Sustainable Consumption And Digital Era: A Review And Research Agenda

Muhammad Mohsin Ali Khan1*, Dr. Hamid Mahmood2

Abstract

The transformation in the digital era has enabled marketers and scholars to understand how companies might facilitate sustainable consumption. Recognizing its significance, the current study provides a brief review of emerging concepts in sustainable consumption studies, aiming to emphasize crucial research themes that have not yet been extensively investigated. This study is anticipated to provide valuable insights into the future direction of sustainable consumption and identify topics that warrant further scholarly advancement, emphasizing its academic prominence. We further emphasize certain themes that need to be prioritized when implementing new technologies, particularly artificial intelligence (AI), in order to encourage sustainable consumption.

Keywords: Social media, Digital marketing, Artificial intelligence, Sustainable consumption, Industry 5.0, Disruptive events.

Introduction

The world has been steadily transitioning toward the digital era over the years. The rise of this age has resulted in a nearly complete disclosure of the brand among customers in this particular era (Mbama & Ezepue, 2018; Mahmood et al., 2022). Particularly in the field of sustainability, the advent of innovative technologies that utilize artificial intelligence (AI) and the Internet of Things (IoT) has ushered in an era of profound change across a variety of industries (Kumar et al., 2021; Kim et al., 2021). In conjunction with various social networking platforms, these technologies have become indispensable components of the daily lives of customers (Dieck et al., 2022). In today's world, tech-savvy customers spend a significant amount of time online to get knowledge about the most recent and environmentally friendly goods (Kaur et al., 2020; Urdea et al., 2021). Consequently, marketers are making significant investments in innovative technologies that help to manufacture products that are not only effective and efficient but also prove exceptional potential in promoting sustainable consumption (SC), especially within the field of marketing.

With the increasing awareness of environmental concerns worldwide, there has been a notable change in consumer attitude towards the purchase of sustainable goods (Mahmood et al., 2020; Lavuri et al., 2023). The rise of this phenomenon is reinforced by technological
advancements, which have facilitated customers' access to information on the ecological consequences of their purchases (Urdea et al., 2021). With the changing nature of the digital landscape, marketers must promote sustainable practices. This will help reduce greenhouse gas emissions (Severo et al., 2023), promote human health and happiness (Ivanov, 2023), and build a positive reputation for the brand among eco-conscious consumers (Zameer et al., 2020). Thus, sustainable consumption (SC), which reflects the customers' energy conservation, waste and recycling behavior, involvement in nature-related activities, and environmentally conscious purchasing, has great significance (Tan & Lau, 2011). Another evidence of SC's practical value in the business sector is that SDG 12 of the "United Nations Sustainable Development Program" 2030 calls for responsible production and consumption with the objective of "doing more and better with less" to raise the standard of living and ensure that "no one is left behind" through the promotion of sustainable consumption (General, 2015).

Drawing on various theoretical frameworks, different scholars have used SC in different contexts. The concept of SC has been used to identify purchasing behavior (Tan & Lau, 2011), consumption behavior (Kadic-Maglajlic et al., 2019), explaining sustainable choices (Li et al., 2021), pro-environmental engagement (Čapienė et al., 2021) and advancing sustainable consumption (Dermody et al., 2015). But prominently, the role of influencer marketing in producing greater effectiveness in the utilization of resources and on the consumption behavior of customers has been defined by many researchers (Bognar et al., 2019; Chopra et al., 2021; Kilipiri et al., 2023; Li et al., 2024). However, social media sites have played a prominent role in influencing the customers' attitudes and behavior towards SC, which still needs attention.

Considering its practical importance in today's business environment, SC has also been a focal point in recent marketing research (Weber et al., 2021; Haider et al., 2022; Kar & Harichandan, 2022). In recent years, there has been a significant increase in research focused on SC in the emerging online/digital environment, especially artificial intelligence, etc. (Li et al., 2024; Kilipiri et al., 2023; Cao & Liu, 2023). Recently, SC has begun to be discussed more frequently in digitally networked media, including journal special issues, conferences, and research publications (Hermann, 2023; CERASI et al., 2023; Kilipiri et al., 2023; Zia et al., 2022), a topic that was absent from marketing discussions a few years ago. Recognizing its theoretical and practical importance, we provide a brief overview of a few chosen sustainable consumption studies to draw attention to important themes and research concerns that might direct future work in this dynamic and rapidly expanding field of SC.

