



The emergence and influence of the customer experience in the context of sustainable consumption

Bidyut Kumer Balo¹ · Elina Jaakkola¹ · Majid Aleem¹ · Birgitta Sandberg¹

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Abstract

Despite their evident mutual relevance and interconnection, systematic examinations of the relationship between customer experience (CX) and sustainable consumption are rare. This systematic literature review explores the intersection of these concepts by analyzing the nature and influence of CX in sustainable consumption. First, the study synthesizes existing research knowledge on CX stimuli that are particularly highlighted in the context of sustainable consumption, such as product elements and sensory cues tied to sustainability, eco-conscious advertising and marketing messages, and bio-based packaging elements. Second, the review charts CX dimensions evoked by sustainability stimuli, including various sensory, affective, cognitive, and social experiences. Third, the study describes the role of CX in promoting or hindering both purchase behaviors, such as purchasing organic offerings, and non-purchase behaviors, such as recycling. The findings confirm the relevance of CX in facilitating transaction-focused outcomes (purchases or sales), but also show that CX can influence non-transactional outcomes, such as engagement and disengagement in sustainability practices. The study advances existing CX research by developing a conceptual framework that delineates CX in the sustainable consumption context and identifying special features and tensions related to it. Furthermore, the study adopts a dynamic and processual approach to understanding consumer behavior in the context of sustainable consumption, departing from traditional knowledge, awareness, and practice-based approaches. It highlights the interplay between CX stimuli and outcomes, not only in purchase decisions but also in non-purchase journeys, such as sharing. The findings highlight significant gaps in the current literature, including the need for more attention to the economic, social, and cultural dimensions of sustainable consumption, alongside the environmental dimensions that have been more commonly studied. Building on identified gaps in existing research and the developed propositions, our study sets the stage for future research on CX in the context of sustainable consumption.

Keywords Customer experience · Sustainable consumption · Customer journey · Customer experience stimuli · Circular economy

Introduction

The concept of the customer experience (CX) has quickly become a crucial focus for marketing academics and practitioners (Arkadan et al., 2024; Meehan, 2024), as indicated by the Marketing Science Institute identifying CX research as a top priority for 2024 (MSI, 2024). CX refers to the customer's spontaneous reactions and responses to the offering-related stimuli encountered throughout the customer journey, encompassing all offering-related touchpoints where the customer interacts while completing a purchase process or achieving a goal (Becker & Jaakkola, 2020; Halvorsrud et al., 2016; Lemon & Verhoef, 2016; McColl-Kennedy et al., 2015; Rawson et al., 2013).

✉ Bidyut Kumer Balo
bidyut.k.balo@utu.fi

Elina Jaakkola
elina.jaakkola@utu.fi

Majid Aleem
majid.aleem@utu.fi

Birgitta Sandberg
birgitta.sandberg@utu.fi

¹ University of Turku, Turku, Finland

Traditionally, CX has been studied in the context of hedonic consumption (Cova, 2021; Garbinsky & Klesse, 2021), with CX considered important in boosting firm performance metrics, such as sales and customer loyalty (De Keyser & Van Vaerenbergh, 2024; Homburg et al., 2017; Lemon & Verhoef, 2016). At the same time, there is increasing evidence that CX plays an important role in the context of sustainable consumption and could offer great potential in providing new insights into promoting sustainability and, ultimately, fighting environmental challenges (Moura & Hattula, 2024; Rasmussen, 2014; Ta et al., 2022). The extant research on sustainable consumption is predominantly focused on customer decision-making, attitudes, and behaviors toward purchasing more sustainable offerings (Dangelico & Vocalelli, 2017; Sharma, 2021). It sometimes also notes the relevance of customer experiences, but seldom focuses on this concept (Achrol & Kotler, 2012; Ünal et al., 2024). Current research lacks focused analyses on the emergence and role of CX in sustainability contexts. Here, we highlight two particular knowledge requirements for advancing the applicability of the CX concept in this vital context.

First, a consolidated understanding of the emergence of CX in the context of sustainable consumption is needed, as current insights remain fragmented across the CX and sustainability research domains. Previous research on sustainable consumption has highlighted the role of targeted interventions, such as nudge stimuli (Lee et al., 2020; Lehner et al., 2016) and information provision (Blake, 1999; Caferra et al., 2023; Prothero et al., 2011) to influence sustainable consumption during a particular phase of the consumption cycle (i.e., choice), but a “big picture” perspective remains missing. The majority of interventions aimed at promoting sustainable consumption often fail due to a lack of understanding of the underlying mechanisms (Gonzalez-Arcos et al., 2021). CX as a concept allows a nuanced understanding of different dimensions of experience, encompassing sensorial, affective, cognitive, social, and behavioral, and the various stimuli across the customer journey that trigger these experiences (Becker & Jaakkola, 2020). However, previous research has emphasized the contextual nature of CX (Becker & Jaakkola, 2020; De Keyser et al., 2020), and it remains unclear which dimensions of experiences and stimuli are particularly highlighted in the context of sustainable consumption.

Second, we need a broader understanding of the potential outcomes of CX, beyond the prevailing transaction-focused view that emphasizes the facilitation of purchases or sales (Kumar et al., 2023; Sheth et al., 2023). The CX research anchored in purchase journeys often overlooks customer outcomes related to non-transactional, environmental goals, such as consuming less, repurposing, repairing, and

recycling. To generate knowledge that can facilitate sustainable consumption, it is essential to chart the various ways that CX can affect consumers’ preferences, attitudes, and behavior across their journeys, accommodating both experiences related to sustainable purchases (e.g., choosing a sustainable product) and non-transactional parts of the journey (e.g., recycling the product). Hence, further research is required to delineate the various CX outcomes in the context of sustainable consumption.

Against this backdrop, *the purpose of this study is to chart the nature and influence of the customer experience in the context of sustainable consumption*. More specifically, we explore CX stimuli, dimensions of experiences, and their role in promoting sustainable consumption through a systematic analysis of the intersection between CX and sustainable consumption literature. As a comprehensive overview of possible linkages between CX and sustainable consumption would be unattainable by empirical means, we sought to integrate and structure the fragmented and isolated insights from earlier research to outline the potential roles of CX in sustainable consumption (cf., Jaakkola, 2020; MacInnis, 2011). Thus, we conducted a systematic literature review (Breslin & Gatrell, 2023) to capture the existing knowledge of the linkages between the different elements of CX and sustainable consumption.

Our research makes three key contributions. First, this study delineates CX in the context of sustainable consumption: We develop a conceptual framework that broadens the existing understanding of CX stimuli and highlights the role of various CX dimensions in promoting or hindering purchase and non-purchase behaviors related to sustainable consumption throughout the consumption cycle. Second, we identify special features and tensions associated with CX in sustainable consumption, summarized in six propositions that, together with the framework, extend traditional CX research. Third, this study takes a dynamic and processual approach to understanding consumers’ behaviors in terms of sustainable consumption, moving away from conventional knowledge, awareness, and practice-based approaches and highlighting the interplay of CX stimuli, dimensions, and outcomes not only in purchase journeys but also in non-purchase journeys, such as sharing behaviors. Building on identified gaps in existing research and the developed propositions, our study sets the stage for future research on CX in the context of sustainable consumption.

The next section outlines the theoretical foundations of the study. Subsequently, we describe the methodology and present the findings of the systematic review. Finally, we develop a conceptual framework and a set of propositions that delineate CX and its special features in the context of sustainable consumption, before identifying essential avenues for future research. The final section discusses the

study's theoretical contributions, limitations, and practical implications.

Theoretical foundations

Customer experience

Following state-of-the-art reviews on customer experience research by Becker and Jaakkola (2020) and Lemon and Verhoef (2016), we make the following assumptions: CX is multidimensional, contextual, and subjective. A customer journey is a specific path that an individual takes while completing a process or achieving a goal. Stimuli from multiple touchpoints influence CX throughout the journey, within and beyond the firm's control. A touchpoint is any instance of interaction or point of contact—either direct or indirect—between the customer and the offering throughout the journey (Jaakkola et al., 2022; McColl-Kennedy et al., 2019).

Definitions of CX highlight the significance of stimuli from diverse sources, including the company, brand, market participants, and individuals (Becker & Jaakkola, 2020; De Keyser et al., 2015; Lemke et al., 2011; Lemon & Verhoef, 2016; Verhoef et al., 2009). Both external stimuli (outside the firm's control) and internal stimuli (within the firm's control), as well as the dynamic interactions among stimuli, can create various dimensions of experiences that influence customer behavior, perceived quality, and satisfaction (Becker & Jaakkola, 2020). For instance, the interaction of digital, physical, social, and socially symbolic stimuli may have the potential to create multi-dimensional experiences (Bolton et al., 2018). Commonly, scholars converge on a core set of dimensions of experiences, including sensory, affective, cognitive, social, and sometimes behavioral aspects (Bleier et al., 2019; De Keyser et al., 2020). While these dimensions frequently appear in the literature, certain studies have highlighted additional, less common dimensions, such as lifestyle or spiritual values, that may play a role in specific contexts (Bolton et al., 2018).

The *sensory* dimension of CX refers to the stimulation of the five senses, including visual, auditory, olfactory, tactile, and gustatory elements (Gentile et al., 2007; Krishna & Schwarz, 2014). The *affective* experience refers to how CX stimuli generate emotions, moods, or feelings (Gentile et al., 2007; Rose et al., 2012; Schmitt, 1999). The *cognitive* experience refers to the mental process of thinking and creating a conscious mental model (Brakus et al., 2009; Gentile et al., 2007). Cognition may result in the acquisition of knowledge and/or skills (Holbrook & Hirschman, 1982). The *social* experience relates to a sense of social belonging, respect, self-esteem, and social self-image (Guan et al., 2021). The *behavioral* dimension relates to “what people do” after

receiving a particular CX stimulus at a given touchpoint. Thus, in contrast to behavioral outcomes, the behavioral experience refers to observable actions and responses that dynamically emerge during real-time touchpoint interactions (Brakus et al., 2009; Hoang, 2024; Hollebeek et al., 2024; Weidig et al., 2024).

Ultimately, a positive CX can lead to satisfaction, trust, and repurchase intention (Rose et al., 2012). It has been found to play a pivotal role in shaping various behavioral outcomes that can be described as deliberate, conscious, and evaluative decisions or actions that arise from the cumulative experience of multiple touchpoints (Becker & Jaakkola, 2020; Weidig et al., 2024). CX significantly influences customer involvement and purchase decisions (Godovykh & Tasci, 2020) and even leads to actual purchases (Bleier et al., 2019). Furthermore, positive customer experiences are considered pivotal for building and maintaining high levels of customer engagement (Kumar et al., 2019).

