

Table 2
Inclusion and exclusion criteria.

Code	Type	Criteria	Reasons for inclusion and exclusion
INC.1	Basic	Database	Inclusion of articles from Scopus as it is a comprehensive, peer-reviewed academic database, ensuring quality and relevance to sustainable consumption behavior research.
INC.2	Basic	Year of Publication	Inclusion of studies published in the last 10 years (2012–2022) to capture the most current research trends and developments in the field
INC.3	Basic	Language	Inclusion of articles written in English to ensure clarity and consistency in the analysis, given the review team's language capabilities
INC.4	Thematic	Theoretical and Empirical Focus	Inclusion of both empirical (qualitative and quantitative) and theoretical studies that explore sustainable consumption behavior using established frameworks (e.g., TPB, VBN).
EXC.1	Basic	Database and Publication Type	Exclusion of articles from non-peer-reviewed sources, including books, book chapters, theses, and articles not published in Scopus.
EXC.2	Basic	Language	Exclusion of articles not written in English to maintain consistency in analysis and understanding.
EXC.3	Thematic	Themes Outside of Focus	Exclusion of articles that do not include the behavioral aspect of sustainable consumption. For example, articles that limit their discussion of intentions and not the behavior or behavioral intention.

in addressing sustainable/pro-environmental behavior in past studies.

Thus, Part A outlines the procedures for identifying various theories and models utilized in the realm of sustainable/pro-environmental behavior, with the initial aim being to compile a comprehensive list of theories, models, subjects applied in the analysis of human behavior, limited to attitude, intention, and behavior, within the context of sustainability. It should be noted that the search was not limited to just behavior to lower the chance of missing out on any of the theories or models due to restrictive results. Part A concluded with the

**Fig. 1.** Process flow chart.

identification of 27 theories and models.

Subsequently, in Part B, each of the 27 identified theories/models/subjects was scrutinized to ascertain its application in the study of sustainable consumption behavior (SCB). Following this assessment, it was confirmed, to the best of the authors' knowledge, that 14 different theories and models, as delineated in Fig. 2, have been utilized in the field of SCB, with a total of 160 studies identified.

An overview of the inclusion and exclusion process, detailing Part B of Fig. 1, is presented in Fig. 2. Step 1 outlines the inclusion and exclusion criteria, as described in Table 2, which set the boundaries for the search, such as the database to be used, the time frame, etc. Step 2 focuses on developing the search string. The 27 theories/models/subjects identified at the end of Part A in Fig. 1 were individually searched using the string: TITLE-ABS-KEY ((Name of Theory/Model/Subject" OR Abbreviation) AND (Sustainable consumption behavior or Sustainable behavior)). For instance, for the Theory of Planned Behavior, the search string was: TITLE-ABS-KEY ((Theory of Planned Behavior OR TPB) AND (Sustainable consumption behavior or Sustainable behavior)). This step resulted in the identification of 160 papers and 14 theories/models/subjects.

In Step 3, the first quality check, based on Table 3, was conducted by reviewing abstracts to ensure that the articles discussed actual consumer behavior. Finally, Step 4 involved the second quality check, following

Table 3
Primary quality assessment checklist.

Checklist	Possible score
Is sustainable consumption behavior the main theme of the paper	Yes = 1 No = 0
Does the paper address a specific and important aspect of sustainable consumption behavior?	Minimum Score = 1

Table 4, to assess the overall quality of the discussion within the articles.

After step 4, 64 papers were retained and 8 theories namely Theory of Planned Behavior (TPB), Social Cognitive Theory (SCT), Value-Belief-Norm Theory (VBN), Goal-Framing Theory, Protection Motivation Theory (PMT), Self-Determination Theory (SDT), Social Practice Theory (SPT), Theory of Reasoned Action (TRA); 3 Models namely Comprehensive Action Determination Model (CADM), Transtheoretical Model (TTM), and Diffusion of Innovation Theory; and 3 Subjects namely Behavioral Economics, Social Marketing and Community-Based Social Marketing (CBSM) were identified as shown in Fig. 3.

The existing research on the examination of SCB (Sustainable Consumption Behavior) is fragmented, encompassing a variety of themes and approaches. Except for the work by Keller et al., [31], Phipps et al.,

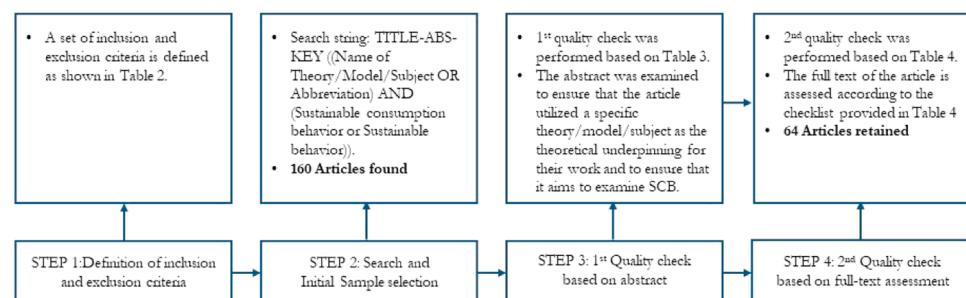
**Fig. 2.** Overview of the inclusion-exclusion process.

Table 4
Secondary quality assessment checklist.

Checklist	Possible score
Is the methodology clearly explained?	
Does the paper discuss potential biases and limitations in the methodology?	Yes = 1, No = 0, Maybe = 0.5, Minimum score = 4.5
Does the paper provide a comprehensive review of relevant literature in the field of sustainable consumption behavior?	
Does the paper critically assess and integrate previous research to support the study's rationale?	
Are the findings discussed in the context of existing literature and theories?	
Does the paper acknowledge limitations and suggest avenues for future research?	

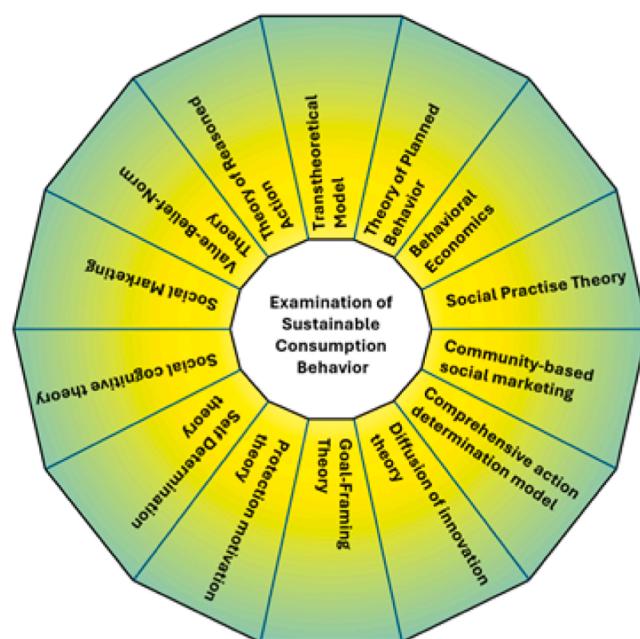


Fig. 3. List of identified theories, models and subjects.

[32], Gsottbauer et al., [33] and Lehner et al., [34], that entails a discussion on the feasibility of the application of specific theory/model/subject within the realm of examination of SCB, the rest of the papers were initially coded according to the theme of consumption, such as whether the issue addressed relates to the consumption of food, energy, water, etc. Subsequently, following the coding procedure of Gerli et al., [34], a second level of coding was applied to link the identified themes with specific facets of consumption, such as Purchase, Utilization, Disposal, or a combination of these, as presented in **Table 5**. Consequently, it was possible to determine that some papers researched multiple facets of consumption across various themes. This method allows for the visualization of the diverse themes and their connections to different aspects of consumption, offering a more nuanced understanding and pattern recognition within the field.

A thorough assessment of the full papers was conducted to determine their primary focus. The initial coding process identified 17 distinct themes. It was observed that not all papers focus on a singular theme. For instance, the study by Betzler et al., [35] examined purchase behavior in relation to electronics, food, and clothing, whereas other studies, such as [36], concentrated on a specific theme (e.g., personal cars) but addressed multiple facets of consumption, such as both Purchase and Utilization. Papers that did not focus on a specific theme were categorized as "General" under the Themes column.

It is noteworthy that Purchase and Disposal have been the most

Table 5
Thematic coding of the research (*n* = number of papers in which the theme was identified).

Themes	Facet of Consumption
1. Electronics (<i>n</i> = 1)	Disposal
2. Plastic packaging (<i>n</i> = 1)	
3. Bath products (<i>n</i> = 1)	Purchase
4. Clothing (<i>n</i> = 9)	
5. Computers (<i>n</i> = 1)	
6. Electronics, Food and Clothing (<i>n</i> = 1)	
7. Energy-efficient appliances (<i>n</i> = 2)	
8. Food (<i>n</i> = 7)	
9. General (<i>n</i> = 6)	
10. Plastic packaging in groceries (<i>n</i> = 1)	
11. Eco-friendly packaging (<i>n</i> = 1)	
12. Personal car (<i>n</i> = 1)	
13. General (<i>n</i> = 1)	Utilization
14. Adoption of Sharing Economy (<i>n</i> = 1)	
15. Clothing (<i>n</i> = 1)	
16. Disposable cups (<i>n</i> = 1)	
17. Energy (<i>n</i> = 3)	
18. Food (<i>n</i> = 3)	
19. Energy, Water, Transport (<i>n</i> = 1)	
20. Transportation (<i>n</i> = 1)	
21. Water (<i>n</i> = 1)	
22. General (<i>n</i> = 1)	Purchase and Disposal
23. Personal car (<i>n</i> = 1)	Purchase and Utilization
24. General (<i>n</i> = 1)	Utilization and Disposal
25. Food, Clothing, Water, Energy and Transportation (<i>n</i> = 1)	Purchase, Utilization and Disposal
26. Classification of behavior (<i>n</i> = 1)	
27. General (<i>n</i> = 8)	

extensively researched facets of consumption, with food and clothing emerging as the most studied themes. Few papers have explored all three facets of consumption within a single theme, and even fewer have examined the antecedents of specific facets of consumption across multiple themes, thereby comparing the factors that motivate similar behaviors across different themes.

The succeeding section discusses the descriptives of the papers included in the review.

3. Results and analysis

3.1. Descriptives of the selected papers

The papers chosen for this systematic review represent a wide range of research efforts aimed at understanding sustainable consumption behavior (SCB). Each paper brings a unique perspective to the field, drawing on different theories and methods. While the idea of "Sustainable Consumption" has been around for some time, interest in studying sustainable consumption behavior has increased recently. **Fig. 4** illustrates the increasing trend in sustainable consumption behavior research by showing the number of published articles along with a trend line from 2012 to 2022.

Additionally, **Fig. 5** provides a comprehensive overview of the distribution of papers on sustainable consumption behavior across various academic journals. The figure highlights the diversity of publication venues, indicating that research on this topic spans a broad range of disciplines. Journals such as the Journal of Cleaner Production and Sustainability are prominent, reflecting their focus on environmental and sustainable development issues. The wide array of journals represented in this figure underscores the multidisciplinary nature of sustainable consumption behavior research, integrating perspectives from environmental sciences, business, social sciences, and beyond. This diversity suggests that sustainable consumption behavior is a field of growing interest, attracting attention from scholars across different domains. The distribution also indicates the key platforms where researchers are disseminating their findings, offering insights into the

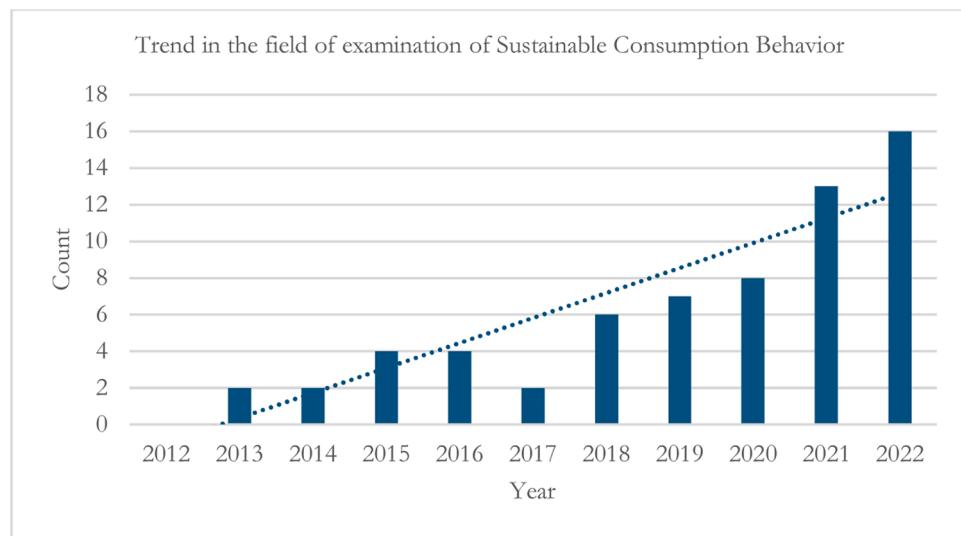


Fig. 4. Number of Published Articles and Trend in Sustainable Consumption Behavior Research (2012–2022).

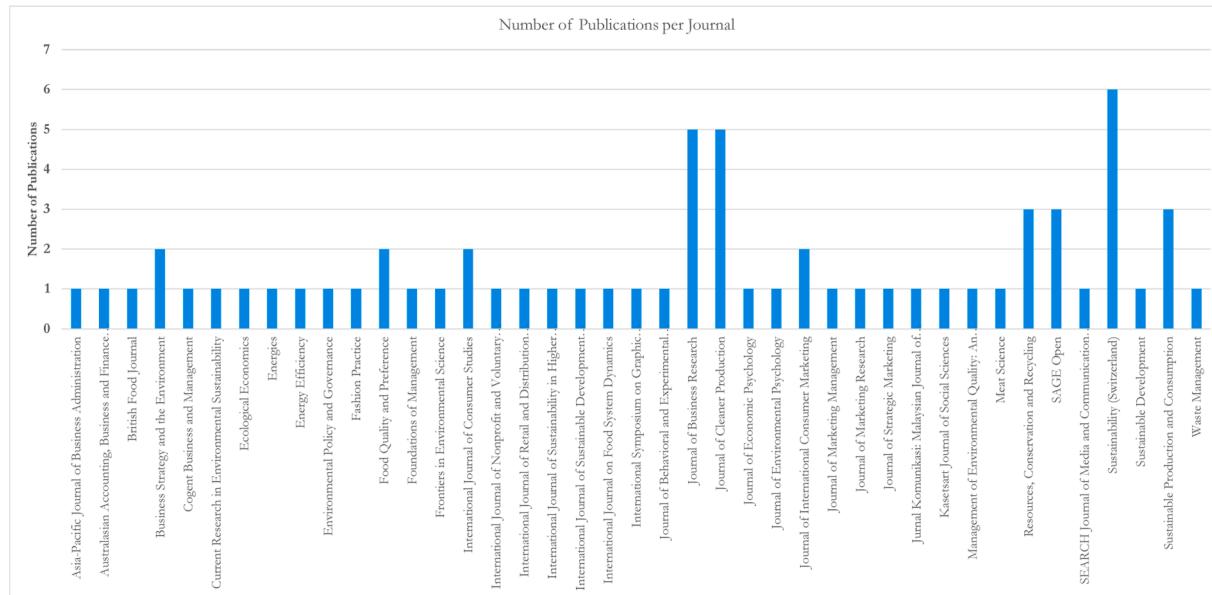


Fig. 5. Distribution of papers over various sources.

most influential journals in this area of study

As evident from Fig. 3, each theory and model offers a distinct avenue for exploring consumption behavior. However, among the 64 papers identified in this review, the predominant choice, with 29 papers, is the Theory of Planned Behavior (TPB) as the foundational framework for hypothesis development in investigating factors influencing sustainable consumption behavior, as depicted in Fig. 6.