**Emerging research themes**

We highlight the following study areas to facilitate SC through digital means. In addition, these themes bring to light several significant aspects that require managerial attention whenever new technologies are implemented to properly develop and manage SC.

**Disruptive events and SC**

Disruptive events have influenced the sustainable consumption behavior of customers throughout history and are a significant factor in upsetting business-as-usual (BAU) procedures. Past disruptions have either been caused by humans or natural forces. For instance, the oil crises that occurred in the 1970s provided a catalyst for the industry to make efforts to improve energy efficiency, which in turn contributed to decreases in greenhouse gas emissions. This occurred even before climate change became a major concern for the general public (Mikhaylov et al., 2020). More recently, the COVID-19 epidemic and the subsequent lockdowns that were implemented to restrict its spread have also caused the economic BAU to
be disrupted, with varied outcomes on the customer willingness to spend sustainably (Severo et al., 2021; Hüttel & Balderjahn, 2022). Besides that, the Gillingham et al. (2020) study highlights that the global dependence on work-from-home arrangements and the slowdown of economic activity have resulted in a significant reduction in greenhouse gas emissions and other air pollutants by a significant amount (Severo et al., 2023). In contrast, the consumption and usage of personal sustainable equipment, packaging materials, and disposable medical supplies have all contributed to an increase in the number of various forms of plastic garbage (Klemes et al., 2020). However, these disruptive events are continuously transforming the customer pattern of using the products and services and highlights multiple factors (Chiu et al., 2020; Haider et al., 2022; Borsatto et al., 2024) to marketers and practitioners to boost the sustainable consumption behavior of customers.

In addition, literature has also revealed the factors that influence the consumption patterns of individuals and populations as a whole. According to Li et al. (2019), the decision to engage in a sustainable lifestyle is influenced by both internal and external factors. Internal factors include demographics such as age, gender, marital status, and financial capacity, as well as psychological variables such as attitudes, beliefs, and subjective norms. While external factors include social norms, convenience, community facilities, and innovation. But still, the studies acknowledge the existence of a gap between consumers' attitudes and their actions. The concern is the consumers may have the information and the consciousness for environmental concern, but they do not necessarily act on it, which means that it does not always transfer to sustainable behavior (Jaeger-Erben et al., 2015; Lin et al., 2022). Although to induce a shift toward a lifestyle that is more sustainable, it will be necessary to intervene (for example, by legislative or economic measures) to change everyday behaviors, which are often rarely pondered about. Even though, a single event or change (for example, the sudden unavailability of a sustainable product or the influence of peers) may easily break such a new sustainable consumption effort overnight (Carden & Wood, 2018; Lazaric et al., 2020). It may take a long time to develop sustainable practices and shift from old, ingrained bad habits to sustainable practices.

Practitioners need to have a more in-depth grasp of how to properly manage disruptive events to avoid aberrant behavior and bad reactions towards sustainable consumption (Haider et al., 2022; Borsatto et al., 2024). This is a necessary aid to cultivate awareness of these situations. In addition, practitioners need to pay attention to the internal and external factors that consumers have accessible to them as well as their desire to take part in activities and interactions that are associated with the brand (Essiz & Mandrik, 2022). In light of this, the challenge for marketers is to transform their strategy towards such types of disruptive events over time to facilitate the environment through enhancing sustainable consumption.

**Artificial intelligence and SC**

Marketers are facing the challenge of personalizing their communication and selecting the targeted audience to promote their sustainable products (Collazo et al., 2020; Chokera et al., 2023). To minimize this concern, they are using multiple AI tools such as Canva, Feed Hive, etc. to provide highly customized visual graphics content (Talha et al., 2023) and social media post management. The integration of AI into different sectors of society gives prospects that hold great promise for the improvement of environmentally responsible approaches to consumption. Artificial intelligence (AI) systems are intricate socio-technical–ecological systems that are linked to a variety of social, environmental, and economic concerns (Sætra, 2021). Ecologically society is a topic that is currently being discussed, and the review explains the role of AI in enhancing sustainable consumption in a society to facilitate energy efficiency and work for environmental safety (Cao & Liu, 2023). Although, the potential of AI systems
for ecological goals, such as ecosystem monitoring, climate protection, or the energy transition (Rolnick et al., 2022), sustainable manufacturing (Jamwal et al., 2022), and social good, such as public health issues or education, terms such as "AI for Earth" or "AI for Social Good" (Robbins & van Wynsberghe, 2022) are being used.