Sustainable consumption

Sustainability has significantly impacted both academic research and practical applications in the marketing literature (Mittelstaedt et al., 2014; Plangger et al., 2025). The conceptualizations of sustainability in the marketing literature are primarily built upon the triple bottom line (Elkington, 1997) of achieving sustainable development goals (Bolton, 2022; Karpen et al., 2023; Voola et al., 2022). Accordingly, the conceptualization of sustainable consumption comprises three pillars: the environment, society (equity), and the economy (Balderjahn et al., 2013; McDonagh & Prothero, 2014). Sustainable consumption is a multifaceted concept intertwined with multiple behavioral, ecological, social, and economic aspects (Giulio et al., 2014; Vargas-Merino et al., 2023).

For this study, sustainable consumption can be defined as the deliberate process of making decisions throughout the consumption cycle, consisting of choice, consumption, and disposal, to meet present needs in a way that reduces adverse effects on the environment, economy, society, and culture (Roundtable, 1994; Santos-Corrada et al., 2024; Sheoran & Kumar, 2022; Trudel, 2019; World Commission on Environment and Development, 1987). This perspective encompasses proactive behaviors, such as purchasing sustainable offerings; avoidance behaviors, including reducing unnecessary purchases of unsustainable offerings (Verfuert et al., 2021); and reuse practices, which extend the lifecycle of existing offerings. Making a *sustainable choice* involves considering the environment, economy, society, and culture in one's decision-making. This could mean, for example, choosing plant-based dietary options (Lea et al., 2006), supporting products that promote fair labor conditions (Reisch et

al., 2013), preserving local cultures and economies (Novita et al., 2024), opting for products that support biodiversity (Foti et al., 2019), and/or prioritizing local products to boost rural economies (MacGregor & Vorley, 2006; Morone et al., 2019). Likewise, the *sustainable consumption phase* relates to interacting with consumer offerings in an economically, environmentally, socially, and culturally responsible way—for instance, by consuming organic options while practicing energy, water, and product conservation throughout (White et al., 2019b). In the *sustainable disposal phase*, individuals adhere to sustainability principles that are environmentally friendly, socially acceptable, economically viable, and culturally appropriate, such as by reducing food waste (Morone et al., 2019) and integrating recycled garments into one's lifestyle (Jägel et al., 2012), or making informed disposal choices by considering public health and quality of life (Howden-Chapman et al., 2017).

There is evidence that individuals often have discrepancies between their opinions about sustainable offerings and actual purchasing practices (Claudy et al., 2013; Gleim & Lawson, 2014; Moser, 2015), as well as conflicting attitudes and behaviors regarding practices such as reusing and recycling (Wang & Mangmeechai, 2021). Consumers sometimes disengage from sustainable consumption in favor of less environmentally friendly options (Harding & Rapson, 2019). Sustainable marketing scholars and practitioners have employed various marketing interventions to address the challenge of stimulating and maintaining sustainable consumption, including enhanced communication, regulatory interventions, incentive mechanisms, and behavioral modification (Harrison et al., 2023; Lloveras et al., 2022; White et al., 2019a). However, existing research tends to emphasize specific outcomes—the “what”—such as solutions derived from interventions, while often overlooking the underlying processes and dynamics—the “how”—that transform these interventions into sustainable behaviors (Dangelico & Vocalelli, 2017; Elhoushy & Jang, 2023; Rettie et al., 2012). Most studies prioritize achieving specific behaviors, rather than exploring how these behaviors are formed or influenced over time (Osman et al., 2021). Consequently, existing studies often overlook the dynamic evolution of preferences, contexts, and motivations by taking a reductionist and sometimes oversimplified approach that focuses on influencing the purchase of sustainable offerings, while overlooking other aspects, such as non-purchase activities. This gap restricts researchers' and practitioners' ability to design effective strategies and highlights the need for research focused on the processes through which interventions achieve sustainable behaviors.

Tools commonly used to promote sustainable consumption include nudges, such as design changes or cues that influence behavior, and information provision to educate

customers (Chen et al., 2024a). Nudges and similar interventions are limited in their effectiveness in promoting sustainable consumption because they need to address the underlying psychological and societal factors that drive behavior. Overall, these interventions are typically applied separately and aim to lead customers through a structured, linear decision-making process to encourage purchases (Kemper & Ballantine, 2019). The limitations of this approach in sustainability marketing underscore the need for change, as sustainable consumption entails a dynamic and iterative process that extends beyond purchase decisions. Thus, adopting a CX perspective that highlights the processual, iterative, and dynamic nature of consumer interactions across touchpoints throughout the journey can provide a more nuanced understanding of sustainable consumption, thereby explaining purchase and non-purchase behaviors more effectively. The connection between CX and sustainable consumption is still emerging, with a few studies indicating that the overall experience of the customer can encourage more sustainable behaviors (Ta et al., 2022). Research on how CX impacts sustainable consumption is sparse, and this theoretical gap warrants further exploration. Incorporating sustainable consumption into customer experience frameworks may offer new insights and enable CX mechanisms to promote sustainable consumption.

Initial theoretical framework

Summarizing the above discussion, the analytical framework in Fig. 1 links and integrates the review's components to enhance coherence and accessibility. The framework highlights three critical interconnected phases of a customer's journey: choice, consumption, and disposal. In the *choice* phase, sustainable decisions must consider economic, social, environmental, and cultural issues. The *consumption* phase—interacting with offerings in socially, ecologically, economically, and culturally appropriate ways and consuming sustainable options—is also critical for sustainable consumption. Finally, *disposal* decisions should consider economic, social, cultural, and environmental issues throughout all phases and practices of disposal, including reduction, reuse, and recycling.

To understand the role of CX in sustainable consumption, we need to know how customers react and respond to direct and indirect interactions at various touchpoints throughout their journey, shaping different dimensions of their experiences. Our analytical framework prioritizes three crucial elements: identifying key stimuli, understanding the dimensions of experiences that unfold throughout the customer journey, and clarifying the resulting CX outcomes. By analyzing the interactions among CX stimuli, dimensions of experiences, and CX outcomes, we sought to develop

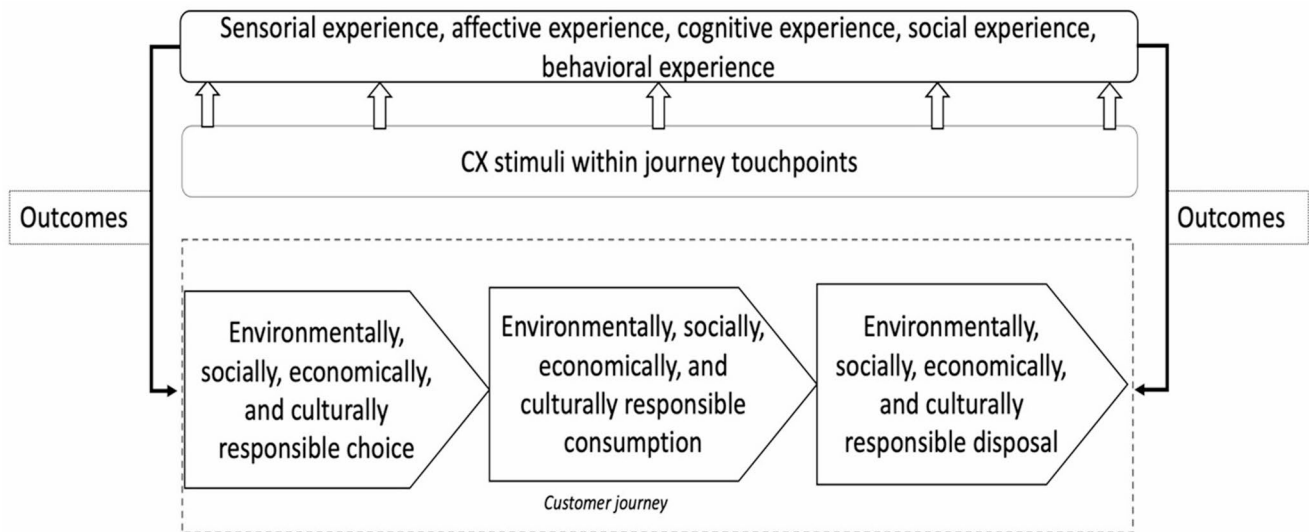


Fig. 1 Initial theoretical framework

meaningful insights into sustainable consumption and its enhancement.

The following section outlines the structured review process, including the inclusion criteria, article selection strategies, and analysis methods for comprehensively exploring the existing literature on the intersection of CX and sustainable consumption.

Method

Selecting articles for review

We conducted a systematic literature review (Breslin & Gatrell, 2023) to capture and integrate existing knowledge on the linkages between different elements of CX and sustainable consumption. To ensure the relevance and inclusivity of our review, we searched two major databases: Web of Science (WoS) and Scopus. Common synonyms related to the research questions were used to discover relevant scholarly publications and to ensure a close relationship between key phrases and concepts (Bethel & Rogers, 2019). At the outset, the research team discussed and agreed on the following initial search terms: (“customer experience” OR “consumer experience” OR “user experience”) AND (sustainab* OR green OR organic OR “eco-friendl*” OR “environmentally conscious” OR ecolog* OR “circular*” OR “reuse” OR “repair*” OR “recycl*”). Finally, we ensured that the final sample covered the existing literature published prior to December 31, 2024, using clear and specific inclusion and exclusion criteria (Denyer & Tranfield, 2009) based on the PRISMA guidelines (Page et al., 2021), as shown in Fig. 2.

Our initial search yielded 6,223 documents. We excluded books, chapters, conference papers, editorials, notes, errata, and retracted publications and considered only articles published in peer-reviewed journals available from the WoS and Scopus databases. We also excluded items from unrelated fields (e.g., physics, astronomy, molecular biology, and aerospace) and prioritized articles related to business, management, and economics. We then screened the articles to include only those published in English.

The remaining 1545 articles from the two databases were combined in an Excel document showing titles, abstracts, keywords, authors’ names, and citations. To avoid duplication, we manually checked and eliminated 344 entries. We then reviewed the remaining titles, abstracts, and keywords to identify whether the articles intersected CX and sustainable consumption. We identified 930 articles that were unrelated to this study, as they did not intersect with the concepts of CX and sustainable consumption. As we aimed to explore research knowledge related to the CX concept specifically, we did not consider articles that studied concepts closely associated with CX (e.g., customer engagement). This additional step reduced the sample to 271 articles. After reading the full texts, we eliminated 131 articles that we deemed fell outside the scope of our research, leaving a final sample of 140 articles, upon which the present review was based.