It is noteworthy that many papers employing TPB or other theories/models often adapt or integrate multiple frameworks to address their research inquiries or objectives. However, the data presented in Fig. 6 counts per paper, one theory/model that serves as the primary basis for the research.

The Theory of Planned Behavior (TPB) has steadily gained prominence over the years, particularly in research focusing on sustainable consumption behavior, as depicted in Fig. 7. This growing interest is not merely coincidental but rather reflects the theory's robust framework for understanding and predicting human behavior across a wide array of domains. TPB has been extensively employed by researchers in diverse

fields, ranging from addiction, [37,38,39], clinical science [40], agriculture [41], etc. The versatility of TPB in addressing different behavioral contexts is one of the primary reasons for its widespread adoption. Researchers appreciate the theory's ability to provide a structured approach to examining the factors that influence behavior, such as attitudes, subjective norms, and perceived behavioral control. The adaptability of TPB across these varied disciplines has led many scholars to consider it a foundational model for studying behaviors, particularly when investigating complex phenomena like sustainable consumption. This adaptability is a critical factor that has driven its frequent use in the literature. Despite this widespread application, it is essential to acknowledge that TPB is not without its critics. Some studies, such as the work by Sung et al., [42], delve deeply into the theory's strengths and limitations, offering a nuanced view of its efficacy. These discussions are crucial as they provide a balanced perspective, highlighting both the utility of TPB and the areas where it may fall short. Moreover, while many studies justify the use of TPB based on its extensive application in prior research, there is a notable trend of researchers seeking to enhance

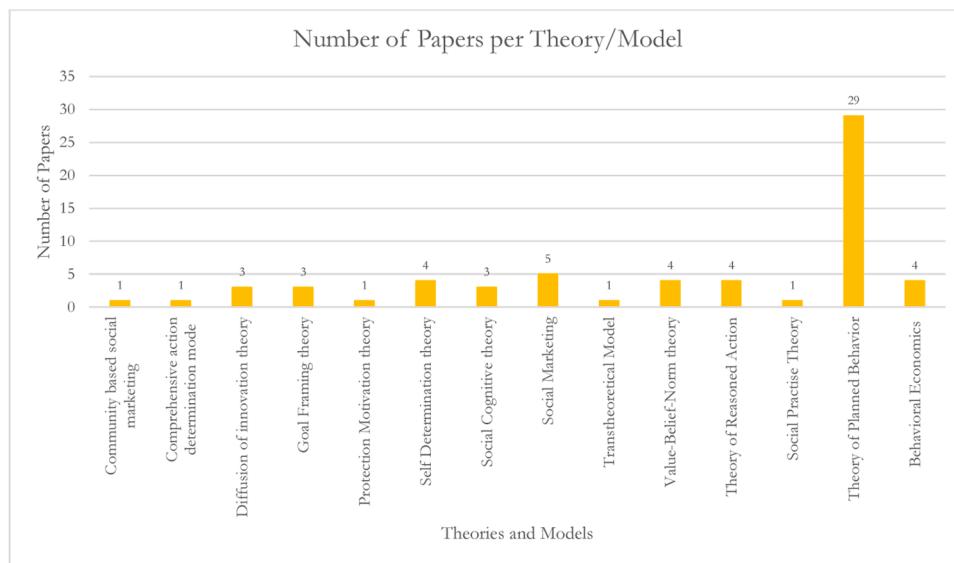


Fig. 6. The number of papers utilizing the given theory/model as their primary framework.

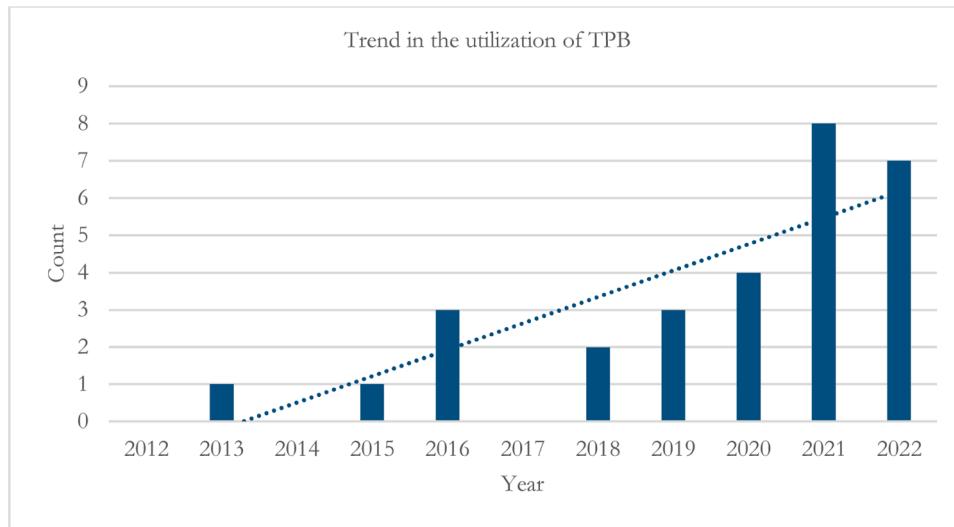


Fig. 7. Trend in number of publications utilizing the TPB.

the theory. One of the most documented point of criticism when it comes to the TPB and even the theory of Reasoned Action is the attitude-behavior gap [43]. Majority of studies included in this review attempt to address this in their discussion, often trying to enhance the predictive power of the guiding framework by enhancing the guiding framework. These enhancements often involve extending the original model proposed by Ajzen [44], by integrating additional variables that are thought to better capture the nuances of consumer behavior in the context of sustainability.

Figs. 8 and 9, present a keyword analysis of the selected papers using VOSviewer, which offers valuable insights into the thematic landscape of sustainable consumption behavior (SCB) research. Fig. 8 includes all keywords with a minimum occurrence of 1, revealing a broad array of research topics, while Fig. 9 focuses on keywords with a minimum occurrence of 5, highlighting the most prevalent themes.

The analysis shows that common keywords such as "Sustainability," "Consumption behavior," "Sustainable development," and "Sustainable consumption" appear frequently across the literature, indicating these as core areas of focus within the field. The differences between the figures also illustrate the diversity of research interests and the emergence of

specialized subfields. For instance, keywords like "Recycling" and "Regression analysis" in Fig. 9 suggest a growing interest in specific methods and applications related to SCB.

Overall, these figures underscore the multidimensional nature of SCB research, with a strong emphasis on foundational concepts and a noticeable trend toward more specialized studies that explore specific aspects of sustainable behavior.

Subsequent sub-sections present detailed descriptions of the selected papers, categorized according to the theories and models utilized in their analyses. Through this comprehensive examination, the review aims to provide a nuanced understanding of the current state of knowledge surrounding SCB, shedding light on key trends, gaps, and avenues for future research.

3.2. Theories, models and subjects used in examining the unique characteristics and context of sustainable consumption behaviour

Research Objective 1: To identify and examine the different theories, models and subjects utilized in the field of sustainable consumption behavior, and to appraise the contexts in which these theories and models have been

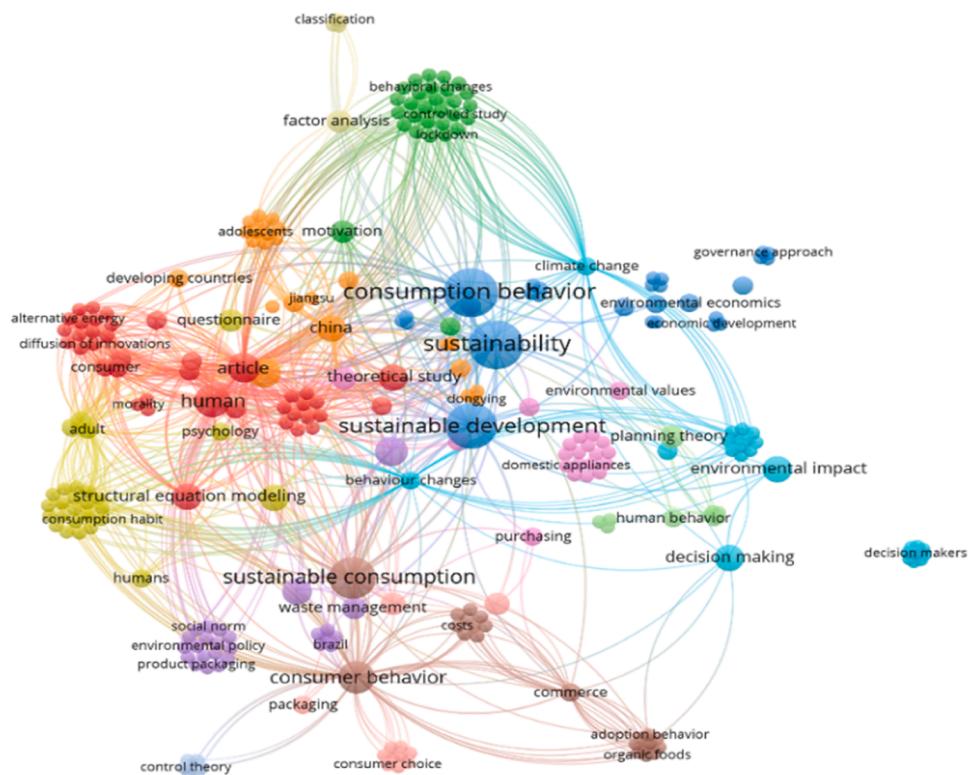


Fig. 8. Indexed Keyword map with minimum 1 occurrence.

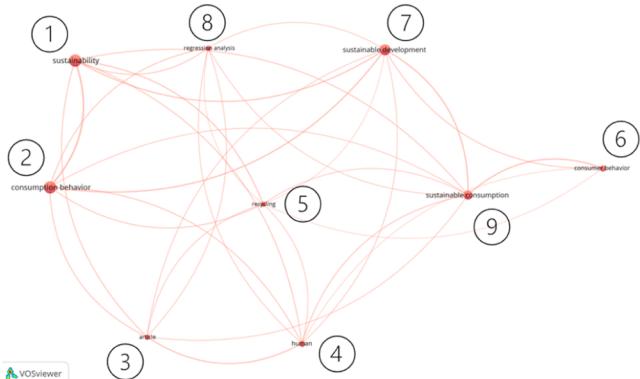


Fig. 9. Indexed Keyword map with minimum 5 occurrences; 1 = sustainability, 2 = consumption behavior, 3 = article, 4 = human, 5 = recycling, 6 = consumer behavior, 7 = sustainable development, 8 = regression analysis, and, 9 = sustainable consumption.

applied.

In light of the intricate and multifaceted nature of sustainable consumption behaviour (SCB), as well as the contextual intricacies associated with diverse products and consumption patterns, it becomes evident that a universal approach to its examination would be inherently limiting. Consequently, a comprehensive examination of SCB, which employs a multifaceted utilisation of diverse theoretical frameworks, models and subject matter, is essential to gain a nuanced understanding of this conceptual phenomenon.

3.2.1. Theories

Theories used to examine human behavior are systematic frameworks that help us understand, predict, and explain how people think, feel, and act. They are often broad and can be applied across various contexts [45]. 8 theories were found to be extensively utilized by

researchers in the field of SCB as discussed below.

3.2.1.1. Theory of Planned Behavior. The Theory of Planned Behavior posits that our intentions are the strongest predictor of whether we will perform a specific behavior [46]. These intentions are shaped by three main factors: attitude, which is how favorably we view the behavior in terms of enjoyment, rewards, or positive outcomes; subjective norm, which is the perceived expectations and approval from important people in our lives such as friends, family, or society; and perceived behavioral control, which is our belief in our ability to perform the behavior, including having the necessary skills, resources, and opportunities. The Theory of Planned Behavior (TPB) helps understand and promote sustainable consumption by examining three factors: attitudes towards sustainable products (such as perceptions of environmental friendliness, quality, and value), social pressure from subjective norms (social pressure and the influence of family, friends, and societal values), and perceived behavioral control over making sustainable choices (belief in one's ability to make sustainable choices, including access to products and necessary skills). By analyzing these factors, leaders, marketers, and policymakers can predict and encourage sustainable behavior by highlighting benefits, promoting sustainability as a social norm, and making sustainable options more accessible and convenient.

Within the TPB framework, Ayar and Gürbüz [47] in a study in Turkey identified key factors influencing environmentally friendly purchasing behaviors, revealing that subjective norms can indirectly enhance sustainable purchases through subjective incentives. Moreover, while perceived behavioral control impacts intention, it does not directly influence behavior; instead, changes in attitudes towards sustainable consumption lead to stronger intentions, which in turn guide behavior. Additionally, altruistic values were found to significantly boost sustainable consumption intentions. Vanatamy [16], within the context of Thailand, reported the results of both intention and actual behavior and found that Perceived behavioral control had the most influence, followed by Attitude toward the behavior, and Subjective norm. Yarimoglu and Binboga [48] utilized TPB to highlight various factors

influencing environmentally conscious consumer behavior (ECCB) across different demographics. Perceived consumer effectiveness (PCE), altruism (AL), and environmental concern (EC) were identified as significant predictors of ECCB within the Theory of Planned Behavior (TPB), finding no impact from narcissism (NA). The model also showed significant relationships between ECCB, green purchase intention (GPI), and green purchase behavior (GPCB). Leßmann and Masson [49] suggest that perceived freedom to act pro-environmentally is crucial and may be an area of social inequality, requiring a capability model informed by theoretical insights and empirical data. While direct normative effects on behaviors like organic food purchase and eco-friendly mobility are weak, combined indirect effects—mediated by attitudes and perceived freedom—significantly enhance norms' predictive power. This suggests that considering only direct normative effects, as in the Theory of Planned Behavior (TPB), underestimates social influence on PEB. High perceived freedom reduces constraints and fulfills autonomy needs, motivating behavior aligned with attitudes. On the other hand Oliver et al. [50], adapted the TPB to investigate the link between purchase intention and behavior regarding eco-friendly grocery packaging, revealing that sociodemographic factors such as age, income, education, and gender do not significantly moderate this relationship. Meanwhile, research on package-free bath products among higher education students reveals that attitudes and social norms positively influence the intention to purchase, with pro-environmental self-identity also playing a significant role [51]. In the context of plastic recycling in Finland, TPB was applied to examine household sorting and recycling behaviors under a new scheme. While attitudes and perceived behavioral control significantly influence plastic recycling diligence, social norms do not, as such Reijonen et al. [52] argued that several control variables indicate that TPB alone does not fully capture the complexity of recycling behaviors. As such majority of the research tend to include variables in their model, which are not native to the TPB. These can include the incorporation of various mediating variables, incorporation of multiple facets of consumption: purchase, recycling etc.

Qin and Song [53], examined the factors, influence paths, and decision-making mechanisms behind Chinese consumers' sustainable consumption, focusing on green purchases, green transportation, and recycling behaviors by utilizing TPB. They reported that internal motivations like social norms, attitude, and perceived behavioral control positively impact green purchases, with attitude mediating the effect of external contexts. While external contexts do not directly affect green transportation, they influence it through attitude. For recycling, external contexts such as policies and incentives directly promote behavior, though challenges like inadequate facilities and time constraints persist. In the context of green food consumption in China, purchasing convenience plays a significant role in moderating the relationship between green food consumption intentions and actual behaviors. High purchasing convenience enhances the likelihood that green food consumption intentions will translate into behaviors. However, only education significantly affects green food consumption intentions once internal influencing factors are accounted for. Additionally, as incomes rise and the middle class expands in China, consumers with intentions to purchase green food are increasingly likely to follow through with these purchases [54]. In a related context, research on food waste prevention behavior, using an extended TPB model by Teoh et al. [55], highlighted the role of social media and injunctive norms. It was found that social media exposure significantly influences consumers' attitudes and injunctive norms towards food waste, thereby promoting food waste reduction behaviors. Moreover, injunctive and moral norms were identified as significant positive predictors of the intention to reduce food waste, suggesting a strong social component in these environmentally responsible behaviors. Furthermore, a study on the consumption of perceived inedible parts (PIPs) of fruits and vegetables in Ireland and Italy revealed that sociodemographic characteristics significantly affect PIP consumption behaviors. Italian respondents, influenced by higher societal pressure to avoid food waste, demonstrated greater

acceptance of consuming PIPs compared to their Irish counterparts [56]. This cultural distinction emphasizes the importance of social norms and demographic factors in shaping environmentally friendly behaviors.

Whereas adolescents in China were found to be inclined to purchase sustainable products if they provide clear benefits like energy saving and waste reduction, their lack of understanding of eco-labels can hinder this preference. Song et al., [57] reported that eco-labels effectively communicated environmentally friendly product attributes to Gen Z consumers, with product attributes enhancing environmental attitudes and concerns. These, in turn, were significant predictors of green purchases. Another facet of sustainable behavior within the sharing economy was explored by Matharu et al., [58] by incorporating the lifestyle of health and sustainability (LOHAS). This lifestyle was shown to significantly influence behavioral intentions for sustainable consumption within the sharing economy. Specifically, it was revealed that LOHAS lifestyles positively affect customers' attitudes toward sustainable consumption, thereby promoting sustainable consumption behaviors.

Education is crucial to enhance understanding of sustainable consumption (SC), with awareness and attitude also playing key roles. Particularly for environmentally aware adolescents, SC understanding is essential to drive purchasing and effective disposal of sustainable products [59]. Liobikiene et al. [60], applied the TPB across EU countries revealing that subjective norms have the most substantial influence on green purchase behavior. European individuals are more likely to buy green products if they believe it is the right thing to do, sets a good example, and is supported by family and friends. This influence is particularly pronounced in high power distance EU countries, where societal emphasis on wealth, power, and status symbols is greater [60]. Additionally, the interaction between knowledge and confidence in green products significantly impacts green purchase behavior across most EU countries, except Estonia.

For e-waste recycling, in Brazil, females aged 30 to 49, from lower income groups, or residing in the Southeast exhibit a slightly higher positive intention than their peers. However, actual behavior tells a different story, with higher income groups more likely to dispose of e-waste properly, suggesting a disparity where income negatively impacts intention but positively correlates with actual recycling behavior. This discrepancy highlights that awareness and proper disposal practices are more prevalent among affluent respondents, indicating that eco-friendly intentions often do not translate into actions beyond the acquisition phase of the consumption cycle [61]. Similarly, in the context of sustainable apparel purchasing, Change and Watchravensringkan [62], found that perceived behavioral control, attitudes toward sustainable behavior, and subjective norms significantly influence purchasing intentions, with actual behavior aligning closely with these intentions. Interestingly, this study too, found no gap between intention and behavior. Furthermore, it was noted that the availability of money enhances perceived control over sustainable apparel purchases, and store accessibility also plays a positive role. Within the context of collaborative fashion consumption by young female consumers McNeill and Venter [63], revealed that emotional pleasure in fashion is tied to ownership rather than use, with place identity shaping fashion self-concept. Emotional connections and positive experiences motivated involvement in clothing swaps. Along a similar vein of the context of online sustainable fashion, in Malaysia, customer endorsements, family environmental beliefs, and celebrity endorsements were found to significantly influence millennials' attitudes toward sustainable fashion brands [64]. In a similar sphere of sustainable clothing in India, Kaur and Bhardwaj [65] examined the gap between purchase intention and actual purchase behavior, within TPB, in India, highlighting the role of Actual Behavioral Control (ABC) as a moderating factor. It was suggested that a consumer's ABC is crucial in translating intentions into actual purchases of environmentally sustainable clothing. Whereas, in the UK, challenges in sustainable consumption among young consumers highlight the effectiveness of policy interventions and eco-labeling [66].

Visible labels and government regulation of unethical practices are favorably viewed by young consumers. Also, it was reported that reference groups significantly impact norms, promoting sustainable behaviors. However, the discrepancy between attitude and behavior, in the so-called attitude-behaviour gap frequently hinges on price, thereby underscoring its pivotal role in consumption decisions [67]. These findings show the complex interplay of individual, social, and policy factors in shaping sustainable behaviors. Parallel investigations into sustainable clothing purchases, by Frommeyer [68], confirmed the utility of intention as a proxy for actual sustainable buying behavior. Here, subjective norms emerged as the most influential factor in purchase intention, underscoring the critical role of social validation. Social concerns and awareness of social issues, although not originally part of the TPB, were also found to significantly enhance purchase intention, demonstrating their additional explanatory power in sustainable consumption contexts.

For upcycling in the UK, the findings indicate a high intention driven by positive attitudes and strong social expectations. Upcycling appears to be an intention-driven, deliberate act, strongly swayed by pleasant attitudes and societal expectations, although other factors such as perceived behavioral control exert weaker influence [69]. By integrating environmental concerns into the TPB model, Borusia et al., [70] demonstrated that the intention to reduce bottled water consumption (BWC) and shift to filtered tap water is significantly influenced by attitudes, subjective norms, perceived behavioral control, and perceived moral obligation, with environmental concern positively affecting this intention. Generalized models to predict behavior often lack the inferences of individuals as such Poškus [71], incorporated five big personality traits (extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience) and measured the antecedents to various facets of sustainable consumption behavior (recycling, water conservation, electricity conservation, sustainable consumption, and sustainable transportation use) using TPB. A notable finding of the study is that individuals with different personality traits exhibit distinct attitudes, subjective norms, and perceived behavioral control concerning these behaviors. Furthermore, the research connecting egoistic, altruistic, and biospheric values to pro-environmental purchasing behaviors indicated that consumers exhibit diverse green purchasing patterns driven by their values and implicit beliefs [72]. Dangelico et al. [73], attempted to elucidate factors affecting the multifaceted nature of consumption behavior by extending the TPB by incorporating three dimensions of green purchase behavior: willingness to pay a premium price, green purchase frequency, and green purchase satisfaction and various variables. It identifies personal norms to be the strongest predictor of purchase satisfaction, while social value exerts a negative effect. Additional predictors include value for money and functional value, with younger, male, and more educated consumers reporting higher satisfaction from green purchases. In conclusion, it was reported that green consumption behavior is multifaceted, with different antecedents for each dimension.

Fatoki et al. [74], explored young South African consumers' purchase of energy-efficient appliances (EEAs) and extended the TPB by including moral norms, EC, informational publicity, and perceived benefits. Positive attitudes, perceived behavioral control (PBC), and informational publicity were found to be significant predictors of EEA purchase intention, while subjective norms were not. Whereas purchase intention was found to significantly impact actual behavior. Similarly Sharma [75] explored the ethical nature of purchasing energy-efficient products (EEAs). The sample, skewed towards academics, reveals that environmental knowledge and concern positively affect consumer attitudes. Interestingly, the analysis finds no attitude-behavior gap concerning eco-friendly products like energy-efficient appliances. Perceived behavioral control, influenced by product availability, and perceived consumer effectiveness also found to impact behavioral intentions towards EEAs, although the latter's influence is weaker compared to the impact of attitude.

In conclusion, the application of the Theory of Planned Behavior (TPB) across various contexts reveals a complex interplay of factors influencing sustainable consumption behaviors. Key determinants such as subjective norms, perceived behavioral control, and attitudes consistently emerge as significant predictors, although their specific impacts vary by context. Studies in Turkey, Thailand, and China highlight the critical role of internal motivations and attitudes, while external contexts and sociodemographic factors also play pivotal roles in shaping behaviors. The importance of perceived freedom and social influences is evident in driving pro-environmental actions, as seen in recycling and upcycling behaviors. Additionally, the incorporation of extended TPB models, including factors like altruism, environmental concern, and moral norms, further enriches our understanding of sustainable consumption. Despite variations in findings, the overarching theme emphasizes that fostering sustainable behaviors requires a multifaceted approach, integrating individual motivations, social norms, policy interventions, and educational efforts. As consumer awareness and environmental concerns grow, especially among younger and more educated demographics, targeted strategies to enhance sustainable consumption will become increasingly vital in addressing global environmental challenges.

3.2.1.2. Self Determination Theory. Self-Determination Theory (SDT) suggests that people can become self-determined when their needs for competence, relatedness, and autonomy are fulfilled [76,77]. SDT proposes that people are active organisms with evolved tendencies toward growth, mastering challenges, and integrating new experiences into a coherent sense of self. These natural developmental tendencies require ongoing social nutrients and support. As such SDT facilitates the examination of SCB by focusing on the role of motivations such as the need for autonomy, relatedness, competence, perception of value, emotional and attentional processes, etc. on the consumption behavior [78,79]. Self-Determination Theory (SDT) has faced criticism for several reasons. One key critique is that it places too much emphasis on intrinsic motivation, potentially overlooking the significant role of extrinsic factors such as rewards and incentives, which are crucial in many real-world contexts. Additionally, the theory's structure, composed of six mini-theories, makes it comprehensive but also complex and challenging to apply consistently across different scenarios. Measurement issues further complicate its application, as assessing basic psychological needs and distinguishing between different types of motivation can be subjective and inconsistent. Critics also highlight that SDT focuses heavily on the needs for autonomy and competence, sometimes at the expense of relatedness, which is especially important in social contexts and among adolescents [80]. This has led to concerns that the theory does not adequately account for individual differences in psychological needs, particularly during different developmental stages. Finally, there is ongoing debate among scholars about whether these psychological needs are innate or acquired through experience, adding another layer of complexity to the theory [81].

Abdulrazak and Quoquab [82], delved into the motivations driving sustainable consumption among Malaysian consumers, employing the SDT as its theoretical framework. Through qualitative interviews with 10 participants engaged in sustainable practices such as purchasing organic products and recycling, it was revealed that consumers are primarily extrinsically motivated by their psychological need for relatedness. This intrinsic desire to connect and care for others in their community underscores the significance of communal connections in fostering sustainable behaviors. Similarly in China, it was found that consumers' autonomy, affiliation, and control needs significantly influence material possession love, particularly regarding durable products like personal computers and cars, subsequently impacting sustainable consumption behaviors [36]. Notably, it was found that materialism values moderate the effects of autonomy and control needs on material possession love, underscoring the importance of emotional

attachments in driving sustainable consumption behaviors. Furthermore, research on luxury fashion rental by Ruan et al. [83], elucidated various motivations driving consumer engagement in this form of collaborative consumption. Applying SDT, they identified intrinsic motivations such as hedonic benefits, uniqueness, and sustainability, alongside extrinsic motivations including economic benefits and social norms. Deviating from focusing on a specific avenue of SCB, Minton et al. [84], attempted to investigate the correlation between religion and sustainable behaviors among South Korean and US consumers, revealing significant insights into the role of religious values in shaping consumption patterns. The study found that religious affiliation and the intensity of religious beliefs significantly impact SCB. Leveraging religious values, particularly among highly religious individuals, thus emerges as a potential strategy for promoting sustainable consumption practices.

3.2.1.3. Value-Belief-Norm Theory. The Value-Belief-Norm (VBN) Theory explains the influence of human values on behavior, particularly in an environmental context. It specifies that there are three types of value orientations, notably egoistic, altruistic, and biospheric value orientations, which determine pro-environmental behavior [85]. It proposes a causal chain between values, beliefs, norms and behaviors thus explaining the factors that influence sustainable consumption behavior across various contexts.

Research among Indian millennials utilizing the VBN framework revealed distinct categories of consumers based on their consumption patterns, emphasizing the need to enhance awareness regarding the comprehensive nature of sustainable development [86]. Factors such as city size, age, and gender influence awareness and behavior, highlighting demographic variations in sustainable consumption practices. Similarly, subjective norms were found to exert significant influence over personal norms, emphasizing the role of social pressure in driving computer purchase behavior among Malaysian consumers. Furthermore, biospheric and altruistic values emerged as key drivers, suggesting that consumers' values shape their attitudes and behaviors toward sustainability [87]. The psychological drivers behind SCB across three product categories: mobile phones, food, and fashion were explored, by Betzler et al. [35], revealing value-based, emotional, and rational factors as significant predictors. Furthermore, problem awareness was found to play a crucial role, particularly in food consumption, underscoring the importance of addressing emotional, value-based, and rational factors in promoting sustainable consumption behavior.