Analysis and synthesis

Having transferred the details (article title, author data, publication title, year, and abstracts) into a Microsoft Excel 2020 document, we sorted the articles in ascending order by year of publication. Our analysis then proceeded from the oldest article to the newest (Mota et al., 2021). To perform

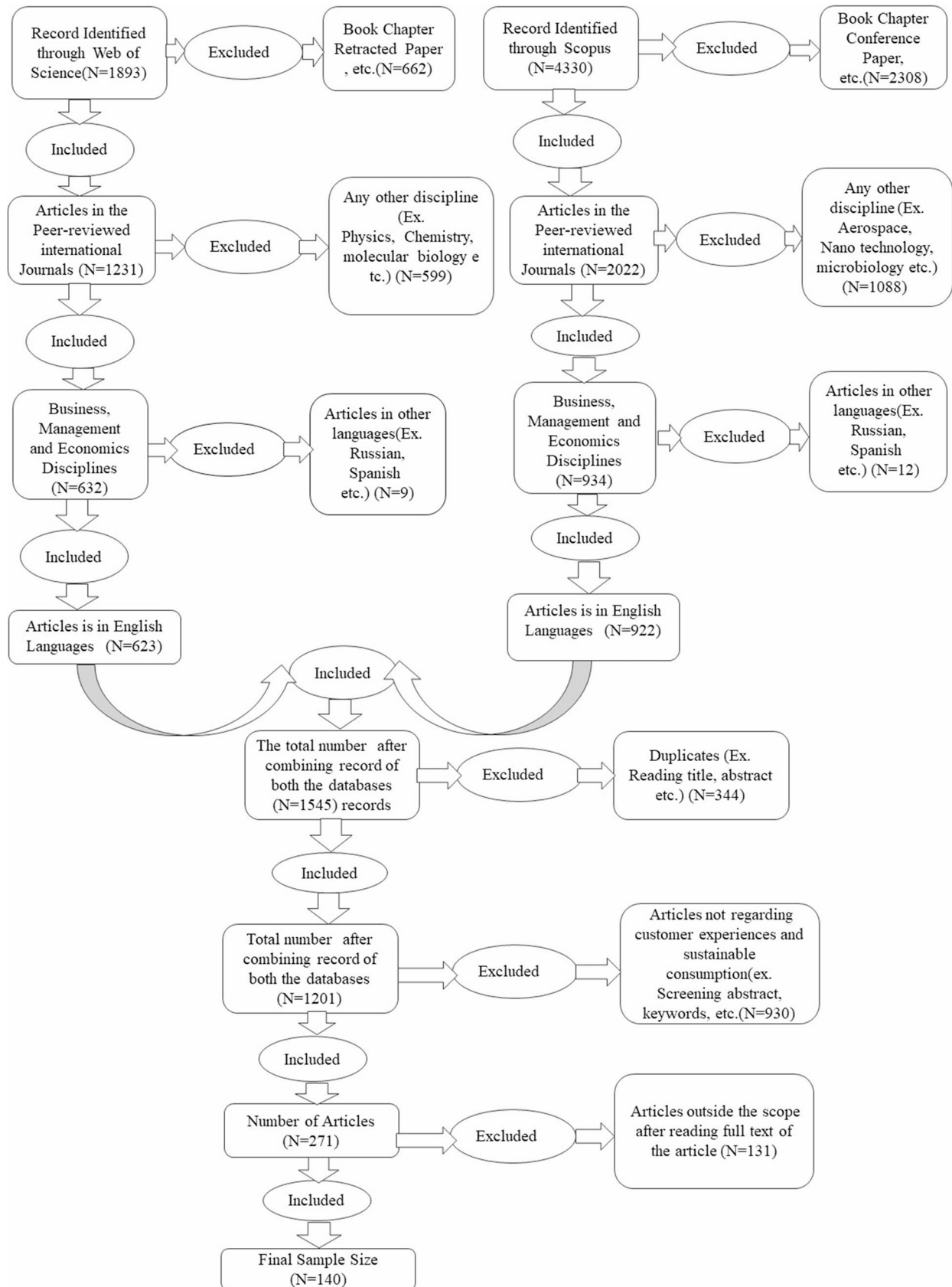


Fig. 2 Exclusion and inclusion process for the analyzed articles

textual analyses, we transferred the full text of each article to NVivo 20, underlining key passages and terms for coding purposes (Smyth, 2006).

The analysis consisted of three main steps: identifying the critical stimuli that trigger customer experiences, determining the dimensions of those experiences, and examining the resulting outcomes. This approach enabled us to expose the complex dynamics of CX at play in the present context. Following the same approach, we grouped our findings in terms of the CX stimuli encountered during the customer journey, the dimensions of experience that emerged, and the resulting outcomes (Snyder, 2019).

Findings

Overview of existing research linking CX and sustainable consumption

The focus of academic papers on the intersection between CX and sustainable consumption has shifted over time (see Fig. 3). Following the first publication in 2007, research activity in this field remained low until 2015; we found that it was typical for there to be no publications on the topic, or just one or two, annually. A modest expansion of research growth trends began in 2016, when output rose to five articles. This upward trend continued, maintaining a steady increase through 2019. The upward trajectory continued until 2023, underscoring the sustained interest in the links between CX and sustainable consumption.

The publications cover a wide range of contexts related to sustainable consumption, including, for example, energy-efficient housing, autonomous electric vehicles, environmental conservation, responsible tourism,

second-hand luxury, organic food, community-supported agriculture, and environmentally friendly waste management. Some studies explore the intersection of sustainable consumption with technology, including artificial intelligence and the metaverse. Emerging trends in this research include the promotion of bicycling culture and bike-sharing initiatives, circular fashion such as second-hand and recycled apparel, repairing and repurposing products, and reusable and biodegradable surgical gloves and packaging materials.

Situating existing research in the context of the customer journey, a majority of the analyzed articles focus on the *choice phase* (see Table 1). These studies investigate sustainable options, customer intentions and motives, and drivers and barriers influencing choice (Hopkins et al., 2022; Huang et al., 2023). Examples include the inclination to make environmentally responsible choices, such as favoring organic dry beans (Arvanitoyannis et al., 2007), opting for local foods (Banerjee & Quinn, 2022), reducing one's transportation-related carbon footprint, and the willingness to consume climate-friendly foods such as insect-based meals (Hopkins et al., 2022).

The second-largest group of articles focuses on the sustainable consumption phase, exploring a range of issues, including the adoption, use, and improvement of sustainable consumption practices. Examples include sustainable mobility solutions such as e-bikes (Huang, 2024; Van Lierop et al., 2020) and improving domestic energy efficiency (Pillan et al., 2019; Sherriff et al., 2019). Some papers fall into both sustainable choice and consumption phases; examples of these papers are choice and the use or consumption of sustainable offerings (Bejarano et al., 2017) and the choice and consumption of organic and local products (Savelli et al., 2019).

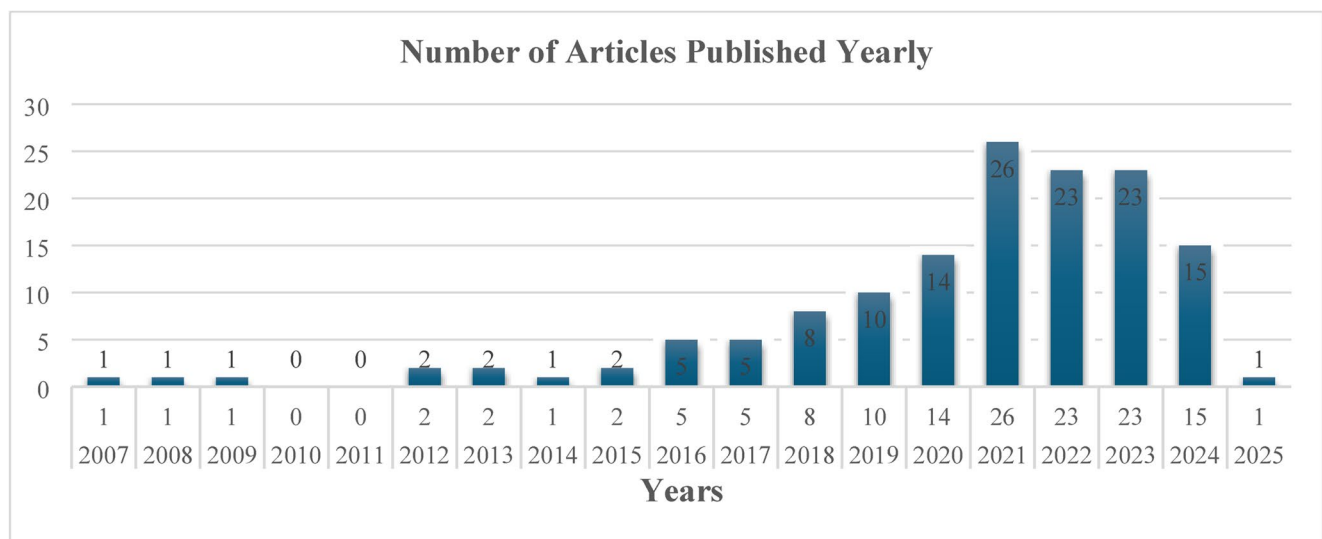


Fig. 3 Number of published articles addressing CX and sustainable consumption by year

Table 1 Distribution of articles by journey phase

Journey phase	Number of articles	Context	Example articles
Sustainable choice	63	Alternative food options (e.g., edible insects), suboptimal organic food, organic and local foods, organic food restaurants, sustainability practices in restaurants, community-supported agriculture, sustainable consumption with technology (e.g., artificial intelligence, the metaverse)	Arvanitoyannis et al. (2007); Álvarez-González et al. (2024); Banerjee and Quinn (2022); Jitrawang and Krairit (2019)
Sustainable consumption	31	Energy-efficient housing solutions (e.g., low-energy homes, low-carbon buildings, reduced energy consumption), autonomous electric vehicles (e.g., e-mountain bikes), bicycling experience, environmental conservation, and responsible tourism	Caruana et al. (2020); Laqua et al. (2023); Pillan et al. (2019); Sherriff et al. (2019)
Sustainable choice and consumption	17	Use experience and choice of autonomous vehicles, choice and consumption of organic products, experience in cycling, and the choice of cycling	Feys et al. (2020); Savelli et al. (2019); Van Cauwenberg et al. (2018)
Consumption cycle	16	Second-hand product circularity, product-service systems, sustainable modular products	Amend et al. (2022); Armstrong and Park (2020); Baxter et al. (2017); Pecorari and Lima (2021); Rogers (2021)
Sustainable disposal	11	Repairing and repurposing products, disposal of packaging materials, and smart packaging to reduce waste	Clark et al. (2022); Ganeson et al. (2023); Puzzo and Prati (2024)

*Two studies (Achrol & Kotler, 2012; Ünal et al., 2024) did not specify a journey phase

A minority of studies consider the *disposal phase* of the journey, affording insights into customer engagement and disengagement with sustainability practices such as recycling. A handful of papers address ways of disposing of packaging (Clark et al., 2022) and waste reduction (Ganeson et al., 2023; Puzzo & Prati, 2024). In addition, some

papers address the entire consumption cycle, such as circularity in second-hand goods (Armstrong & Park, 2020), second-hand luxury fashion (Arribas-Ibar et al., 2022), and sustainable modular products (Amend et al., 2022). Overall, our analysis reveals that most studies focus on the choice and consumption phases of the journey, whereas the disposal phase receives relatively little attention from the research community.