Afridi et al. [88]., investigated the influence of generativity, defined as concern for future generations, on green purchasing behavior using data from 416 university students in Pakistan. Drawing from moral norm-activation theory, value-belief-norm theory, and the theory of planned behavior to develop and test hypotheses the findings indicate that generative consumers are more inclined towards green purchasing behavior, particularly when they exhibit high man-nature orientation and perceived behavioral control.

The Value-Belief-Norm (VBN) Theory, while providing a comprehensive framework for understanding pro-environmental behavior through the interaction of values, beliefs, and norms, faces several criticisms. One major critique is its cultural limitation, as the theory's focus on individual values and beliefs may not be universally applicable, particularly in collectivist cultures where community and social norms are more influential [89]. Additionally, the theory is criticized for overemphasizing personal norms, potentially overlooking the significant impact of external factors like social norms, economic incentives, and structural barriers [90]. This could limit its practical application in diverse real-world contexts. Moreover, the measurement of values, beliefs, and norms often relies on subjective self-reported data, which can introduce biases and inconsistencies [91]. Finally, the theory's assumption of a static relationship between these constructs fails to account for the dynamic nature of social, economic, and environmental

changes that can influence behavior over time.

3.2.1.4. Theory of Reasoned Action. The Theory of Reasoned Action (TRA) aims at explaining the relationship between attitudes and behaviors within human action by predicting how individuals will behave based on their pre-existing attitudes and behavioral intentions. The TRA proposes that an individual's decision to engage in a particular behavior is based on the outcomes the individual expects will come as a result of performing the behavior. The theory identifies four main terms: beliefs, attitudes, subjective norms, and intention [92,93]. TRA is valuable in SCB for its predictive power, systematically forecasting behavior based on attitudes and subjective norms and aids in understanding the factors influencing consumers' decisions towards sustainable consumption, emphasizing the need for explicit behavioral control variables in research. As noted by Han [94], and Vergura et al. [95], TRA's effectiveness spans diverse consumer groups, offering a framework to design interventions that promote sustainable consumption patterns. However, the Theory of Reasoned Action (TRA) has faced several criticisms over the years, particularly regarding its assumptions and applicability in real-world contexts. One major criticism is its overemphasis on rationality, as the theory assumes that individuals always act in a rational and deliberate manner, neglecting the influence of emotions, habits, and unconscious behaviors [96]. Additionally, TRA has a limited scope because it does not consider behaviors that require specific skills, knowledge, or cooperation from others, making it less applicable in complex scenarios [97]. The theory also overlooks external factors like environmental constraints, economic conditions, and social pressures, focusing mainly on internal factors such as attitudes and subjective norms [98]. Furthermore, TRA is criticized for its static nature, as it assumes that attitudes and subjective norms are stable over time, despite evidence showing that these factors can change with new information, experiences, or social influences.

The exploration of SCB across various cultural contexts provides valuable insights into the determinants and patterns of environmentally conscious consumerism. Employing a revised Theory of Reasoned Action (TRA) model to understand the factors influencing consumers' behaviors in Korea and Japan, Lim et al. [99]., researchers identified that despite high awareness of sustainable consumption, the actual participation in such practices remains relatively low. Descriptive norms emerged as a significant predictor of behavior, highlighting the influence of perceived normality and self-identity. In another vein Minton et al. [100]., investigated subjective norms of sustainable consumption across France, Japan, and the US, utilizing the cultural dimension of pragmatism to understand how consumers from diverse cultures perceive and engage in sustainable behaviors. It was found that sustainable attitudes and normative behaviors vary across countries with different levels of pragmatism, emphasizing the importance of context-specific modeling of subjective norms. Deviating from cross-culture analysis, Kang and Moreno [101] endeavored to construct a predictive framework for consumers' environmentally sustainable product (ESP), specifically environmentally sustainable apparel product purchases by integrating the value-belief-norm (VBN) theory with the theory of reasoned action (TRA) and surveying undergraduate students. The resultant framework encompasses various predictors of ESP purchases, including environmental values, responsibility, personal and social norms, attitudes, and risk aversion [101]. On a similar footing attitude, environmental concern, word of mouth, sustainable label awareness, and subjective norms were identified as significant determinants of purchase intention and behavior regarding the purchase of recycled shoes [102]. These drivers were identified by applying both the TRA and TPB among Indian consumers, presenting and insight into factors influencing consumers' intentions of buying recycled shoes.

3.2.1.5. Goal-Framing Theory. The Goal-Framing Theory posits that individuals' goals act as cognitive "frames," shaping the way they

process information and subsequently act upon it. It delineates three distinct types of goals: Hedonic, Gain, and Normative goal frames [103]. These goal frames hold the potential to exert a significant influence on consumers' sustainable behaviors. Consequently, several scholarly endeavors have employed the Goal-Framing Theory to scrutinize consumer consumption behaviors [104].

Gain and normative motives, which are distinct goals of the Goal-Framing Theory were determined to be pivotal determinants influencing the consumers opting for eco-friendly packaging in online retail settings in Germany, whereas hedonic motives were found to exert a comparatively lesser impact [105]. The results were derived from the data collected from 1491 consumers and the study was limited to online clothing retail. Another study by Khan et al. [106], however, explored consumer motivations for embracing organic food in Pakistan, by surveying 488 respondents, and found that hedonic motivation was the most potent predictor of purchase intentions, closely followed by gain motivation. Furthermore, the study reveals that normative motivation exerts its influence on intentions through both gain and hedonic motivations. Both of these studies have limited sampling as well as limited focus on specific segments of products. Unlike the previous studies, researchers from China; see for instance Tang et al. [107], attempted to explain the interplay of hedonic, gain, and normative motives on sustainable consumption patterns in China, leveraging the goal-framing theory as its conceptual underpinning. The findings of this study illuminate that hedonic and normative motives positively correlate with green consumer behavior, whereas gain motives manifest a negative impact. Furthermore, the study identifies perceived risk and lifestyle as partial mediators in these relationships. The research concludes with recommendations advocating for behavioral change strategies aimed at bolstering hedonic and normative motives, thereby fostering a green lifestyle among Chinese consumers. Despite its contributions, the study acknowledges certain limitations, such as the limited number of independent variables considered.

It is important to note that the Goal Framing Theory tends to oversimplify human motivation into three broad categories, which fails to capture the complexity and fluidity of real-world decision-making where multiple and overlapping goals exist. Additionally, the theory is criticized for its reliance on self-reported data, which can be biased, pointing to a need for more experimental research observing actual behavior in real-world settings. The theory also tends to neglect situational factors, such as resource availability and social pressures, that can significantly influence behavior. Moreover, its development in predominantly Western contexts raises concerns about cultural bias, questioning its applicability in diverse cultural settings where goal prioritization may differ. Lastly, the theory's focus on conscious goal-setting and decision-making overlooks the role of unconscious processes, limiting its explanatory power given that many behaviors are influenced by factors beyond conscious awareness [108].

3.2.1.6. Social Cognitive Theory. Social Cognitive Theory (SCT) describes how individuals actively influence and are influenced by their environment. The key components of the theory are Observational learning, Modelling, Self-Efficacy and Reciprocal Determinism [109, 110]. The Social Cognitive Theory (SCT) emphasis heavily on cognitive processes, particularly self-efficacy, which may lead to an under-appreciation of other crucial factors, such as emotions and unconscious motives. Additionally, SCT has been critiqued for its insufficient consideration of biological and genetic influences on behavior. This lack of attention to biological factors can diminish the theory's explanatory power, especially in contexts where these factors play a significant role [111]. Within the realm of SCB, the theory is utilized by focusing on the interactive nature of personal, environmental, and behavioral factors of consumption [31]. To further underscore how SCT furnishes a framework for grasping the inherent complexity of these interactions, Phipps et al. [31], utilized two illustrative cases—namely, the sharing of toy

libraries in New Zealand and water conservation initiatives in Australia—to elucidate the interplay among environmental, behavioral, and personal facets of consumption. Furthermore, they synthesized findings from various other works to validate the utilization of SCT to investigate the determinants shaping pro-environmental and SCB across varied cultural settings.

Among Generation Y consumers, in Vietnam, Nguyen et al. [112], found that various types of environmental information, specifically problem-, action- and effectiveness-related information, activate pro-environmental personal norms (PNs), subsequently shaping behavior. Importantly, the influence of this information on norms and, in turn, personal norms is contingent upon the consumers' egoistic values. This underscores the importance of congruence between information and values in media campaigns. Specifically, individuals' values related to money and possessions, authority and social power, as well as effectiveness, play a crucial role in determining the effects of knowledge on actionable behaviors and effectiveness. Whereas in Hong Kong, among young educated consumers, supportive behaviors toward environmental organizations, attitudes toward sustainable development efforts, parental influence, recycling behavior, peer influence, and environmental concern were identified as 6 key predictors, in descending order of influence, of sustainable consumption behavior [113]. Among the top three predictors identified, the predominant flow of influence was observed to emanate from supportive actions towards environmental organizations, subsequently leading to parental influence, thereby fostering attitudes towards sustainable development initiatives.

3.2.1.7. Protection Motivation Theory. Protection Motivation Theory (PMT) explains how people evaluate threats and decide whether or not to engage in protective behavior. The theory proposes that people base their actions on two primary factors, i.e. Threat appraisal and Coping appraisal. As such, PMT is used to understand how individuals perceive the environmental threats associated with unsustainable consumption and their ability to mitigate these threats through their consumption behavior [114]. PMT overemphasizes on fear appeals, which can sometimes trigger defensive reactions, such as denial or avoidance, instead of promoting constructive protective actions [115]. Additionally, PMT's focus on cognitive processes may neglect the influence of emotions and social factors, potentially limiting its effectiveness in complex social contexts [116]. Furthermore, the theory encounters measurement challenges, as constructs like perceived severity, vulnerability, and self-efficacy are often subjective and prone to biases, particularly when relying on self-reported data [117].

COVID-19 was one of the recent global threats, and it brought about significant changes in the behavior of the general mass. Tchetchik et al. [118], employed PMT to investigate the impacts of the COVID-19 pandemic on pro-environmental beliefs and behavior, particularly concerning recycling and consumption reduction. Conducted through a web-based survey during the national lockdown in Israel, it was found that threat and coping appraisal drove changes in behavior toward pro-environmental practices, with individuals exhibiting low-intensity habits showing a greater likelihood of increasing pro-environmental behavior. Factors such as perceived knowledge about the link between climate change and COVID-19, self-resilient attitudes, and anthropocentric beliefs were identified as influencers of behavioral change. It highlighted how threat and coping appraisals, along with individual beliefs and attitudes, affect behavioral changes towards sustainability practices, particularly during the COVID-19 pandemic. Notably, individuals with lower-intensity habits showed a greater inclination toward increasing pro-environmental behavior.

3.2.1.8. Social Practice Theory. According to Social Practice Theory (SPT), what is perceived and experienced as culture is the result of the dynamic interaction of internal and external structures, individual

performance (practice), and strategy. Social actors are not just shaped by their social world, they in turn shape it as well.

As noted by Schatzki [119], practices are organized entities that unfold over time and are spread out across different locations, forming interconnected actions and expressions. Within the realm of sustainable consumption, it challenges the notion of private consumption as solely a matter of personal choice, highlighting its complex interdependencies influenced by 'systems of provision' and varying symbolic meanings across social contexts [120]. It offers alternative strategies for reducing resource consumption by examining how norms, values, and material constraints evolve with consumption practices [121]. Additionally, SPT provides insights into promoting sustainable lifestyles through political measures.

As such Keller et al. [30], note that SPT offers an alternative approach to individual behavior change models, emphasizing the routinized nature of social practices and the importance of socio-technical systems, underscoring the necessity for policymakers and program designers to target social practices, advocating for transformations in material objects, socio-cultural meanings, and skills rather than solely individual behaviors. Critics argue that SPT's abstract nature and its resistance to simplification make it challenging to translate into concrete, actionable policies. Additionally, SPT tends to underplay the role of power and social inequalities in shaping practices, which are crucial considerations in sustainability efforts. Despite these limitations, SPT's holistic approach underscores the importance of addressing the interconnectedness of practices and offers a nuanced understanding of behavior change that goes beyond the traditional focus on individual choice. Recommendations for applying SPT in policy-making, stress the significance of reflexivity, experimentation, and coalition-building among 'distributed interveners,' with an emphasis on both domestic and workplace practices. The role of materiality and infrastructure in shaping practices is highlighted, suggesting that interventions should encompass these elements to facilitate and support change across various practices. Conclusively, Keller et al. [30], underscores that sustainable consumption policy necessitates a collaborative, distributed approach involving multiple stakeholders rather than relying on a single agency or large-scale shifts, advocating for coordinated efforts across the board.

3.2.2. Models

Models are specific, concrete applications of broader theories, focusing on particular aspects to provide localized understanding of a phenomenon. Unlike theories, which are broader and more abstract, models offer precise illustrations of the mechanisms underlying a process by breaking down these processes into components, their properties, and their interactions over time. They are compared to geographical maps, which simplify reality to be useful; similarly, models simplify complex realities to enhance understanding and practical application [45]. In our enquiry we found three models, discussed below, that have been utilized by researchers in the field of SCB.

3.2.2.9. Diffusion of Innovation Theory. The Diffusion of Innovations Theory posits a framework elucidating the mechanisms by which novel technological and other advancements permeate societies and cultures, progressing from initial introduction to widespread adoption. This theory delineates the trajectory of a novel concept as it traverses through distinct stages of adoption by various participants or early adopters. Consequently, it offers valuable insights into the examination of sustainable consumption behavior, elucidating the mechanisms by which innovative sustainable products are embraced by the populace [119]. However, Roger [122], has himself provided criticism of this theory primarily concerned with its application and assumptions. One notable critique is its pro-innovation bias, which assumes that all innovations are inherently beneficial and should be adopted, overlooking the possibility that some innovations may have detrimental effects or be

unsuitable for certain contexts. The theory is also criticized for its individual-blame bias, as it tends to place the onus on individuals for not adopting innovations, while neglecting structural and contextual barriers that may impede adoption. Additionally, the reliance on retrospective data introduces potential recall problems, leading to biased or inaccurate findings. The theory also inadequately addresses how innovations might exacerbate social inequalities. Geoff Kaine's research highlights further issues, such as the overestimation of potential adopters and the misinterpretation of innovativeness as a personal trait rather than context-specific [123]. Nonetheless, despite criticisms the validity of the model hasn't been disproven. In the realm of SCB, three notable studies have employed the Diffusion of Innovations Theory as a foundational framework.

Li et al. [124], discovered social innovativeness and hedonist innovativeness as pivotal determinants of organic food adoption behavior among Chinese consumers. Noteworthy, consumer knowledge emerged as a primary mediating variable, underscoring the cognitive processes intrinsic to adoption decisions. Building on this discourse, Chuah et al. [125], scrutinized the factors influencing the adoption of the sharing economy (SE) within the business-to-business (B2B) context in China. Employing PLS-SEM and fsQCA methodologies, the research delineates motivations, constraints, and top management support as fundamental constructs shaping adoption intentions. Also, reciprocity benefits and perceived risks emerged as salient factors, carrying managerial implications for the formulation of effective business strategies. In a related vein, through a cross-sectional field survey coupled with structural equation modeling, factors like relative advantage, compatibility, and observability were discerned as significant influencers of adoption intentions concerning the adoption of solar innovations in Indian households [126]. Nonetheless, these studies recognize certain limitations, including constraints associated with sample size and the cross-sectional nature of the research design. This underscores the necessity for future research to employ more representative samples, adopt longitudinal designs, and embark on broader comparative studies spanning diverse countries and cultural contexts.

3.2.2.10. Comprehensive Action Determination Model. The Comprehensive Action Determination Model (CADM) aims to provide a broader understanding of ecological behavior by integrating the main assumptions of several existing theories, including the Theory of Planned Behaviour (TPB), the Norm-Activation Model (NAM), the theoretical concept of habit, and the Ispative Theory of Behavior [127]. The Comprehensive Action Determination Model (CADM) has been recognized for its integrative approach, combining elements from various theories like the Theory of Planned Behavior (TPB) and the Norm-Activation Model (NAM) to offer a broad understanding of behavior. It has also demonstrated empirical support by explaining a significant amount of variance in ecological behaviors. However, CADM faces criticism for its complexity, which can make it difficult to apply practically. Additionally, its context-specific nature raises concerns about its generalizability across different behaviors and settings [127].

Joanes et al. [128], utilized the framework of CADM, in their work, to understand the psychological drivers for reducing personal clothing consumption. Wherein personal norms and social norms emerged as the strongest predictors of intentions across Germany, Poland, Sweden, the United States, and the United Kingdom. However, the relationship between intentions and actual purchase behavior remains weak, with past behavior and impulsive purchase tendencies exerting stronger effects. This intention-behavior gap underscores the complexity of clothing consumption, indicating the role of automatic or non-intentional processes. The study emphasizes the importance of tailoring intervention strategies to address different consumer segments effectively. The clothing consumption reduction is framed as a moral issue influenced by normative factors. Future research directions outlined in both studies include exploring the effectiveness of legislation and regulation,

comparing findings across different disposable products, investigating the long-term usage of reusable alternatives, and testing the applicability of the CADM in diverse settings, countries, and cultures. Additionally, avenues for exploring contextual factors, personality variables, and alternative pathways for sustainable behavior development in emerging countries are suggested.

3.2.2.11. Transtheoretical Model. Transtheoretical Model (TTM) posits that individuals move through six stages of change: Precontemplation, Contemplation, Preparation (Determination), Action, Maintenance, and Termination [129]. As such TTM can be utilized to understand how consumers' behavior progresses from the pre-contemplation stage where consumers may not be aware of the impact of their consumption habits on sustainability, to, the maintenance stage where the consumers can sustain their sustainable consumption behavior.

Assuming meat consumption to be unsustainable, Arnaudova et al. [130], investigated Swiss students' meat consumption behavior using an adapted transtheoretical model of change (TTM). It categorized students into four segments based on their stage of change regarding meat consumption: passive, curious, awoken, and active consumers. Analysis of these segments revealed differences in current diet, attitudes, knowledge, acceptance of meat alternatives, and willingness to reduce meat intake. Thus while attempting to promote SCB, such insights on varying stages of consumption behavior can facilitate practical interventions like education, awareness, nudging, and policy measures to promote behavior change.

However it should be noted that TTM faces several criticisms. Critics argue that the stages of change proposed by the model are not always clearly distinct and that individuals may not progress through them in a linear manner. Additionally, TTM is criticized for its strong focus on individual behavior change, which may overlook the influence of broader social and environmental factors [131]. Furthermore, the model's predictive power has been questioned, with some studies finding that TTM does not consistently predict behavior change, raising concerns about its overall effectiveness [132].

3.2.3. Subjects

A subject refers to the specific area of study or topic under investigation. In the context of studying human behavior, it involves identifying the methods and areas researchers focus on to understand, predict, and explain actions, thoughts, and emotions. This review has identified 3 such subjects namely Behavioral Economics, Community-Based Social Marketing (CBSM), and Social Marketing that have been utilized to explore how people make decisions and how their behaviors can be influenced within the context of SCB.

3.2.3.12. Social marketing. Social marketing focuses on influencing behavior with the primary goal of achieving the "common good". Influencing Behavior, Promoting Quality of Life, Creating Awareness, Encouraging Mindful Consumption, and Reforming Marketing Practices are a few ways to utilize social marketing to promote/influence SCB [133,134]. Social marketing as a tool can be applied across various fields and allows for targeted intervention however ethical concerns are raised over its potentially manipulative nature, as it employs persuasive techniques that may not always align with ethical standards. Additionally, social marketing campaigns often lack cultural sensitivity, which can result in ineffective or even counterproductive outcomes. Moreover, despite its potential, social marketing frequently struggles to reach and engage the most vulnerable populations, limiting its overall impact [135,136]. In our understanding, social marketing does not necessarily provide a framework for evaluation of sustainable consumption behavior but by utilizing this strategy, one can discern various factors that can influence consumption behavior. For example, social marketing initiatives targeting water consumption behavior provide valuable insights, particularly in drought-affected regions like South-Eastern

Australia. Grounded in the theory of planned behavior (TPB), these initiatives underscore the importance of considering contextual factors, timing, and communication strategies to effectively influence consumer behaviors toward sustainable water use [137]. Furthermore, it was found that social marketing is effective in promoting sustainable water consumption in the absence of a monetary mediator [138].

Furthering the importance of social marketing for influencing consumption behavior Mulcahy et al. [139], assessed the effect of gamified apps designed for sustainable energy consumption, the impact of game design elements, including points, feedback, characters, and challenges on customers' perceived enjoyment, knowledge, behavioral intentions, and actual energy-saving behaviors. The findings indicated significant effects on energy-saving behaviors, underscoring the effectiveness of social marketing in influencing consumption behavior via gamified apps. Lowe et al. [140], explored the relation of place identity with sustainable consumption in Kuala Lumpur, Malaysia. The results indicate that social acceptance, perception of familiarity, and attachment significantly contribute to commitment to place, subsequently fostering positive attitudes and behaviors toward sustainable consumption. Consequently, it was proposed that social marketing strategies can focus on augmenting place identity and pro-environmental attitudes, suggesting interventions such as instilling meaning in the environment, preserving distinctive place characteristics, and creating opportunities for social interaction.

Similarly, mass media, one of the common tools for social marketing, was found to be crucial in shaping social norms and boosting demand for sustainable products, such as hybrid vehicles, thereby driving private utility and social status associated with sustainable consumption [141]. Additionally, social media marketing proves instrumental in fostering consumer engagement in sustainable consumption practices, emphasizing influencer marketing, meaningful content, and brand relationship quality.

3.2.3.13. Behavioral economics. Behavioral economics merges insights from psychology and economics to examine the decision-making behaviors of individuals and institutions. Unlike classical economic theory, behavioral economics seeks to understand the boundaries of rationality for economic agents by grasping consumer attitudes toward sustainability, considering factors like pricing, perceived impact, and social influences. Furthermore, it identifies barriers such as high costs and incentives like a positive brand image [142]. As argued by Gsottbauer and van den Bergh [32], bounded rationality and other-regarding preferences can explain many empirical phenomena and behavioral anomalies that are otherwise puzzling or ignored by standard theory. Behavioral economics is praised for offering more realistic models of human behavior, challenging the traditional economic assumption of rational decision-making. It has significantly influenced public policy through the concept of "nudging," which seeks to improve decision-making without limiting choices. However, critics argue that behavioral economics overemphasizes human irrationality, potentially neglecting rational aspects of decision-making. Additionally, the use of nudges raises ethical concerns regarding manipulation and autonomy [143]. Furthermore, some critics contend that behavioral economics has a limited scope, focusing primarily on individual behavior while overlooking broader social and structural factors. Nonetheless Behavirol Economics and especially the concept of "nudging" has been utilized by researchers within the realm of SCB. The findings of Vergue et al. [142] were corroborated by Terlau and Hirsch [144], who investigated the factors influencing sustainable consumption and the attitude-behavior gap in Denmark. The study identified several barriers to sustainable consumption, including higher prices, limited availability, and habitual behavior. Furthermore, proactive state measures and collaborative efforts were found to be successful in boosting organic food consumption, setting an example for fostering sustainable consumption.

Antonides [145] noted in his work that behavioral economics also

demonstrates how consumer behavior toward sustainability can profoundly be influenced by leveraging the concept of nudging. Nudging also involves various forms of interventions such as dynamic, static, injunctive, etc. termed norm-based nudging. Loschelder et al. [146], found dynamic interventions to be more effective than static, injunctive, static+injunctive, and no-norm interventions for nudging the customers to adopt sustainable alternatives to disposable go-to cups. Anticipation of future conformity and perceived behavior importance were reported to mediate the effectiveness of dynamic norms, underscoring their potential to shape sustainable consumption behaviors.

Self-nudging is a derivative of nudging which encompasses the deliberate and conscious change of one's choice architecture to align one's behaviour with one's intentions. The concept of self-nudging for promotion of SCB was explored by Thomas et al. [147], in Denmark using an Organic box scheme. It was revealed that consumers with a strong pro-environmental mindset used the organic box scheme as a self-nudging strategy to overcome their intention-behavior gap and to simplify their lives.

As such nudging shows promise in promoting sustainable consumption across various domains, including energy, food, and transportation. While effective in influencing non-deliberative behaviors, the legitimacy and long-term impacts of nudges raise ethical concerns [33].

3.2.3.14. Community-based social marketing. Community-Based Social Marketing (CBSM) aims to provide sustainable and healthy behavior change programs across the globe by understanding and addressing the factors that influence behavior [148]. Community-Based Social Marketing (CBSM) is praised for its strengths, including a strong emphasis on community engagement, which fosters more sustainable and widely accepted behavior changes, and its targeted focus on specific behaviors, potentially leading to more effective interventions. However, CBSM faces criticisms such as measurement challenges due to the complexity and variability of community settings, limited reach in effectively engaging the most vulnerable populations, and the resource-intensive nature of its implementation, requiring significant time and effort to successfully involve communities [149]. In field of SCB, CBSM aids to the examination of sustainable consumption behavior by providing a framework to understand why people behave the way they do and how to encourage them to make more sustainable choices [150].

Vantamay [151] evaluated the effectiveness of a CBSM campaign that was aimed at promoting SCB among Thai youth. The campaign was aimed at promoting the three processes of saving, selecting, and sharing and the evaluation of this campaign was performed using the Theory of Planned Behavior between the experimental group and the control group before and after the intervention. The intervention consisted of various tools of behavior change, such as commitment, social norms, social diffusion, prompt, convenience, incentives, and communication, that were implemented in 15 weeks with a small class of university students in Bangkok. The findings indicate that the CBSM campaign was successful in increasing all five indicators (LIST) significantly in the experimental group compared to the control group, concluding that, tools of behavior change (commitment, social norms, social diffusion, prompt, convenience, incentives, and communication) targeted via a CBSM campaign can be effective in promoting sustainable consumption behavior.

Research Objective 2: To establish and examine the inherent characteristics of these theories and models, within the context of sustainable consumption behavior in the unique ways in which they have been utilized in explaining the rationale underpinning such behavior.

The paper aims to achieve this objective by presenting the context and various variables used to evaluate different aspects of sustainable consumption behavior across the studies in a tabular format (Table 6). The column titled "Unique Characteristics" systematically catalogs the variables identified in each study, offering a comprehensive overview that includes independent, control, and dependent variables. In

addition, it attempts to classify the moderating and mediating variables in those studies where they are explicitly stated. This detailed compilation serves as a valuable resource for researchers, providing a concise summary of the diverse variables utilized across the body of literature. Given the significant variation in theoretical frameworks employed by the studies under review, conducting a detailed critique of the relationships being measured in each paper would be a complex and expansive task. As no two studies employ identical theoretical models, this column instead aims to consolidate and organize the variables, facilitating a broader understanding of the patterns and trends within the field without delving into the intricacies of each relationship examined. This approach not only highlights the multidimensional nature of the research but also underscores the challenge of comparing findings across studies that are rooted in different theoretical perspectives. For example, the context of the work by Ruan et al. [83], the focus lies on investigating the drivers behind consumer behavior regarding luxury fashion rental, which serves as the study's context. Employing the "Self-Determination Theory," the study seeks to achieve its objective by examining the relationship between various factors such as Economic benefits, Social norms, Smart shopping, Ego defense, Hedonic benefits, Uniqueness, and Sustainability, with consumer motivation. The variables selected in each of the studies are termed as unique characteristics as these variables form the basis for the direction of the studies, which is further discussed in Section 4. Emphasizing the importance of capturing the intricacies of the context and the utilization of these variables, the review encourages readers to refer to the specific study for a more comprehensive understanding of the research.

4. Discussion and implications of the study

The exploration of sustainable behavior within the literature is expansive, reflecting the multifaceted nature of this field, as underscored in the preceding sections. Each study contributes its own unique perspective, shaped by a variety of factors including the theoretical frameworks employed, the specific contexts under examination, the geographical locales in which the research is conducted, the demographic composition of the sampled population, and the methodologies utilized for data analysis. What emerges from these diverse investigations is a nuanced understanding of sustainable consumption that is contingent upon the interplay of these various dimensions. Context, for instance, exerts a profound influence on the interpretation of findings, with the specific socio-cultural, economic, and environmental circumstances shaping consumer behaviors in distinctive ways. Similarly, the geographical location of a study can introduce significant variations, as regional disparities in infrastructure, resource availability, policy frameworks, and societal norms can profoundly influence consumption patterns and attitudes. Moreover, the choice of theoretical framework or model serves as a critical lens through which researchers interpret and analyze data. Different theoretical perspectives offer unique insights into the underlying drivers of sustainable consumption, whether focusing on individual decision-making processes, social influences, or broader systemic factors. Consequently, studies that employ disparate theoretical approaches may arrive at divergent conclusions, even when examining similar contexts or geographic locations. For instance, the works of Li et al., [124] and Chuah et al., [125] both grounded in the Diffusion of Innovation theory and conducted within China, exemplify how variations in contextual factors can lead to nuanced findings. Despite their shared theoretical foundation, differences in the specific socio-economic conditions, cultural norms, or policy environments of the study sites can result in distinct outcomes, highlighting the importance of considering context in the interpretation of results.