Key stimuli affecting CX in the context of sustainable consumption

The review identified key CX stimuli influencing customer experiences throughout the customer journey (see Table 2). We identified several CX stimuli that are linked to sustainability cues. *Product stimuli*, such as product elements tied to sustainability—for example, recycled materials and plant-based ingredients—along with products' sustainability-related sensory cues, act as catalysts for customer experiences during sustainable consumption throughout the customer journey. For instance, products made from recycled or plant-based ingredients may make consumption experiences more enjoyable (Tezer & Bodur, 2020). This review highlights the sustainability-related sensory cues of the products. For instance, the color of bio-typical products can effectively appeal to eco-conscious consumers (Ende et al., 2023). Conversely, less aesthetically appealing stimuli, such as irregular colors, textures, and shapes, have also been shown to influence sustainable consumption (Puteri et al., 2022). *Offering origin-related stimuli* is also a distinct stimulus; for instance, sustainability-linked origin information, such as geographic indicators or certifications related to local and organic foods, may influence CX in the purchasing and consumption phases (Savelli et al., 2019), and local and organic sourcing is a critical priority, for example, when preparing menus in eco-friendly restaurants (Meyer et al., 2021).

Many studies focused on understanding how *marketing promotion* stimuli influence consumers, thereby highlighting the influence of eco-conscious advertising and marketing messages on CX in the sustainable choice phase of the journey. For instance, marketing messages communicating the health benefits of organic offerings can influence the purchase of organic foods (Pilař et al., 2018). Consequently, the combination of sustainability-related message stimuli and stimuli highlighting experiential and pleasurable aspects can influence the choice of sustainable tourism (Hanna et al., 2018). Some studies suggest that sustainability-related messages are more effective when tailored to the context—environmental benefits resonate in shared spaces, while self-benefits (i.e., price reduction) work better in private settings (Green & Pelozo, 2014). Additionally, these message

Table 2 Key stimuli affecting CX in the context of sustainable consumption

Types of stimuli	Studied stimuli	Representative quotations
<i>Sustainability-related stimuli</i>		
Product stimuli	Product elements tied to sustainability (e.g., ingredients include recycled materials and plant-based ingredients) Products' sustainability-related sensory cues (e.g., biotypical color, suboptimal appearance of organic produce)	<p>"Across five experiments, we show that using green products (e.g., a pair of headphones produced from recycled materials, a dinnerware sanitizer made from plant-based ingredients) enhances the enjoyment of the accompanying consumption experiences (e.g., listening to music, cleaning dishes) compared to using conventional products." (Tezer & Bodur, 2020, p. 35)</p> <p>"Participants judged the products as bio or non-bio depending on the bio-typicality of the products' colours [...]." (Ende et al., 2023, p. 177)</p> <p>"Organic fruits and vegetables are often visually "suboptimal" because organic farming uses [...] we propose measures for policymakers and food retailers to reduce such ambivalence and thus increase organic consumers' acceptance for suboptimal food." (Puteri et al., 2022, p. 1)</p>
Offering origin-related stimuli	Sustainability-linked origin information (e.g., geographic indicators or certifications of local or organic food, locally grown, coming from authentic sources)	<p>"The respondents are driven by sensory values when buying and consuming truffles, and many of them perceive the importance of the "origin sign" (http://eur-lex.europa.eu) as an indicator of truffle quality." (Savelli et al., 2019, p. 1212)</p> <p>"For example, the statements "just being able to see where it comes from" and "knowing that everything is locally sourced" related to FND's procurement commitment, which was always a critical topic, along with food safety skills, when the menu preparation with volunteers started." (Meyer et al., 2021, p.11)</p>
Marketing promotion stimuli	Eco-conscious advertising and marketing messages (e.g., advertising focusing on sustainability, messages related to the health benefits of using organic and local products, shaming messages criticizing unsustainable consumption)	<p>"Consumers experience guilt in response to messages emphasizing the unsustainable (vs sustainable) nature of luxury products" (Amatulli et al., 2021, p. 412).</p> <p>"In marketing communication, product packaging should focus on communicating 'health' issues, such as active living; this area was found to be important in 11% of the cohort studied in the present work." (Pilař et al., 2018, p. 924)</p> <p>"We find that overt discourses of sustainability are often rejected by consumers, thus suggesting that messages concerned with sustainability should place greater priority upon consumer experience and opportunities afforded by the purchase and consumption of the travel experience (that happens to be sustainable) they can expect at their chosen destination." (Hanna et al., 2018, p. 36)</p>
Packaging-related stimuli	Bio-based packaging materials, labeling, hygiene factors of reusable packaging, interaction capability of bio-based packaging	<p>"This evolved packaging technology is becoming highly necessary as it could also ensure an increase in the interaction between the consumer and the food product, adding a new consumer experience besides allowing unambiguous data, traceability, and trackability." (Ganeson et al., 2023, p. 1)</p> <p>"This research shows that consumers have concerns with issues relating to hygiene, usability, motivation and finance, highlighting the factors which packaging professionals should consider when designing the user experience of RPSs." (Long et al., 2022, p.18)</p>
Price stimuli	Fluctuation of prices: higher prices signaling organic origins, lower prices with sustainability cues	<p>"FND meals were priced lower than other less healthful foods in the retail space, as an incentive; thus, customers mentioned the "great price" for such high-quality, locally sourced, healthy food." (Meyer et al., 2021, p. 10)</p> <p>"Participants judged the products as bio or non-bio depending on the bio-typicality of the products' colours and price levels (high price is more likely judged as bio)." (Ende et al., 2023, p. 177)</p>
Human stimuli	Interactions with peer-to-peer participants in the sharing economy	<p>"The results highlight collaborative consumption as being influenced by family practices, social relations and the current economic scenario." (Barbosa & Fonseca, 2019, P. 705)</p> <p>"Worth pointing out here is the experience being affected by the interaction with the person, e.g., while coordinating the transaction such as picking the product and dropping it." (He et al., 2021, p. 980)</p>
<i>General stimuli not specific to sustainability</i>		
Tech-nology stimuli	Virtual reality videos, gamification and utilitarian elements of the mobile app, big data (BD) applications, BD-enabled personalized stimuli, personalized voice assistance	<p>"The results show that while watching VR videos, people experience positive emotions, and this helps to improve the holistic image of the tourist destination." (Polishchuk et al., 2023, p.15)</p> <p>"These results indicate that a hybrid mobile app—containing utilitarian and gamification elements as well—might be one of the most effective combinations to encourage consumers to change their behavior towards more sustainable food consumption." (Haas et al., 2022, p.18)</p>
Human stimuli	Interactions with employees (e.g., direct interactions, staff attentiveness, positive emotional cues)	<p>"Although at the beginning of the study, it was speculated that words related to green practices would be the most used by the guests, the results showed that they still do not fully perceive the ecological services that the hotels engage in. The study proves that as long as consumers' personal needs are not affected, they will continue to be satisfied with their experience. The staff plays an important role, as they are the ones who directly connect with the clients; if at any time a customer comes to perceive something different in the rooms, facilities, or service, the accompaniment of the staff can mitigate this effect." (Moreno Brito et al., 2023, p. 1546)</p> <p>"Customers' experiences highlight FND's fresh, flavorful food, smiling and supportive staff, and personal transformation." (Meyer et al., 2021, p.1)</p>

Table 2 (continued)

Types of stimuli	Studied stimuli	Representative quotations
Physical spaces and atmosphere stimuli	Layouts, furniture, décor, light, color, scent of touchpoints	<p>“In the interior design of Hotel B, the lobby depicts wings, the veranda represents light and the gallery gives the feeling of time, creating a feeling of relaxation in arriving guests. The hotel integrates various experiences into a sensory design that include exterior modeling and imaging, landscaping and décor using antique items.” (Chen & Chen, 2022, p. 183)</p> <p>“In order to offer positive experiences for the customers, the in-store shopping environment of second-hand clothes sensory-based quality benefits should be gratified by colourfully, scented, and well-organized environments and clothes.” (Kapusy & Lógó, 2020, p.143)</p>
General product and offering origin related stimuli	Sensory attributes of sustainable offerings (e.g., color hue and saturation, taste, smell, flavor, shape and size) Authentic local cultural elements (e.g., scenic views, traditional clothing)	<p>“Senses of vision, taste, and smell collaborate to create sensory experiences of food, and interviewees mentioned having increased sensory awareness linked to their improved health.” (Birtalan et al., 2020, p. 8)</p> <p>“The findings of this study show that incorporating local arts and culture into sustainable service design can generate unique value and experiences for customers.”(Chen & Chen, 2022, p. 162)</p>

stimuli should be communicated in concrete terms, such as “made from ingredients that would otherwise go to waste,” rather than in abstract terms, such as “made from sustainable ingredients” (Taufik et al., 2023).

Packaging-related stimuli were identified as another critical element for CX in sustainable consumption. Packaging elements such as biodegradable materials, labeling, hygiene factors of reusable packaging, and the interaction capabilities of bio-based packaging can shape and enhance CX. For example, Ganeson et al. (2023) noted that the interaction capability of bio-based packaging can generate a unique customer experience. *Price stimuli*, such as lower prices associated with secondhand clothes and the higher prices of bio-based offerings, can shape positive CX by signaling the benefits or greater sustainability of the offering (Ende et al., 2023; Lee & DeLong, 2022). Research indicates that combining sustainability stimuli, such as edible active packaging, with price stimuli like affordable prices can enhance CX (Dabija et al., 2024). In addition, this review found that *human stimuli*, related peer-to-peer interactions, are of critical importance in the sustainable consumption and disposal stages, as they often involve the sharing or reselling of products (He et al., 2021).

In addition to the above, many studies exploring CX in the context of sustainable consumption have focused on *general stimuli not specific to sustainability*, for example, technology, human stimuli, physical spaces, and the atmosphere. *Technology stimuli* such as virtual reality videos, gamification, and big data applications, can enhance CX. For instance, virtual reality videos and smart connectivity features can provide authentic experiences (Polishchuk et al., 2023; Ullah et al., 2021). Furthermore, a combination of gamification, utilitarian elements, and eco-friendly features in mobile applications is considered important stimuli in sustainable consumption (Haas et al., 2022; Zandi & Sekhvat, 2024). *Human stimuli* not related to sustainability, such

as interactions with employees, have also been found to advance positive CX in sustainable consumption; for example, at an eco-friendly hotel, guests value interactions with hotel staff as the primary point of contact for issues regarding the facilities or services provided (Moreno Brito et al., 2023). In sustainable restaurants, customers value organic food and positive staff interactions, emphasizing human connection and emotional cues such as smiles as integral to dining experiences (Meyer et al., 2021). Finally, studies also highlighted *the physical spaces and atmosphere of touchpoints*, including layouts, furniture, décor, lighting, colors, and scents. For instance, the physical spaces and atmosphere of eco-friendly hotels influence the CX of guests (Ko et al., 2023), and in-store atmospheric matter in the context of secondhand clothing vendors (Kapusy & Lógó, 2020; Scott & Wu, 2025).

In sum, our findings indicate that most studies exploring sustainable consumption and CX emphasize environmental sustainability cues, such as eco-friendly product attributes and eco-conscious promotional activities. In contrast, economic dimensions (e.g., economic equity), social dimensions (e.g., social equity), and cultural sustainability-related cues (e.g., local arts and culture) receive considerably less attention.

Nature and emergence of customer experiences in sustainable consumption

The review identified a range of experiences evoked by sustainability-related stimuli (see Table 3). Many sustainable consumption-focused studies discuss the *sensory experience*, primarily focusing on pleasantness. This review highlights the role of pleasant, unpleasant, and neutral sensory experiences evoked by both sustainability and brand-related stimuli. For example, the pleasant smell and visual brightness of organic foods can

Table 3 Nature and emergence of customer experiences in sustainable consumption

Dimension of CX	Studied CX dimensions	Representative quotations
Sensory experience	Pleasant sensorial experience (e.g., pleasant visual experience; enhanced color, brightness; pleasant olfactory experience, (smell), pleasant touch, taste)	<p>“These results may indicate that smell, brightness and acceptance are the most important factors determining dry bean total acceptability, so effort should be directed at improving these attributes in an attempt to satisfy consumer experience.” (Arvanitoyannis et al., 2007, p. 819)</p> <p>“The materials of bamboo green, wood veneer, stone decoration created a touch of nature—the whole visual elicits the experiences of Qu Shui Liu Shang from Lanting Xu in a contemporary cocktail style.” (Qin & Ng, 2020, p. 9)</p> <p>“Participants were asked to evaluate the experience of drinking hot Earl Grey or iced lemon soft drinks in cups made of different materials such as glass, ceramic, opaque plastic, partially translucent plastic, and melamine. It was found that different cups significantly affected the judgment of sensory attributes such as “warm” and “sweetness.” The tactile characteristics affect consumers’ judgments of beverage products because of the differences in the color, weight, and texture of these cups made of different materials.” (Yang & Peng, 2021, p. 5)</p>
	Unpleasant sensorial experience (e.g., unpleasant visual experience, unpleasant olfactory experience, foul odor)	<p>“Finally, regarding visual responses, several participants pointed to a perceived lack of cleanliness and hygiene. As opposed to traditional sanitation, participants observed that the dry sanitation system was never “virgin” because users see the pile of sawdust, which can make the visual experience unpleasant.” (Guyader et al., 2022, p. 6)</p> <p>“People evoke memories according to smell, hygiene, perception of a lot of clothes, the sensory pleasure of many colours.” (Kapusy & Lógó, 2020, p. 143)</p>
Affective experience	Positive affective experience (e.g., comfort, enjoyment, fun, playfulness)	<p>“This study revealed that for most of the participants, the clarity of the new signage improved their navigational confidence which resulted in a more relaxing cycle highway experience. Policy makers and transportation planners are likely to be interested in the results of this study as they reveal how specific improvements to wayfinding along cycle highways not only help improve navigation, but also positively influence users’ perceived comfort and enjoyment.” (Van Lierop et al., 2020, p.12–13)</p> <p>“We demonstrate that consumers perceive an increase in their social worth when using green products and feel warm glow, which then enhances the enjoyment of the accompanying consumption experiences.” (Tezer & Bodur, 2020, p. 11)</p>
	Negative affective experience (e.g., negative emotions, shame, disgust, guilt)	<p>“This week, I found the “undergrowth” smell from the toilet to be rather [...] unpleasant.” (Guyader et al., 2022, p. 7)</p> <p>In case of car sharing, “Smoke residue in car creates feelings of disgust (hygiene) and infringement of personal space (territory).” (Baxter et al., 2017, p. 512)</p> <p>“Meat-shaming messages trigger shame but also other negative emotions that translate into reduced purchase intentions.” (Kranzbühler & Schifferstein, 2023, p. 1)</p> <p>“[...] the results showed that customers do experience guilt when discovering that their bank supports projects that do not give adequate consideration to the environment.” (Burhanudin et al., 2021, p. 38)</p>
Cognitive experience	Confidence and memory building	<p>“Most self-repair stories mentioned previous experiences as one of the reasons to attempt repair, resulting in repair confidence. [...] Specifically, previous positive experience stimulated young adults to try diagnosing the problem (sometimes using online resources). Understanding the extent of the required repair tended to make the search and negotiations of professional repair service quicker and more efficient. On the other hand, the non-repair stories often specified that the lack of previous repair experience was the reason for not attempting repair.” (Korsunova et al., 2023, p. 5)</p> <p>“Consuming local cuisine at local restaurants could offer a unique learning and memorable food experience.” (Karagiannis & Andrinou, 2021, p. 6).</p>
Social experience	Enhanced social value, strengthened social bonds, and collective experiences in sustainability-related community practices	<p>“Merely using a green product makes consumers perceive an increase in the extent to which they are valued as individuals by society, which leads to warm glow feelings, and consequently enhances the enjoyment of the accompanying consumption experience. When consumers experience low social worth, the positive effect of using green products on the accompanying consumption experience is amplified.” (Tezer & Bodur, 2020, p. 1)</p> <p>“I will always remember with great pleasure the time spent repairing the bicycle because it was a fun experience that I shared with my family.” (Korsunova et al., 2023, p. 4)</p>

enhance the sensory experience that shapes consumers’ perceptions (Arvanitoyannis et al., 2007). Similarly, a blend of various sensory experiences—pleasant touch, sight, taste—can form an integrated and holistic drinking experience (Yang & Peng, 2021). By contrast, *unpleasant visual experiences*, such as seeing a pile of sawdust, and unpleasant olfactory experiences, like foul odors, can negatively affect the overall experience of using dry

sanitation (Guyader et al., 2022). Likewise, Kapusy and Lógó (2020) link product stimuli, such as color and smell, along with the shopping environment and atmosphere, to shape pleasant, unpleasant, and neutral sensory experiences in secondhand clothing shopping. Interestingly, some studies also suggest the dual nature of pleasant sensory experiences, arguing that they may lead to unsustainable behaviors, while unpleasant experiences deter such

behaviors and promote sustainable consumption (Clube & Tennant, 2020; Tireki et al., 2024).

The reviewed studies also provide detailed insights into the role of affective experiences in sustainable consumption, which can be broadly classified as positive or negative. Our analysis reveals that, in sustainable consumption studies, positive affective experiences, such as comfort, enjoyment, fun, and playfulness, are more commonly reported than negative affective experiences. For instance, enhanced signage (e.g., color, size, position) along cycleways can make cycling a more enjoyable and comfortable experience (Van Lierop et al., 2020), thereby encouraging greater bicycle use and supporting sustainable urban mobility (Zhou et al., 2024). Further, self-repair experiences can stimulate positive emotions and influence how product categories are perceived (Korsunova et al., 2023). However, there is less clarity on how affective and sensory experiences translate into sustained behavioral changes. Moreover, many studies rely on self-reported intentions, rather than behavioral tracking or longitudinal designs, which weakens causal inferences. Our review also identified negative affective experiences, such as shame and guilt, caused by meat-shaming messaging (Kranzbühler & Schifferstein, 2023) or by a service provider's connection to environmentally irresponsible projects (Burhanudin et al., 2021). It was also notable that some affective experiences—such as shame—may lead to short-term compliance but long-term avoidance or disengagement (Kranzbühler & Schifferstein, 2023), thus further highlighting the complexity and dual nature of affective CX.

Cognitive experiences, such as memories related to sustainable consumption and confidence in sustainability practices, can also play a crucial role in sustainable consumption. For instance, the sensory richness of locally sourced cuisine can enhance the experience of consumption, leaving a lasting imprint on memory (Karagiannis & Andrinou, 2021). Similarly, when purchasing second-hand clothing, the smell and visual appeal of products may evoke past experiences or trigger memories (Kapusy & Lógó, 2020). Memories can also affect confidence in sustainable consumption practices; for example, self-repair success stories illustrate how past achievements can be empowering, increasing confidence in one's ability (Korsunova et al., 2023). The complex interplay among cognitive experiences can have significant implications for sustainable consumption, as memories of past accomplishments can inspire efforts to adopt more sustainable behaviors and lifestyles.

Our analysis also revealed how various *social experiences*, such as enhanced social value, strengthened social bonds, and meaningful collective experiences in sustainability-related community practices, can emerge in sustainable

consumption. For example, elements of products such as headphones made from recycled materials can enhance the pleasure of listening to music, reflecting consumers' belief that using eco-friendly items elevates their societal value (Tezer & Bodur, 2020). Similarly, research finds that individuals often include friends in buying second-hand clothing, which can strengthen social bonds and shape collective experiences (Kapusy & Lógó, 2020). Activities like community-supported agriculture (CSA) nurture relationships with local farmers and other acquaintances. CSA participants may organize social events like dinner parties to share surplus vegetables from their CSA boxes, illustrating how sustainable practices can catalyze community-building and collective experiences (Birtalan et al., 2020). Social dimensions also seem relevant in shaping sustainable behavior in restaurants (Jun & Yoon, 2024). In access-based platforms, the interconnectedness of the customer experiences of various customers is essential for enhancing process efficiency (Trujillo-Torres et al., 2024). For instance, research indicates that collective experiences in carpooling shape consumer decision-making about further use of the service (Magassy et al., 2024). However, limited research has addressed this issue, despite the increasing prevalence of access-based businesses such as peer-to-peer car sharing and clothing rental, which rely heavily on the seamless coordination and collective experiences of multiple customers.

The reviewed studies also reveal how contextual factors shape the nature of the stimuli. Some studies explored how contextual factors shape the impact of stimuli on affective experiences (Beekman et al., 2021; Van Cauwenberg et al., 2018) and how innovative strategies, like modular shoe design or combining digital and physical elements in retail settings, can engender positive affective experiences (Petreca et al., 2022). Barros and Casotti (2023) found that, when shaped by ecological constraints, social, cultural, material, and technical stimuli in an ordinary context can foster unique, extraordinary experiences where individuals reduce, reject, or rethink conventional consumption.