Similarly, the work by Lim et al., [99] demonstrates that even when researchers employ the same theoretical framework, such as the Theory of Reasoned Action, and operate within similar contexts, geographical nuances including demographic data such as age, gender, income level,

Table 6

Summary of context and unique characteristics of the papers.

Framework	Context	Country	Unique characteristics	Cite
THEORIES				
Goal Framing theory	Choosing eco-friendly packaging in online retail	Germany	Gain goals [Reliability, Willingness to pay] Normative goals [Subjective norms, Environmental concerns] Hedonic goals [Hedonic motivation, Personal Innovativeness] Control variables (Age, Gender, Income, Purchase frequency)	[105]
	Adoption of Organic food	Pakistan	Gain Motivations, Normative Motivations, Hedonic Motivations, Knowledge, Perceived price.	[106]
	Factors influencing green consumer behavior	China	Gain goals, Normative goals, Hedonic goals, Perceived risks, Lifestyle	[107]
Protection motivation theory	The effect of COVID-19 (Threat and Coping) on pro-environmental beliefs and behavior in case of recycling and consumption	Israel	Threat appraisal [Severity, Exposure, Vulnerability] Coping appraisal [Self-efficacy, collective response efficacy, maladaptive belief] Information covid-19 and climate change. Protection motivation. Past behavioral habits.	[118]
Self Determination theory	Motivations for sustainable consumption Influence of material possession, PCs, and Cars on sustainable consumption behavior	Malaysia China	NA Need for autonomy, Need for affiliation, Need for control, Materialism, Material possession [Passion, Intimacy, Commitment]	[82] [36]
	Luxury fashion rental	USA	Extrinsic Motivations [Economic benefits, Social norms, Smart shopping, Ego defense] Intrinsic Motivations [Hedonic benefits, Uniqueness, and Sustainability]	[83]
	Correlation between religion and sustainable behaviors	South Korea, USA	Religious affiliation, religiosity, country.	[84]
Social cognitive theory	Impact of environmental information	Vietnam	Environmental problem-related information exposure, Action-related information exposure, Effectiveness-related information exposure, Mediating variables [Money-based egoistic value, Authority-based egoistic value], Moderating variable [Pro-environmental personal norms]	[112]
	Predictors of sustainable consumption	Hong Kong	Supportive Behaviors for Environmental Organization, Attitude toward Sustainable Development Efforts, Parental Influence.	[113]
	Discussion of Social Cognitive Theory using two case studies: Toy Sharing, Household water conservation	New Zealand, Australia	NA	[152]
Social Practise Theory Value-Belief-Norm Theory	Advocation for SPT Investigation of sustainable consumer behavior	NA India	NA The consumption behavior of Indian behavior is categorized by utilizing questionnaires based on Values (Altruistic, Traditional, Self Interest, Openness to change), Cultural bias (Hierarchy, Egalitarianism, Individualism, Fatalism), Awareness of consequences, Personal normative beliefs, Consumer behaviour, Willingness to sacrifice, Environmental citizenship Attitudes towards green-computer purchase behavior,	[30] [86]
	Green computer purchase behavior	Malaysia	Subj ective norms, Perceived behavioral control, Egoistic, Altruistic, Biospheric, Awareness of consequences—egoistic, Awareness of consequences—altruistic, Awareness of consequences—biospheric, Ascription of responsibility, Personal norms	[87]
	Sustainable consumption behavior of mobile phones, food, and fashion	Germany	Problem awareness, Guilt, Pride, Attitude, subjective norm, perceived behavioral control, Awareness of consequences, Ascription of responsibility, Personal norm, Intention.	[35]
	Generativity and consumer green purchasing behavior	Pakistan	Man-Nature Orientation, Generativity, Perceived Behavioral Control.	[88]
Theory of Reasoned Action	Status of sustainable consumption in Korea and Japan. As well as identification of variables driving SCB.	Korea, Japan	Demographic factors (age, marital status, gender, education level, income), consumer attitude, pro-environmental self-identity, awareness, and the descriptive norm	[99]
	Subjective norms of sustainable consumption	France, Japan, USA	Subjective norms related to pragmatism in a country, Attitudes Dependent Variables [Normative Sustainable Behaviors, Self-Enhancing Sustainable Behaviors]	[100]
	Predictive framework for consumers' environmentally sustainable product (ESP) purchases	USA	Environmental Value, Environmental Responsibility, Personal Norms, Social Norms, Attitudes, Risk Aversion (as a moderator), Dependent Variable [Current ESP purchases, ESP purchase intentions]	[101]
	Purchase of recycled shoes	India	Perceived Environmental Knowledge, Financial attitude, Shoe choice motive, Subjective norm, Sustainable awareness, Attitude, Word of mouth, Environment consciousness, Purchase Intention, Sustainable label awareness, Shoe surplus. Personal values [Egoism, Altruism, and Biospheric]	[102]
Theory of Planned Behavior	Analysis of sustainable consumption patterns by integrating a complete spectrum of consumers' personal value orientations.	Poland	Moderating variable [World view] Dependent Variable [Green product purchase intention, Green purchase behaviour, Green product purchase experience]	[72]
	Exploration of the ethical nature of purchasing energy-efficient products	India	Environmental concern, Environmental knowledge, Attitude Towards Products,	[75]

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Table 6 (continued)

Framework	Context	Country	Unique characteristics	Cite
Examination of determinants of consumer intentions and behavior toward e-waste recycling	Brazil		Product knowledge, Confidence, Product availability, Perceived consumer effectiveness, Subjective norm, Behavioral intentions, Priority of Economic development, Government Dependency, and Economic Rationalism. Dependent Variable [Likelihood of Behavior]. Attitude, Subjective norms, Perceived Behavioral Control, Socio-demographic & economic factors, Awareness towards environmental problems, Environmental assessment.	[61]
Determination of factors affecting sustainable consumption behavior	Turkey		Dependent Variable [Behavioral Intention and Behavior] Perceived behavioral control, Attitude, Intention to behavior, Subjective norm, Altruistic values Dependent variable [Sustainable consumption behavior.]	[47]
Examination of antecedents of ecologically conscious consumer behavior model and show the relationships among ecologically conscious consumer behavior, green purchase conspicuous behavior, and green purchase intention	Turkey		Perceived consumer effectiveness, Environmental concern, Altruism, Narcissism, Ecologically conscious consumer behavior, Ecologically conscious consumer behavior, Green purchase intention.	[48]
Determinants of green purchase behavior	Italy		Dependent variable [Green purchase conspicuous behavior.] Environmental concern, Social value, Personal norm, Product unavailability, Skepticism towards eco-labels, Materialism, Innovativeness, Creativity, Green practices, Functional value, Value for money. Control variables [Age, Gender, Education, Income] Dependent variable [Green purchase satisfaction and frequency, Willingness to pay premium price] The moderating effect of Age, Gender, Income, Education, Marital status on the relation between Purchase intention and Purchase behavior.	[73]
Examination of the relationship between purchase intention and purchasing behavior toward environmentally-friendly grocery packaging	United States			[50]
Consumption of the perceived inedible parts of fruits and vegetables	Ireland and Italy		Perceived Health Benefits, Perceived Sustainability Benefit, Perceived Edibility Attitude, Social Norms, Perceived Behavioural Control, Intention. Dependent variable [Stated Behavior]	[56]
Exploration of factors influencing upcycling for UK makers	United Kingdom		Attitude, Social factors (Subjective norms, Personal norms, Role beliefs), and Perceived behavioral control, Perceived habits, Intention, Perceived facilitating conditions. Dependent variable [Behavior]	[69]
Examination of factors influencing plastic recycling at the household level	Finland		Environmental concerns, Social norms, Low behavioral costs, Ease of gaining info, Ease of dealing with waste, Intentions. Dependent variable [Recycling Behavior]	[52]
Investigation of factors that influence the purchase of EEA's by young consumers	South Africa		Control variables [Perceived costs of time and distance] Attitude, Subjective Norms, Perceived Behavioral Control, Moral norms, Environmental concern, Perceived benefits, Informational publicity, Purchase Intention. Dependent variable [Purchase Behavior]	[74]
Examination of factors to promote green food consumption Intention and consumption	China		External and Internal influencing factors, Green food consumption intention, Demographical control variables, Context factors. Dependent variable [Green food consumption behavior]	[54]
Identification of core motivations young women towards and barriers to collaborative consumption of clothing and fashion products	New Zealand		Emotion, pleasure, hedonism, Fitting in and social norms, Expressing individuality and standing out, Social implications.	[63]
Investigation of the influence factors, the influence paths, and the decision-making mechanisms of Chinese consumers'	China		External contexts [Positive and Negative contexts], Subjective norms, Attitude, and Perceived behavioral control. Dependent Variable [Green purchase behavior, Green transportation, and Recycling and resource conservation behavior].	[53]
Examination of determinants of SCB	Thailand		Attitude, Subjective Norms, Perceived Behavioral Control. Dependent Variable [Intention to perform SC and SCB]	[16]
Examination of motivators of SCB among adolescents	China		Education, Sustainable awareness and attitude, Social influence Effectiveness of energy saving and emissions reduction for sustainable products, Differentiation of sustainable products from regular products, understanding, Control variable [Age], Dependent variable [Behavior (Purchasing, Use, Treatment & Disposal)]	[59]
Investigation of factors contributing to millennials' attitude towards online sustainable fashion brands, their intention to purchase and their actual purchasing behavior	Malaysia		Family Environment Beliefs, Peer Pressure, Celebrity Endorsement, Customers' Endorsement, Environmental Concerns of the Fashion Industry, Ethical Beliefs of Sustainable Fashion Brands, Subjective Norm, Perceived Behavioural Control, Attitude towards Online Sustainable Fashion, Purchasing Intention of Sustainable Fashion Brands. Dependent variable [Purchasing Behaviour of Sustainable Fashion Brands]	[64]
Examination of the applicability of an extended version of the theory of planned behavior (TPB) in predicting the purchase behavior (PB) of package-free bath products	Philippines		Environmental Knowledge, Attitude, Subjective Norms, Pro-environmental Self-Identity, Perceived Behavioral Control, Purchase intention. Dependent variable [Purchasing Behaviour]	[51]

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Table 6 (continued)

Framework	Context	Country	Unique characteristics	Cite
	Examination of the mediating role of eco-label-informed purchase for Gen Z consumers in China	China	Eco-label, Product attributes, Perceived consumer effectiveness, Environmental Attitude, Ecological Affection, Environmental Concern. Dependent variable [Green Purchase]	[57]
	Investigation of the effects of social norms and personal autonomy on sustainable consumption behavior	Germany	Conversion factors [Descriptive norms, Infrastructure barriers, Health barriers], Resources [Financial constraints, Time constraints], Attitude, PCB.	[49]
	Investigation of the influence of consumers' environmental concern on both intention and actual consumption behavior to reduce the use of single-use water bottle	Poland	Dependent variable (Intention/ Behavior choice) Environmental concern, Attitude on reducing bottled water consumption, Subjective norms concerning reduction of bottled water consumption, Perceived behavioral control over bottled water consumption, Perceived moral obligation to reduce bottled water consumption, Intention to reduce bottled water consumption. Dependent variable [Non-bottled water consumption behaviour]	[70]
	Investigation into how the use of social media influences consumers' decision-making process regarding the prevention of food waste behavior.	-	Social Media Usage, Attitude, Injunctive Norms, Moral Norms, PCB, Intention (Reduce Food Waste).	[55]
	Investigation of the feasibility of utilization of purchase intention as a proxy for sustainable buying behavior in the case of sustainable clothing purchase	Germany	Subjective norms, PCB, Social concern, Perceived knowledge of social issue, Intention.	[68]
	Analysis of the impact of "Actual behavioral control" on the purchase intention and purchase behavior for the consumption of environmentally sustainable clothing	India	Dependent variable [Sustainable buying behavior] Subjective Norms, Attitude, Purchase Intention. Moderating variable [Proxy Measure for Actual Control]	[65]
	Evaluation of the main determinants of green purchase behavior	European Union	Dependent variable [Purchase Behavior]	
	Investigation of the effect of lifestyle of health and sustainability and other determinants on sustainable consumption behavioral intentions and behavior in a sharing economy using TPB.	India	Knowledge of green products, Confidence in green products, Subjective norms, PCB (Convenience level, Importance of price) Dependent variable [Green Purchase Behavior] Lifestyle of health and sustainability, Attitude, Social norms, PCB, Intention for Sustainable Consumption.	[60]
	Investigation of five pro-environmental behaviors (Extraversion, Agreeableness, Conscientiousness, Neuroticism, Openness) using man-oriented approach	Lithuania	Dependent variable [SCP]	[58]
	Examination of factors affecting sustainable apparel buying behavior.	Southeast	Influence of Intention, Self-oriented attitudes, Society-oriented attitudes, Subjective norm, Perceived behavioral control, Self-reported behavior, Perceived behavioral control on Sustainable consumption, Conserving electricity, Recycling, Use of sustainable transportation, Conserving water.	[71]
	Examination of the challenges UK policy intervention for sustainable fashion among young consumers	United Kingdom	Environmental Knowledge, General Environmental Attitudes, Apparel Environmental Attitudes, Perceived Money Availability, Perceived Store Accessibility, Subjective Norms, PCB, Behavioural Intentions Dependent variable [Actual Buying Behavior]	[62]
MODELS			Attitude, Subjective Norms, Perceived Behavioral Control	[66]
Transtheoretical Model	Assessment of students' meat consumption behavior	Sweden	Current consumption habits, attitudes and knowledge, Perceived benefits and barriers of a plant-based diet, Decision-making process, Willingness to change behavior, Attitudes towards practical interventions regarding sustainable meat consumption	[130]
Comprehensive action determination model	Personal clothing consumption	USA, UK, Germany, Sweden, Poland	Behavior, Intentions, Awareness of need, Ascription of responsibility, Outcome efficacy, Personal norms, Social norms, Attitudes, Perceived behavior control, Impulsive purchase behavior. Control variables (Age, Sex, Income, Past clothing purchase behavior)	[128]
Diffusion of innovation theory	Adoption of Organic food	China	Social innovativeness, hedonist innovativeness, consumer knowledge, consumer attitudes	[124]
	Adoption of B2B sharing economy	China	Motivators [Financial, Sustainability, Social connections, and Reciprocal benefits] Constraints [Perceived risks, Lack of trust (Platform & Service provider), Lack of regulatory support] Top management support Control variables (Firm size, Firm age, Industry type)	[125]
	Adoption of solar equipment	India	Relative advantage, Compatibility, Complexity, Observability Behavioral intention	[126]
SUBJECTS				
Behavioral Economics	Investigation of the effectiveness of "Dynamic norm" intervention to promote consumption of sustainable go-to cups	Germany	Dynamic norms	[146]

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Table 6 (continued)

Framework	Context	Country	Unique characteristics	Cite
Community-based social marketing	Investigation of the feasibility of the 'self-nudging' strategy of consumers signing up for an organic box scheme subscription	Denmark	NA	[147]
	Discussion on the possibility of helping individuals make better decisions for themselves and society at large by overcoming limitations of human cognitive capacity and behavioral biases using nudging as a tool for behavioral change	Sweden	NA	[33]
	Discussion on the Attitude-Behavior gap using a case of promotion of sustainable food consumption in Denmark	NA	NA	[144]
	Evaluation of the effectiveness of a community-based social marketing (CBSM) campaign	Thailand	Variables utilized to examine the effectiveness among experimental and control groups are: attitude toward SCB, subjective norm(friends) perceived behavioral control, intention to perform SCB,	[151]
Social marketing	Effect of a gamified app designed for sustainable consumption	Australia	Effectiveness of gamified apps to change behavior is tested using Game Design Elements as Mediator [Points, Challenge, Feedback, Character], Perceived Value [Enjoyment, Knowledge], Behavioral Intentions.	[139]
	Impact of mass media coverage of climate change on the sales of hybrid vehicles	USA	The effect of Climate change news covered by media on sale of hybrid vehicles is tested. Some of the variables utilized are as follows: Media Coverage of climate change, Fuel Economy, Vehicle Design Rating, Tax Incentive, Vehicle price, Gasoline price, Seasonality, Year, Firm, Model age, monthly average Americans for Democratic Action (ADA) score, Length of media coverage.	[141]
	Relationship between place identity and sustainable consumption.	Malaysia	Attachment, Continuity with personal past, Perception of familiarity, Cohesion, Social acceptance, Commitment to a place, Attitude to sustainable consumption.	[140]
	Impact of a social marketing program on reducing household water consumption	Australia	Reciprocity, Consumer citizenship (Moral obligation, Perceived water right), Beliefs about conserving water (Attitudes, Social norm, Reciprocity), Social marketing activity, Background factors(Personal, Sociocultural, Environmental, Information)	[138]
	Role and application of social marketing in managing water consumption	Australia	Social marketing, Background factors (Habit strength, Personal, Sociocultural, Environmental, Political, Information), Attitudes & Beliefs (Attitude towards water conservation, Social norms, Perceived Behavioral Control), Obligation & reciprocity (Moral obligation, Efforts of water management agencies)	[137]

educational attainment, and cultural background can shape the manifestation of sustainable consumption behaviors. Variations in regional attitudes, infrastructure development, or environmental consciousness may therefore yield divergent findings, underscoring the significance of geographical specificity in understanding consumption dynamics.

While these examples underscore the impact of context and geographical location on research outcomes, it is important to recognize that the choice of theoretical framework also plays a pivotal role. Each theory or model offers a distinct perspective on the drivers and determinants of sustainable consumption, rooted in its own conceptual underpinnings and assumptions. Consequently, the selection of a particular theoretical approach can fundamentally shape the interpretation of data and the generation of insights. In light of these interrelated dimensions, the examination of sustainable consumption across various facets emerges as a complex and dynamic endeavor. The combination of

theoretical frameworks, contextual factors, geographical considerations, and demographic characteristics all contribute to the richness and diversity of research findings in this field as summarized in Fig. 10, where the block titled Theory/Model represents utilization of Theory or Model or Subject.

Another interesting observation is that even when studies use the same theory or model as their primary framework, their conceptual frameworks can vary significantly. Aside studies such as the work by Keller et al. [30], Lehner et al. [33], etc., that discuss the feasibility of applying the specific theory/model in the field of examination of sustainable consumption or behavior change, majority of the studies have a unique theoretical model that serves as the guide for the research. For example, Ajzen [46], first developed the conceptual framework for the Theory of Planned Behavior (TPB) as shown in Fig. 11.

Both Vantamay [16] and Matharu et al., [58] also used TPB as their

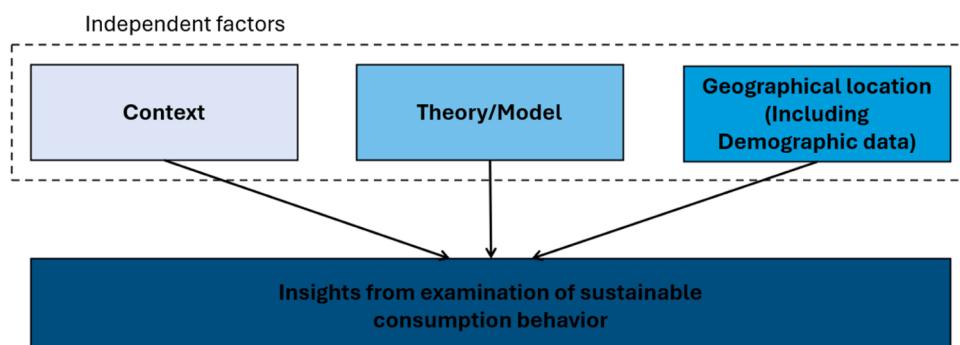


Fig. 10. Proposed relation of insights and combination of Context, Geographical location, and Theory/Model utilized.

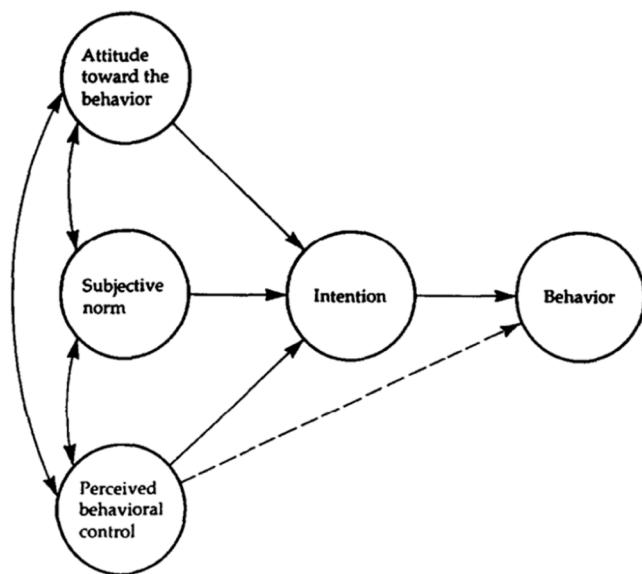


Fig. 11. The “basic” conceptual framework of the Theory of Planned Behavior [46].

primary theory, but the unique research objectives they address result in the development of distinct conceptual frameworks, as illustrated in Figs. 12a and 12b, respectively. The study by Vantamay [16] aimed to investigate the determinants of sustainable consumption among undergraduates in Thailand. The researchers extended Ajzen's conceptual framework by examining the direct impact of various variables on both intention and behavior. In contrast, Matharu et al., [58] sought to explore the effect of the lifestyle of health and sustainability (LOHAS) on sustainable behavior. They did this by introducing a new variable, LOHAS, into the Theory of Planned Behavior (TPB) framework.

Similar trends are evident across the majority of the documented studies, stemming from the inherent complexity of linking established theories/models with the diverse factors impacting consumption behavior. Although authors may not always overtly showcase the conceptual framework, the variables employed provide insights into it. From the array of studies analyzed, it can be inferred that the conceptual framework guiding each study results from the combination of the underlying theory/model, the context within which the study is performed, variables that are selected, and the relationships between variables that are being evaluated as outlined in Fig. 13.

Research Objective 3: To develop a guidance framework, to aid researchers and practitioners in developing studies within the realm of examination of sustainable consumption behavior.

These elements are used to create a guideline, drawn from the

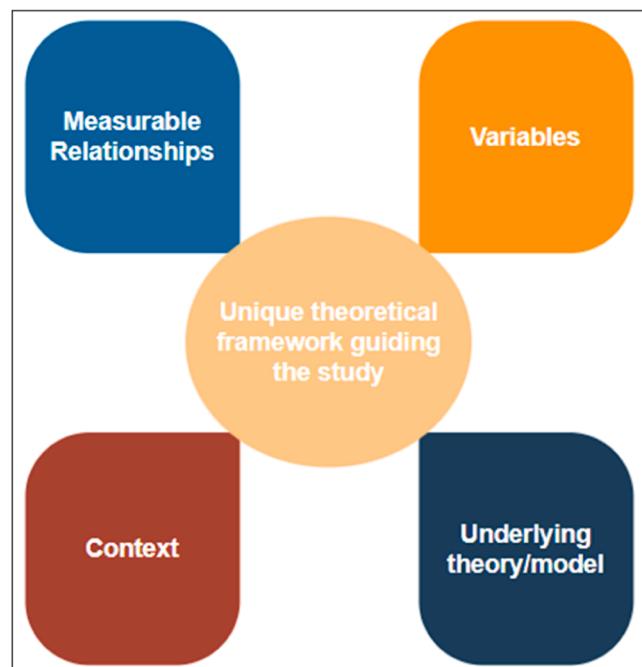


Fig. 13. Factors that contribute towards the theoretical framework guiding various studies.

analysis of chosen studies, to aid researchers in constructing their research using theories or models for analyzing behavior in sustainable consumption, refer to Fig. 14. This guideline, derived from selected studies, can be divided into two main paths: Pathway 1, which focuses on studies aiming to employ a specific theory, model or subject for examining sustainable consumption behavior, and Pathway 2, which guides studies aiming to explore the practicality of using a specific theory, model or subject for analyzing sustainable consumption behavior, readers can refer to the work by Keller et al. [30], Lehner et al. [33], Phipps et al. [152], etc.

According to Pathway 1 (Utilization of theory/model/ subject), the study can be structured as follows:

1. **Selection of the context, facet of consumption behavior, and geographical location:** Determine the specific aspect of consumption behavior (e.g., purchasing, recycling) and the geographical location, considering socio-demographic factors.
2. **Select the theory/model:** Choose the theories or models that serve as the evaluation’s underpinned framework.

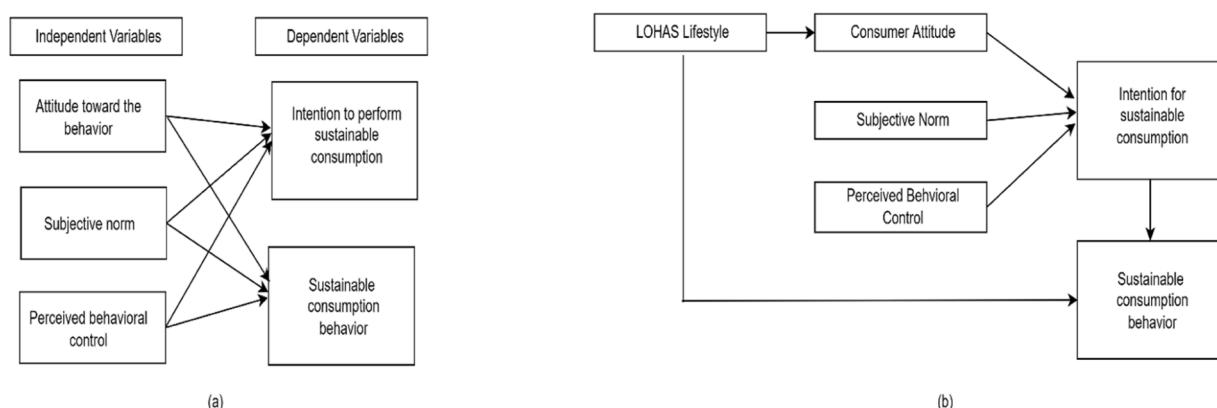


Fig. 12. Conceptual framework rooted in the TPB as developed by (a) Vantamay[16] and (b) Matharu et al. [58].

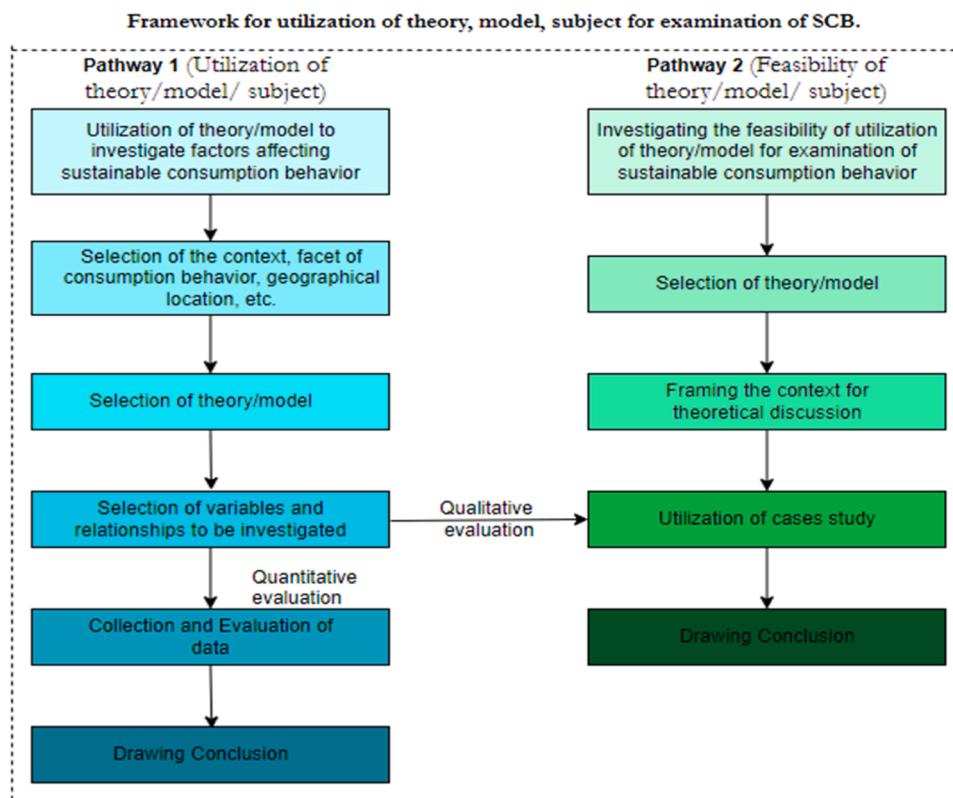


Fig. 14. Guideline for the formulation of study in the field of examination of sustainable consumption behavior utilizing theories/models of behavior analysis.