This review highlights the multifaceted nature of experiences associated with sustainable consumption. We have identified manifestations of sensory, affective, cognitive, and social dimensions of experiences; however, interestingly, none of the analyzed studies described the immediate behavioral dimensions at touchpoints. The review also suggests that contextual factors, including social and cultural interactions, may significantly influence various dimensions of CX. Overall, the findings of this section underscore the complexity of CX in sustainable consumption and the importance of integrating multiple dimensions to foster sustainable consumption.

CX outcomes in sustainable consumption

Our study suggests that CX can influence sustainable consumption in multiple ways (Table 4). Depending on the dimension of CX—whether considered alone or in

conjunction with other dimensions—it can either hinder or promote sustainable consumption. Our study shows that CX can influence the *intention to (re)purchase (un)sustainable offerings*. For instance, for purchasing decisions related to sustainable offerings such as second-hand clothing and

Table 4 CX outcomes in sustainable consumption

Types of outcomes	Studied outcomes	Representative quotations
Intention to (re)purchase (un)sustainable offerings	Enhanced intention	“Our findings that product experience has a strong collocation with the shopping experience and both plays very important role in purchase decision.” (Kapusy & Lógó, 2020, p. 143)
	Enhanced sustainable offerings	“Results showed that knowledge about organic PCP and sensory appeal significantly improved the utilitarian and hedonic attitude towards these products. Finally, both the affective and functional attitudinal dimensions significantly increased the purchase intention.” (Vergura et al., 2020, p. 121)
	Enhanced repurchase intention	“We document that after using the green (vs. conventional) product, consumers are more likely to purchase the focal green (vs. conventional) product and willing to pay more for it.” (Tezer & Bodur, 2020, p. 11). “The analysis highlighted the ways in which, for our participants at least, the main draw for them to a destination was their own hedonistic experience.” (Hanna et al., 2018, p. 42) “The evidence from this study clearly shows that consumers’ experience significantly influences the purchase intention of organic rice.” (Jitrawang & Krairit, 2019, p. 822)
Willingness to pay (WTP)	Reduced intention to purchase unsustainable offerings	“This study analyzed the following seven factors: the four sub-dimensions of experiential value (CROI, service excellence, aesthetics, and playfulness), overall image, revisit intention, and willingness to pay a premium [...]. Additionally, it was confirmed that the overall image of ECHRs, which is formed through experiential value, positively influences consumer revisit intentions and willingness to pay a premium. (Ko et al., 2023, p. 11) “This study collects data from 303 consumer surveys on green food consumption to explore the impact of consumer satisfaction with consumption experience on green food repurchase intention and further explore the mechanisms and influence boundaries. The results show that consumer experience satisfaction positively affects green food repurchase intention.” (Wang et al., 2023, p.1)
	Enhanced willingness to pay more	“The meat-shaming message decreases consumers’ purchase intention of the meat product in question. Next to this immediate effect, it also has potential long-term effects as it increases consumers’ intentions to restore their self-image by eating less meat in the future (i.e., approach behavior).” (Kranzbühler & Schifferstein, 2023, p. 6) “Indeed, people’s subjective ambivalence outweighed the impact of people’s mere attitude on their willingness to pay for suboptimal food.” (Puteri et al., 2022, p. 12) “The results suggest that WTP is influenced by consumers’ experience, awareness, perceptions regarding better quality and high price, and preference for the retail distribution of organic olive oil.” (Kalogeris et al., 2009, p. 286)
Individual (dis)engagement with sustainability practices	Enhanced individual engagement with sustainability practices	“Positive experiences with secondhand purchases have reduced the prejudices about secondhand use and have positively affected the concept of clothing sharing.” (Lee & DeLong, 2022, p. 308) “Our participants’ repair stories highlight how positive experiences of self-repair as enjoyable and empowering projects (with various outcomes) contribute to propensity to repair.” (Korsunova et al., 2023, p. 7) “A number of interviewees commented that participation empowered them to learn new abilities in managing food consumption [...]” (Birtalan et al., 2020, p. 8) “The [...] analysis indicated that enjoyment of the ride is an important factor that contributes to the intention to use autonomous shuttles in the future.” (Feys et al., 2020, p.1) “This study is also one of the first studies to identify the effect of user experience on energy saving behavior.” (Xu et al., 2021, p. 285)
	Reduced individual engagement with sustainability practices	“Finally, regarding visual responses, several participants pointed to a perceived lack of cleanliness and hygiene. As opposed to traditional sanitation, participants observed that the dry sanitation system was never “virgin” because users see the pile of sawdust, which can make the visual experience unpleasant. For instance, used toilet paper can remain largely visible. In addition, several participants highlighted the recurring appearance of bacterial problems (e.g., mold or fungus) that made the system unattractive and difficult to clean. The awareness of a mediocre visual experience was reported as being particularly negative among guests who used, or refused to use, the sanitation system.” (Guyader et al., 2022, p. 6)
Willingness to consume alternative sustainable offerings (WTC)	Enhanced or reduced willingness to consume alternative sustainable offerings	“Plant-based products are complex materials showing different quality properties. Sensorial properties of these products are the critical barriers to consumer acceptance.” (Tireki et al., 2024, p. 3725) “Across a large number of studies, affect-based factors, such as ‘food neophobia’, ‘disgust’ and ‘the expected unpleasant taste of insects’, were consistently strongly correlated with WTC.” (Wassmann et al., 2021, P. 909)

alternative sustainable foods, sensory experience is a motivating factor that can either hinder or promote sustainable consumption (Clube & Tennant, 2020; Hopkins et al., 2022; Kapusy & Lógó, 2020). Positive affective experiences motivate customers to purchase sustainable offerings (Tezer & Bodur, 2020) and when choosing tourist destinations (Hanna et al., 2018). By contrast, negative affective experiences can not only discourage meat consumption but also encourage an intention to eat less meat in the future (Kranzbühler & Schifferstein, 2023). In addition, Wang et al. (2023) highlight the pivotal role of CX in fostering repurchase intention.

Our review reveals that many studies associate CX with the *willingness to pay more for sustainable offerings*. Sensory experiences influence the willingness to pay more for suboptimal sustainable fruits and vegetables (Puteri et al., 2022). Likewise, positive CX influenced by technological CX stimuli can enhance the willingness to buy organic offerings (Bolesnikov et al., 2022; Chandra & Verma, 2023). In addition to the willingness to pay a premium price, positive CX, defined by experiential value, enhances the overall brand image, leading to increased revisit intentions (Ko et al., 2023). Positive affective experiences also enhance the reuse intention of sustainable offerings (Balatsas-Lekkas et al., 2024) and customer engagement through brand loyalty, referrals, and feedback for improvement (Ullah et al., 2021). These findings highlight the crucial role of well-crafted experiences in fostering customer loyalty within sustainable consumption contexts.

Some studies also indicate that CX may influence an individual's *(dis)engagement with sustainability practices*. For instance, unpleasant visual and olfactory experiences reduce engagement with sustainable sanitation (Guyader et al., 2022). Interactive technology and product design can promote a unique CX by involving customers with sustainable products or materials; in return, these experiences foster their engagement (Petreca et al., 2022). Cultural customs and conventions (e.g., product origins) can also shape CX, which in turn contributes to enhanced engagement in sustainability practices (Qin & Ng, 2020). CX has also been found effective for enhancing the intention to consume less energy (Xu et al., 2021). Finally, a handful of studies indicate that CX can influence a *willingness to consume alternative sustainable offerings*, such as meat alternatives (Wassmann et al., 2021) or plant-based products (Tireki et al., 2024).

In sum, the analysis indicates that CX is relevant to sustainable consumption and that a CX perspective can either enhance or detract from it.

Critical discussion and implications for future research

In this section we discuss the unique characteristics and tensions related to the nature of CX stimuli, emergence, and outcomes in the context of sustainability in relation to commonly held assumptions on CX in traditional consumption contexts (Table 5). We also delineate implications for future research based on gaps identified in the literature review and the observed tensions.

Rethinking CX stimuli

Traditional CX research has primarily focused on brand-related stimuli, such as logos, signs, and symbols, typically highlighting stimuli that reside in the pre-purchase phase of the journey (e.g., Brakus et al., 2009). This review reveals that, in the context of sustainable consumption, both traditional product/brand-related stimuli and sustainability-related stimuli (Tezer & Bodur, 2020) are relevant to consumer experiences. In other words, CX stimuli play a dual role, signaling both the qualities of the brand and its sustainability. Furthermore, our review highlights the importance of stimuli residing in the disposal phase of the journey, such as social stimuli related to reselling or sharing products (He et al., 2021). Thus, we propose that:

P1 In sustainable consumption contexts, CX is triggered by the interplay of brand-and sustainability-related stimuli across the entire customer journey, including the disposal phase.

Traditional CX research has also tended to assume that appealing stimuli, such as bright colors, smooth textures, and shiny packaging, can signal higher quality and greater functionality (Gentile et al., 2007). However, our review found that reality is more complex. On the one hand, appealing sensory cues such as biophilic or ecologically typical bright colors and fresh scents are perceived as a sign of sustainability (Arvanitoyannis et al., 2007; Ende et al., 2023). On the other hand, less appealing sensory cues, such as earthy odors, dull or muted colors, or rough textures, can also signal sustainability and convey authenticity in compelling ways (Puteri et al., 2022; Tireki et al., 2024). This duality creates a “Janus-faced” situation for research and practice, challenging researchers and practitioners to reconsider the role of imperfection not as a deterrent, but as a potential enabler of the perceived sustainability of the customer experience. This leads us to propose:

Table 5 Special features of CX in the context of sustainable consumption

CX elements	“Baseline assumptions” in CX research	Special features of CX in sustainability contexts	Research proposition
CX stimuli	<ul style="list-style-type: none"> Typically focus on brand-related stimuli (Brakus et al., 2009), often focusing on the purchase decision-making journey (Baxendale et al., 2015) Stimuli should be appealing to trigger positive CX (Gentile et al., 2007) 	<ul style="list-style-type: none"> Consumers respond to both sustainability- and brand-related stimuli (Meyer et al., 2021; Savelli et al., 2019; Tezer & Bodur, 2020) Social stimuli residing in post-purchase touchpoints are central for CX (He et al., 2021) Unappealing (e.g., earthy odors, muted tones) stimuli may be beneficial for CX, as they signal sustainability (Ende et al., 2023; Puteri et al., 2022) 	<p>P1: In sustainable consumption contexts, CX is triggered by the interplay of brand- and sustainability-related stimuli across the entire customer journey, including the disposal phase</p> <p>P2: In sustainable consumption contexts, both appealing and unappealing CX stimuli can influence the perceived sustainability of the customer experience</p>
Nature and emergence of CX	<ul style="list-style-type: none"> Firms should aim at creating positively valenced CX and develop touchpoints and journeys to avoid negatively valenced CX (Gahler et al., 2023; Kranzbühler et al., 2020) Past experiences affect purchase decisions and the nature of CX by setting expectations (Lemon & Verhoef, 2016) 	<ul style="list-style-type: none"> Acceptance of discomfort can lead to positive experiences (Caruana et al., 2020; Barros & Casotti, 2023) Consumers adopting sustainable solutions emphasize future-oriented goals (Pillan et al., 2019) 	<p>P3: In sustainable consumption contexts, acceptance of unpleasant experiences may ultimately enhance customer experiences</p> <p>P4: In sustainable consumption contexts, customer experience is affected by tensions between consumers’ past experiences and future-oriented sustainability goals</p>
CX outcomes	<ul style="list-style-type: none"> Positive CX leads to increased loyalty and customer satisfaction (Brakus et al., 2009) Focus on purchase-related behavioral outcomes such as repurchase intentions, actual purchases, and word-of-mouth (Homburg et al., 2017; Sheth et al., 2023), and evaluative psychological outcomes such as satisfaction and loyalty (e.g., Kumar et al., 2019) 	<ul style="list-style-type: none"> Negative experiences may reduce unsustainable actions (Burhanudin et al., 2020) Firms may trigger negative affective experiences, such as guilt, to inspire sustainable actions, but that may lead to consumer resistance in the long term (Kranzbühler & Schifferstein, 2023) CX can enhance purchase-reducing behaviors such as repairing and recycling (Petreca et al., 2022), Positive CX may decrease consumers’ purchase intentions (Sherriff et al., 2019) 	<p>P5: In sustainable consumption contexts, negative experiences can positively affect immediate actions, yet negatively affect long-term behavior change</p> <p>P6: Sustainability-aligned CX may positively influence purchase-related performance outcomes, but can also drive sustainable behaviors that negatively influence firm performance.</p>

P2 In sustainable consumption contexts, both appealing and unappealing CX stimuli can influence the perceived sustainability of the customer experience.

Implications for future research Our review shows that more research attention has been given to environmental sustainability-related stimuli than to CX stimuli associated with the economic, social, or cultural dimensions of sustainability. Future research should focus on CX stimuli associated with these less-frequently studied dimensions of sustainability to enable the development of broader frameworks for companies and policymakers to facilitate experiences that encourage sustainable practices. Thus, further studies could focus on stimuli related to equitable work conditions, local traditions, cultural heritage, and/or social and cultural norms, for example. These stimuli often originate from broader institutional and societal environments and fall beyond the firm’s direct realm of “controllability,” as do social stimuli. Furthermore, our review reveals that CX studies focusing on the disposal phase of the customer journey are scarce, despite having important implications for sustainability. Future research should strive to understand CX throughout the whole lifecycle of offerings; this would

help scholars and practitioners alike to design more effective sustainability initiatives. Overall, our review suggests that understanding the nature and influence of stimuli outside a firm’s immediate control is particularly important in the context of sustainable consumption.

Building on the Janus-faced nature of sustainability-related stimuli, future research should investigate how different types of stimuli, both appealing and unappealing, shape the dimensions of CX. One important direction of future research will be to explore boundary conditions: when and for whom less appealing but authentic sustainability-related CX stimuli enhance, rather than hinder, perceived sustainability of the customer experience. Additionally, longitudinal and behavioral studies could examine whether stimuli linked to authenticity foster stronger, more enduring, sustainable behaviors than those based on more aesthetic appeal. Finally, incorporating the dual nature of stimuli into multisensory design and service environments may offer valuable practical and theoretical insights into how organizations can effectively communicate sustainability to diverse consumer segments.

Rethinking the nature and emergence of CX

Traditional managerial and practice-oriented CX reflects a hedonic logic that assumes individuals seek pleasure and avoid pain (Cova, 2021). Thus, there is an underlying assumption that positive valence of experiences is always valuable (e.g., Kranzbühler et al., 2020). CX research in the context of sustainable consumption reveals a more varied picture. Negative affective experiences, such as guilt related to unsustainable consumption, can prompt sustainable actions that in turn induce positive customer experiences (Amatulli et al., 2021; Cui et al., 2020). In a similar fashion, unpleasant experiences related to sustainable tourism ultimately induced positive experiences in the form of pride over sustainable actions (Caruana et al., 2020; Barros & Casotti, 2023). Building on this, we propose:

P3 In sustainable consumption contexts, the acceptance of unpleasant experiences may ultimately enhance customer experiences.

Traditional CX frameworks consider that consumers' past experiences play an essential role in the formation of new experiences by setting expectations (Lemon & Verhoef, 2016). At the same time, the literature on sustainability strongly emphasizes the role of the future in consumer consumption (Chen et al., 2024b; Farmer et al., 2017), indicating that consumers emphasize future-oriented goals when adopting sustainable solutions (Pillan et al., 2019). This highlights a critical tension: while sustainability frameworks advocate for future-oriented thinking, the lived experiences of consumers significantly impact their purchasing decisions. For instance, when consumers shop at second-hand clothing stores, their sensory experiences may evoke unfavorable comparisons with past experiences in more luxurious retail environments, potentially complementing or overshadowing the sustainability narrative. This leads us to propose the following:

P4 In sustainable consumption contexts, customer experience is affected by tensions between consumers' past experiences and future-oriented sustainability goals.

Implications for future research This review reveals a lack of studies on the behavioral dimensions of CX associated with sustainable consumption, specifically the observable actions and responses that emerge dynamically during real-time touchpoint interactions. Thus, there is a need for further research to address the behavioral dimensions of CX, especially as consumers' immediate behavioral responses

may be critical for advancing sustainable practices and long-term customer outcomes.

Our review shows that a range of positively and negatively valenced, multidimensional experiences have been identified in the context of sustainable consumption, but each study typically focuses on a particular type of experience. At the same time, we observed tensions involved in the mixture of experiences. Future research should seek a more holistic view of the range of types of experiences, how they work simultaneously, and identify critical contingencies that influence the effects these experiences have on promoting sustainable behavior. For example, when should a firm seek to trigger negative affective experiences to evoke an overall positive CX, building on sustainability? Furthermore, future research should delve more deeply into the influence of past experiences, as their role in shaping CX has remained unclear in the context of sustainability. These studies could explore, for instance, how firms using recycled or second-hand materials can address the dilemma of potentially creating less pleasant sensory experiences than their competitors who use virgin materials.

Rethinking CX outcomes

Traditional CX research tends to assume a linear relationship where positive input (e.g., appealing CX stimuli) is expected to trigger positive CX, leading to positive outcomes (e.g., enhanced loyalty and customer satisfaction) (e.g.; Brakus et al., 2009). Our findings challenge this assumption and indicate non-linear, dynamic, and context-dependent relationships among CX and its drivers and outcomes. Studies focusing on sensory experiences show that the influence of pleasant and unpleasant experiences on sustainable consumption can range from positive to negative or neutral (Clube & Tennant, 2020; Kapusy & Lógó, 2020). Research also indicates that negative affective experiences triggered by unsustainable actions, in some cases, can be more effective motivators of adopting pro-sustainable behaviors than positive affective experiences (Burhanudin et al., 2021). At the same time, these negative experiences can be counterproductive, leading to an avoidance or denial of sustained behavior change (Kranzbühler & Schifferstein, 2023). Building on this, we propose:

P5 In sustainable consumption contexts, negative experiences can positively affect immediate sustainable actions, yet negatively affect long-term behavior change.

Traditional CX research has focused mostly on CX outcomes related to firm performance, especially purchase-related behavioral outcomes, such as repurchase intentions,

actual purchases, and word-of-mouth behaviors (Homburg et al., 2017; Sheth et al., 2023), and evaluative psychological outcomes, such as customer satisfaction (Kumar et al., 2019). CX research conducted in the sustainable consumption context aligns with these findings, showing that CX shapes both purchase and repurchase intentions (Pai et al., 2023; Qi et al., 2023) and acceptance of sustainable offerings (Chen et al., 2024b), and enhances satisfaction during the consumption process (Kement et al., 2021). At the same time, studies have shown that CX can influence sustainability-related, non-purchase processes such as repairing and recycling, engagement or disengagement in sustainability-related practices (Petreca et al., 2022), and willingness to consume alternative sustainable offerings (e.g., Wassmann et al., 2021). Ultimately, positive CX with sustainable consumption can lead to lower levels of consumption (Mylan, 2018; Sherriff et al., 2019). Thus, some of the potential outcomes of CX appear to conflict with traditional measures of firm performance. This led us to propose:

P6 Sustainability-aligned CX may positively influence purchase-related performance outcomes, but can also drive sustainable behaviors that negatively influence firm performance.

Implications for future research Future research could investigate in greater detail how the various dimensions of CX influence both purchase behaviors and non-purchase behaviors related to sustainable consumption. These studies might compare and contrast how stimuli and the dimensions of experiences remain similar or different when customers' goals shift from purchase-related sustainable consumption to a non-purchase-related sustainability context. Furthermore, future research could investigate which stimuli and dimensions are most influential in shaping unique, sustainable consumption-related outcomes. More specifically, which stimuli or dimensions can shape avoidance behaviors related to sustainable consumption (e.g., consume less), the willingness to consume alternative sustainable offerings, and/or the willingness to extend the lifecycle of offerings?

Future works should explore how CX impacts various forms of customer engagement, including affective, cognitive, or behavioral engagements, both in purchase and non-purchase scenarios related to sustainable consumption. Finally, while CX is often positioned as a catalyst for sustainable purchases, its influence on non-purchase behaviors, such as reuse or repair, receives far less attention. This imbalance raises a critical question: Do positive experiences at the point of sale sustain behaviors beyond the transaction, or do they fade after the purchase?

Conclusion

Theoretical contributions

In exploring the role of CX in sustainable consumption, this systematic literature review makes several theoretical contributions to CX and sustainable consumption research. First, the study *synthesizes existing research knowledge* on CX in the context of sustainable consumption. In summary, Fig. 4 presents a comprehensive, integrative framework that connects the key elements of CX and sustainable consumption. The framework integrates a range of CX stimuli along the customer journey that have been found relevant for sustainable consumption, showing which dimensions of CX these stimuli trigger and how they enhance or hinder sustainable behavior. Existing accounts of these concepts are fragmented, and this is the first in-depth investigation to focus on charting the role of CX in influencing sustainable consumption.