3. **Selection of variables and relationships to be investigated:** Select the variables to be investigated and define the relationships between them that the study aims to explore. This step leads to the development of a unique theoretical framework and helps in formulating hypotheses that guide the study.
4. **Collection and Evaluation of data:** Decide on the data collection methods (e.g., online surveys, interviews) and the data evaluation methods (e.g., regression analysis) to analyze the quantitative relationships between variables and their effect on consumption behavior.
5. **Drawing conclusions:** Summarize the findings and draw conclusions based on the analysis, providing insights into the factors affecting sustainable consumption behavior within the chosen context.

It should be noted that the decisions in the first two steps are independent and can be made in any order.

Pathway 2 (Feasibility of theory/model/ subject) assists in the development of a study through the following steps:

1. **Selection of the theory/model:** Choose the theory or model whose feasibility the study aims to investigate.
2. **Framing the context for theoretical discussion:** Establish the scope of the context within which the discussion will take place.
3. **Utilize a case study:** Use a case study as an example to assess the feasibility of the study. This step may include a qualitative evaluation of the variables associated with the theory/model under examination, as indicated by the arrow connecting to the variable selection step in Pathway 1. Note that not all studies will use case studies, for example, Phipps et al. [152] utilized two case studies: two sharing and water conservation, to validate their discussion. On the contrary, Keller et al. [30], work did not include any case studies but rather a qualitative discussion based on published literature.

4. **Drawing conclusions:** Based on the discussion, draw conclusions and provide recommendations for applying the specific theory/model to examine sustainable consumption behavior.

The findings and insights drawn from the systematic review of theories and models on study of sustainable consumption behavior significantly enhances our comprehension of the factors at play. However, this wealth of information also presents certain challenges. One major issue is the difficulty in effectively organizing and synthesizing these results. For instance, when examining clothing consumption alone, works such as those by Joanes et al. [128], Ruan et al. [83], Betzler et al. [35], etc. offer distinct perspectives on consumer behavior within this domain. Similarly, studies like those conducted by Li et al. [124], Tang et al. [107], Dong et al. [36], etc. which are undertaken in same geographical location but in various contexts led to varying insights. This plethora of findings can pose problems for policymakers attempting to discern how insights from individual studies relate to each other. Additionally, there is a noticeable gap in the literature regarding the practical utilization of these findings by leaders of organisation, policymakers, governments, and industry stakeholders to promote sustainable consumption behavior. While some studies touched on this aspect, most fail to provide a framework or systematic approach for translating their findings into actionable policies or measures. Furthermore, there is a scarcity of literature addressing the factors influencing sustainable consumption behavior from the perspectives of government entities or industry players offering sustainable alternatives in the market. Despite the valuable theoretical insights provided by existing research, it is crucial to comprehend the intricate relationships among various actors driving consumption within an economy. Keller et al. [30], drawing from Social Practice Theory (SPT), proposed that transforming all elements within a set of linked practices is beyond the capacity of any single actor, necessitating the involvement of multiple stakeholders. This notion can be extended to studies utilizing other theories or models, further suggesting that focusing solely on household consumption may not suffice

to fully grasp the factors influencing sustainable consumption behavior within an economy.

4.1. Theoretical, practical and policy implications

4.1.1. Theoretical implications

The Theory of Planned Behavior (TPB) has long been a preferred framework for studying sustainable consumption behavior (SCB), yet its frequent expansion to include variables such as altruism, environmental concern, and moral norms reveals its limitations in fully capturing the complexity of sustainable behaviors. The integration of these additional factors suggests that TPB, in its original form, may not adequately address the multifaceted nature of SCB, thereby necessitating its enhancement for broader applicability in sustainability research. Similarly, the incorporation of social and cultural dimensions into the Value-Belief-Norm (VBN) Theory underscores the insufficiency of relying solely on individual values to predict sustainable behaviors. This highlights the critical role that social norms and cultural contexts play in shaping the relationship between values, beliefs, norms, and behaviors.

Sustainable consumption is a multidimensional phenomenon, influenced by an intricate mix of individual motivations, social pressures, and contextual variables. This complexity challenges the adequacy of single-theory approaches, pointing to the need for interdisciplinary models that integrate various theoretical perspectives. Social Cognitive Theory (SCT) and Social Practice Theory (SPT) offer valuable insights into the dynamic interplay between personal and environmental factors, suggesting that sustainable behaviors are shaped by more than just individualistic considerations. These theories emphasize the importance of adopting a holistic approach to studying SCB, one that accounts for the interplay between individual, social, and material dimensions.

Motivational theories, such as Self-Determination Theory (SDT) and Goal-Framing Theory, have been instrumental in exploring the diverse motivations driving sustainable behaviors, revealing a complex mix of hedonic, normative, and gain-related motives. This suggests a need for refining these theories to better account for context-specific motivations. The emergence of context-specific models, like the Comprehensive Action Determination Model (CADM) and the Diffusion of Innovation Theory, further underscores the importance of adapting theoretical frameworks to different cultural, economic, and environmental contexts to accurately predict and explain SCB. Additionally, the integration of ethical and moral dimensions into existing theories, such as the extended TPB and VBN frameworks, points to the growing recognition of personal and social ethics in driving sustainable behaviors. This, combined with the challenges of generalizing findings across diverse cultural and geographical contexts, highlights the necessity for flexible, context-sensitive, and interdisciplinary approaches to advance the understanding of sustainable consumption behavior.

As a stepwise process, a benchmarking system can be set up as a second stage to prioritize these factors and duly eliminate or include based on respective contextual considerations to target different combinations of markets, demographics and geographical locations. Contextual considerations per the findings from this review could include: 1) the relative advantage, compatibility, and observability attributes of the given sustainable product where applicable; 2) social practices, transformations in material objects and socio-cultural meanings; 3) self-resilient attitudes and anthropocentric beliefs; and 4) supportive actions towards environmental organizations, religious affiliation and the intensity of religious beliefs. The finding on the relevance of the influence of geographical locations (country/region/place of origin designation) and the attributes of sustainable product to SCB further has implications for branding and promotion strategies for sustainable products. As such, this should influence the communication messages to be pursued.

Insights drawn from the Behavioural Economics Theory theme of the review portrays a degree of effectiveness of nudges that could be attenuated with ethical concerns caveat – a further confirmation that

marketers and people tasked with the promotion of sustainable consumption behaviour ought to find creative ways to offer ethical products and promote sustainable consumption behaviour [153]. Noting the role of global challenges such as climate change, resource depletion, and environmental degradation as key drivers to this emerging field of study, facilitating sustainable consumption behaviour awareness at the global level and highlighting the common positive potential effects for humanity has good prospects. Indeed, there is the general optimism that socially responsible consumption can engender the attainment of sustainable development globally [153,154]. Therefore, complementing nudges with global awareness programmes and engagements in activities underpinned by social equity considerations for other people as expanded reference group activities will engender higher social preference for ethical choices. These programmes have the potential to encourage behavioural changes when tools of behavior change such as commitment, social norms, social diffusion, prompt, convenience, incentives, and communication are employed. This by extension could enhance sustainable consumption behaviour.

4.1.2. Practical implications

The refinement of policy interventions for sustainable consumption behavior (SCB) emphasizes the importance of context-specific policy design and the integration of moral and ethical appeals. The review highlights that contextual factors, such as social norms, perceived behavioral control, and cultural dimensions, significantly influence the effectiveness of sustainability initiatives. Policymakers should tailor interventions to these variables, considering strategies like leveraging social norms through public endorsements by respected figures in regions where such norms strongly dictate behavior. Additionally, the findings suggest that moral and ethical considerations are crucial drivers of SCB, particularly in extended TPB and VBN models. To maximize impact, policymakers should incorporate ethical messaging into sustainability campaigns, focusing not only on environmental benefits but also on the moral responsibility of consumers, especially in communities with strong ethical or religious values.

Strategic business applications of the review's insights reveal the need for tailored marketing strategies and product innovation to drive sustainable consumption. Businesses should design marketing campaigns that align with the motivational drivers behind SCB, such as appealing to consumers' desires for social approval, pleasure, and practical benefits. For instance, companies could emphasize the social status associated with purchasing eco-friendly products or the long-term financial savings of energy-efficient appliances. Moreover, the application of the Diffusion of Innovation Theory suggests focusing on early adopters when introducing new sustainable products, ensuring that these innovations resonate with the values and preferences of socially and hedonistically innovative consumers. Enhancing consumer education is also critical, with initiatives aimed at bridging the knowledge-action gap and promoting long-term behavioral change. Educational programs should not only increase environmental awareness but also motivate sustained action, incorporating elements of habit formation and repeated exposure to sustainability messaging to foster lasting behavioral change.

The review highlights the persistent intention-behavior gap, where consumers' intentions to engage in sustainable practices often do not translate into actual behavior, particularly in studies using the Theory of Planned Behavior (TPB) and similar models. To address this gap, practical strategies could include reducing perceived barriers such as cost and convenience, and enhancing perceived behavioral control by making sustainable options more accessible. Additionally, the strong influence of subjective norms on sustainable behaviors suggests that leveraging social influence is crucial. Businesses and policymakers should promote community-based initiatives and peer-driven campaigns, utilizing social proof to encourage wider adoption. The review also underscores the benefits of adopting circular economy principles, advocating for business models focused on longevity, repairability, and

recyclability. Companies should invest in such models and explore service-based approaches like product-as-a-service. Furthermore, targeting diverse consumer segments is essential, as sustainable consumption behaviors vary across demographic groups. Businesses should develop tailored strategies that address the specific needs and motivations of different groups, such as engaging younger consumers through digital channels and emphasizing durability for older consumers.

4.1.3. Policy implications

The finding that a diversity of factors influence sustainable consumption behaviour has implications for sustainable development policy making by governments institutions and non-governmental organizations. This variety of factors confirm the extant scholarly position that sustainable consumption behaviour is complex and therefore requires a well-considered research informed policy to soften the path to mainstreaming sustainable consumption behaviour [155]. By inference, policies aimed at promoting sustainable consumption behaviour ought to be multifaceted in nature and configured to integrate individual motivations, social norms, and educational efforts. Specifically, policy interventions seeking to achieve behavioural changes ought to target social practices, orientated towards partnerships, collaboration and co-creation involving multiple stakeholders rather than relying on a single agency. Additionally, as noted by Thøgersen and Nielsen [156], and Rondoni and Grasso [157], behind the backdrop of persistent misunderstanding of sustainability labels and certifications policies as existing systems are mostly expressed in scientific rather than simple comprehensible language or notation, policy makers and governments ought to support and promote the development of a commonly recognized footprint system refer Quoquab and Mohammad [158]; promote general sustainability literacy from childhood; and encourage clear signposting of sustainable-certified products [159].

4.2. Future research

Future research could explore how insights from behavioral economics, particularly nudging strategies, can be more effectively integrated into existing SCB frameworks to drive long-term sustainable behavior. Investigating the impact of dynamic, injunctive, and self-nudging techniques on reducing the intention-behavior gap in various consumption contexts, such as food, energy, and clothing, would provide valuable insights for policymakers and businesses. By focusing on behavioral economics, researchers can better understand how subtle interventions might shape consumer decision-making processes and promote sustainable consumption. Comparative studies on how cultural and societal norms influence the success of SCB models across various regions would also be beneficial. Examining models like the Theory of Planned Behavior (TPB) and Social Cognitive Theory (SCT) in diverse geographical contexts, especially in emerging economies, could reveal if context-specific modifications improve their predictive power. Furthermore, future research should investigate how digital platforms, including digital marketing, influencer endorsements, and gamification, can shape consumer attitudes and behaviors toward sustainable consumption, providing actionable insights for businesses and policymakers aiming to leverage these platforms for promoting sustainability more effectively.

In addition to these approaches, future research should adopt a more holistic understanding of sustainable consumption behavior (SCB) by investigating all phases of the consumption cycle—purchasing, utilizing, and disposal—rather than focusing on a single facet. For instance, in the context of recycled shoes, researchers could explore how the factors that drive purchase decisions differ from those influencing product usage and eventual disposal behavior. By examining antecedents like environmental concern, perceived behavioral control, or social norms across these stages, a more nuanced understanding of the varying motivations, barriers, and enablers at each stage of consumption can be developed. This comprehensive approach would not only deepen the understanding

of SCB but also reveal potential intervention points to encourage sustainability throughout the entire product lifecycle, offering practical insights for businesses, policymakers, and educators aiming to promote more sustainable consumption practices.

5. Conclusion

This systematic review offers a comprehensive analysis of the theoretical frameworks and models that underpin research on sustainable consumption behavior (SCB). By reviewing 64 studies, the research has identified 14 key theories and models, with the Theory of Planned Behavior (TPB) emerging as the most frequently applied framework. Other significant models, such as the Value-Belief-Norm Theory (VBN) and Diffusion of Innovation Theory, have also contributed to understanding the complexities of SCB. The findings highlight that SCB is influenced by a combination of internal factors—such as values, attitudes, and beliefs—and external elements, including social norms and policy interventions. The review also emphasizes the persistent gap between intention and behavior in sustainable consumption, known as the "intention-behavior gap." This gap underscores the need for multi-dimensional approaches that integrate psychological, social, and contextual factors to better capture the complexity of consumer behavior in sustainability. Furthermore, the study identifies a growing trend of expanding traditional models like TPB by incorporating additional variables, such as environmental concern and altruism, to more accurately reflect sustainable behavior. The proposed guidance framework consolidates these diverse approaches and offers researchers and practitioners a structured roadmap for future studies. It emphasizes the importance of contextual understanding, interdisciplinary collaboration, and the practical application of these insights in fostering sustainable consumption behavior. However, this paper has its limitations. The keywords used to search and identify various theories and models applied in the examination of sustainable behavior were intentionally broad, aiming to capture a wide array of studies and subsequently narrow them down. This approach might not have identified all relevant theories and models. Additionally, the review was limited to papers sourced from a single database, Scopus, and restricted to publications from 2012 to 2022. Consequently, it is possible that other pertinent theories and models were overlooked. Furthermore, the field of sustainable consumption behavior is continually evolving, and recent studies published after the review period were not included.

CRediT authorship contribution statement

Shayaan Syed: Writing – original draft, Visualization, Methodology, Formal analysis, Data curation, Conceptualization. **Adolf Acquaye:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Conceptualization. **Malik Mansoor Khalfan:** Writing – review & editing, Supervision. **Theresa Obuobisa-Darko:** Writing – review & editing. **Fred Amofa Yamoah:** Writing – review & editing.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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