Second, this study highlights the *unique nature and tensions related to CX in sustainable consumption* contexts (Table 5). Despite the increasing relevance of sustainable consumption, CX research has remained deeply rooted in hedonic consumption contexts. Pinpointing some of the unique features and points of departure from existing assumptions, this study can facilitate future research on CX in this vital context.

Taken together, this study advances research in both the customer experience and sustainable consumption domains. For CX research, this study contributes by facilitating the application of the CX concept beyond the traditional transaction-focused and hedonic contexts. The review identifies various outcomes related to non-transactional environmental goals, such as consuming less, repurposing, repairing, and recycling. It also includes the non-transactional parts of the journey that previous CX studies have seldom addressed, given their typical focus on purchase journeys (Lemon & Verhoef, 2016), aiming to increase sales (Srivastava & Kaul, 2016; Wijaya et al., 2019). In contrast, the framework developed here incorporates sustainable consumption and its various dimensions, including environmental, economic, social, and cultural aspects, making this new CX framework better equipped to explain purchase behavior, non-purchase behavior, and emerging sustainability practices such as renting and sharing throughout the customer journey.

In addition, the proposed framework and propositions offer a more balanced view of CX throughout the customer journey by highlighting both pre-purchase journeys, such as the intention to buy second-hand clothing, and the disposal phases of journeys, such as recycling. This broadens CX research beyond traditional firm-centric, performance-related accounts of outcomes, such as customer loyalty

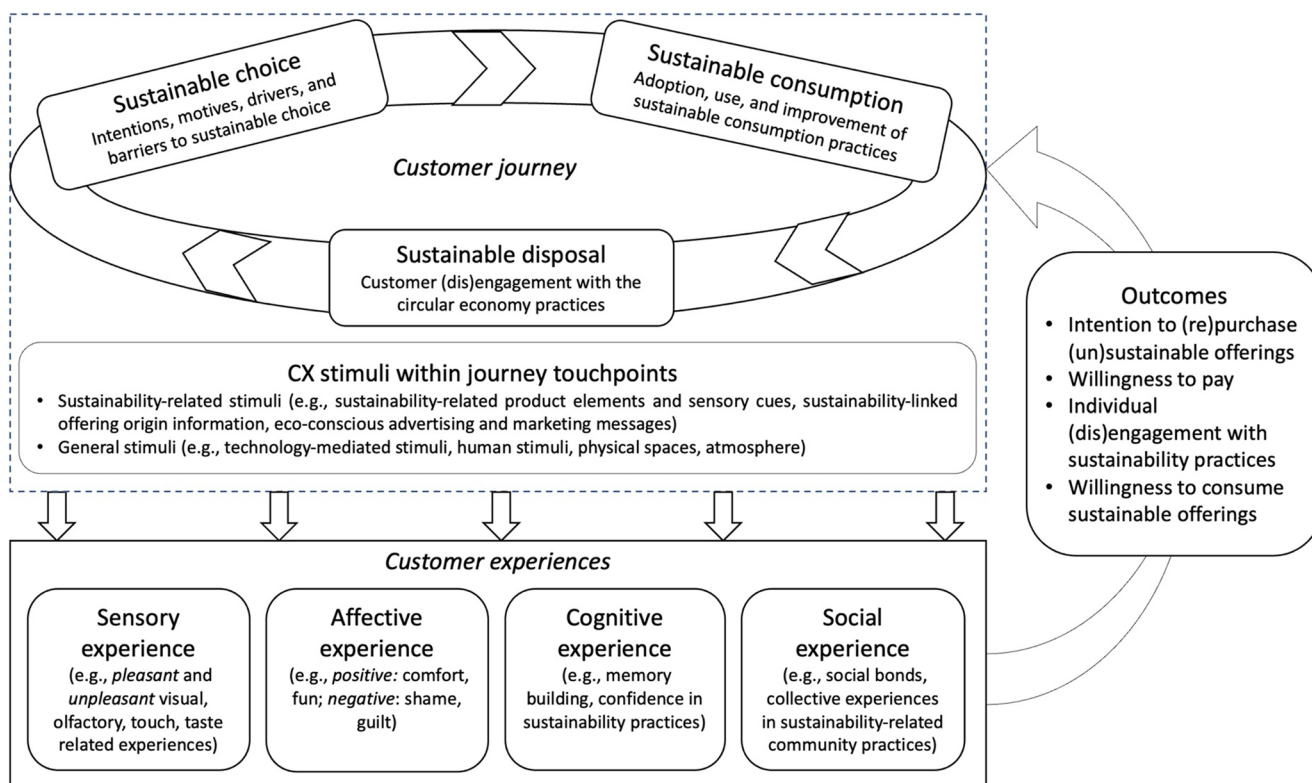


Fig. 4 An integrative framework linking customer experience to sustainable consumption

and purchase intention, which fail to consider critical sustainability issues, including product disposal and reduced purchasing.

In terms of sustainability research, this study contributes by consolidating current knowledge on the influence of CX on sustainable consumption, offering a holistic view that complements current studies that have mainly focused on isolated interventions or drivers (Lehner et al., 2016). Furthermore, this study identifies dimensions of experiences and stimuli that are particularly highlighted in the context of sustainable consumption. Thus, the study provides an overview of the elements that should be considered to clarify the role of CX in sustainable consumption. Moreover, the CX view offers insight into the process of sustainable consumption and the various stimuli and resulting multi-dimensional experiences that affect it, thereby illuminating the underlying mechanisms of sustainable consumption behavior that are currently less known, considering that current research has typically focused on “what solutions,” that is, the outcomes of interventions (Caferra et al., 2023).

This study and the developed propositions also challenge prevailing assumptions about consumers’ behaviors. As traditional explanations based on the knowledge, attitude, and practice model emphasize how awareness and understanding influence consumption, most previous efforts to promote sustainable consumption have prioritized education

and awareness campaigns (Blake, 1999; Hinchliffe, 1996; Prothero et al., 2011; Sangroya & Nayak, 2017). By contrast, our novel perspective identifies dominant CX stimuli, dimensions of experiences, and their outcomes as a point of departure for alternative ways of explaining and addressing the gap in the sustainable consumption literature. This approach extends beyond the initial choice phase to the consumption and disposal phases and confirms the role of CX in sustainable consumption.

Finally, this systematic review identifies the aspects that have been studied and highlights the areas where important knowledge gaps persist, thereby laying the groundwork for future research on CX in sustainable consumption contexts. For example, the review highlights that existing studies have primarily emphasized the environmental dimensions of sustainable consumption, mostly overlooking the economic, social, and cultural dimensions, and highlighting the need to study the disposal phase of customers’ journeys. As a whole, this study confirms that the CX concept offers great potential for promoting sustainable consumption and thereby advocates for incorporating CX as a new element into the sustainability marketers’ and researchers’ toolbox.

Like all studies, this study is not without limitations. Relying exclusively on the WoS and Scopus databases may have excluded relevant content outside these repositories, potentially limiting access to multidisciplinary, novel, or

emerging perspectives. As this is typical for systematic literature reviews, we may have missed articles that address phenomena related to customer experience but use different terminology. Finally, the intersection of CX and sustainable consumption remains a relatively new research area, which means that the sample of articles is still relatively small.

Managerial implications

Our study has implications for CX management to drive sustainable consumption. While companies cannot directly shape their customers' experiences, they can create, manage, or regulate the stimuli that inform those experiences (Becker & Jaakkola, 2020). Our review reveals that both appealing and unappealing stimuli can serve as sustainability signals, influencing various dimensions of CX with differing valences. These diverse experiential responses, whether positive or negative, can play a meaningful role in informing, motivating, and advancing sustainable consumption over time. Consequently, managers should move beyond their long-held assumptions that positive-valenced customer experiences (e.g., positive, pleasant) alone create value for customers. Thus, managers must acknowledge that appealing stimuli, such as eco-labels, and unappealing stimuli, like apparent traces of reuse or imperfections, can be significant sustainability indicators. Undoubtedly, this understanding can help managers in two ways. First, managers can purposefully incorporate raw or imperfect features as indicators of authenticity, thereby reinforcing notions of sustainability, rather than merely enhancing the aesthetic appeal of sustainable offerings in their design and promotional appeals. Second, this understanding can aid in effectively segmenting customers, as an option manager may use appealing, attractive cues for sustainability novices and unrefined, genuine signals for sustainability-savvy customers to underscore authenticity. Furthermore, our study highlights the interconnection between sustainability-related stimuli and environmental, economic, and socio-cultural frameworks. This insight requires managers to implement stimulus designs that correspond with wider environmental (e.g., biodiversity), economic (e.g., global prosperity), cultural (e.g., indigenous materials), and social (e.g., social equity) dimensions. By adopting these stimulus designs, managers can ensure that they are fostering an ecosystemic experience where sustainability is deeply integrated into the offerings' lifecycle, rather than merely superficial. To achieve this, managers must collaborate with a broader ecosystem, including suppliers, logistics providers, local communities, environmental groups, and others. This approach will help in designing internal stimuli (those within the firm's control) and in exerting influence over external stimuli (those outside the firm's control).

Managers should also understand CX during the whole lifecycle of offerings; doing so will help them to develop more effective sustainability initiatives aimed at fostering sustainable consumption. CX should be viewed as a dynamic, iterative process that involves ongoing interpretation and behavioral modification at touchpoints throughout the consumption cycle, including consumption minimization and product lifecycle termination decisions. This approach will enable managers to design more effective sustainability initiatives to nurture long-term sustainable consumption. Thus, managers should pay attention to various disposal journeys after an offering's consumption and use end. In this way, managers can identify phases and touchpoints and map disposal journeys to better design CX stimuli at touchpoints to foster sustainable consumption. By adopting this comprehensive approach to CX management and prioritizing sustainability, managers can shape customer experiences that enhance business performance and contribute positively to the environment, economy, culture, and society.

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Authors' contributions All four authors contributed to the article. Bidyut Kumer Balo: Designed the study, conducted the literature review, developed the research framework, and led the analysis and synthesis of findings. He also wrote the initial draft and revised the manuscript based on feedback from co-authors. Elina Jaakkola: Provided conceptual guidance for the study design, contributed to the interpretation of findings, and supported the drafting of the introduction and contribution sections. Majid Aleem: Contributed to the methodology section and offered insights for both the methodology and findings sections. Birgitta Sandberg: Contributed to the overall conceptualization and provided insights in the introduction section and analysis of findings.

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Data availability This is a literature review and does not involve any empirical data.

Declarations

Ethical approval Not applicable. This study did not involve human or animal participants; therefore, ethical approval was not required.

Competing interests The authors declare that they have no competing interests. There are no financial, professional, or personal conflicts that could have influenced the outcomes of this research.

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