In addition, literature has suggested the AI role in optimizing the consumption and smart management of resources (Li et al., 2021a), individualized recommendations to customers for environmentally friendly items (Kim et al., 2021), improving supply chain transparency (Modgil et al., 2022), and supporting circular economy activities (Pathan et al., 2023). Even though, customers are increasingly becoming omnichannel shoppers which influences their sustainable consumption behavior. Resultantly, it is no longer sufficient for marketers to think just in terms of maximizing sales in physical stores as compared to online retailers (Kumar & Yadav, 2021). Thus, this also raises the question of how marketers and practitioners adopt the strategy to use AI in physical stores to enhance the sustainable consumption behavior of the customers. Likewise, the success of practitioners will also be determined by how they take into account a diverse range of customer-brand touch points especially in the context of the fashion industry (Zhou et al., 2022) to interact with each customer and enhance the entire consumer experience.

Even though the potential advantages of artificial intelligence in fostering sustainability are generally acknowledged, the topic is still in the process of developing in the academic literature (Hermann, 2023a, b). There is a growing interest among academics in investigating the confluence of artificial intelligence and sustainable consumerism by focusing on customer intellectual targeting (Hermann, 2023b) and using smart grid technologies (Schappert & von Hauff, 2020). Nevertheless, further study is still required to adequately comprehend the implications and possible difficulties that are involved with this integration. Besides that, researchers (Cao & Liu, 2023) have examined the effect of just two aspects of AI technology stimuli on customer perception, intention, and behavior. Therefore, future study can be carried out to investigate new features of AI technology stimuli. In addition, while analyzing the influence of external elements, it is important to take into consideration the variables that are associated with the customer's self-considerations, such as their values (Cao & Liu, 2023). It is anticipated that the function that AI plays in furthering sustainable consumption will become a more prominent focus of academic investigation and practical application as it continues to improve and be used in a variety of industries going forward.

Industry 5.0 and SC

The new idea known as Industry 5.0, which is built upon the gains realized by Industry 4.0, emphasizes the incorporation of human-centric methods and environmentally responsible practices into industrial operations (Chivilò & Meneghetti, 2023). Industry 5.0 has the potential to transform production and consumption patterns by emphasizing environmental and social sustainability (Figure 1). Literature suggests that this shift in perspective entails utilizing humans with technologies such as artificial intelligence, the Internet of Things, and automation to maximize the usage of resources, limit the impact on the environment, and eliminate waste across the whole product lifetime. This concept provides the solution to the concern of not being human-centric and does not focus on sustainability during the whole supply chain process (Collazo et al., 2020; Aheleroff et al., 2022; Masoomi et al., 2023).

Studies comprising Industry 5.0 emphasizes the significance of ethical concerns, human well-being, and community participation in the manufacturing processes, which helps to promote a more holistic approach to sustainability (Wang et al., 2023; Ivanov, 2023; Mehroush et al., 2024). This approach provides implications to create a positive brand image in the customer's mind regarding the company's sustainable production process (Zameer et al.,
by following the ethical guidelines provided by the administration. Similarly, another study has emphasized that a brand having a positive image influences customers' behavior toward consuming sustainable products (Dam & Dam, 2021). However, the study enables future research directions to marketers and academics to focus on sustainability to create a positive perception among targeted customers by combining technology, ethics, and sustainability which might lead to long-term benefits through the creation of a global economy that is more socially responsible and ecologically sensitive.

Figure 1: Industry 5.0 (Source: Chivilò & Meneghetti, 2023)

Despite that, Industry 5.0 concept provides direction to investigate how businesses connect their production processes, supply networks, marketing tactics, and product offerings with their sustainability goals (Xu et al., 2021). However, the practitioners also find the difficulties and obstacles that they encounter while attempting to adopt solutions for Industry 5.0. Yet, future studies can also be carried out to investigate the policy implications of Industry 5.0 concerning the promotion of sustainable consumption on the local, national, and international levels. The evaluation of current policy frameworks and the identification of possibilities to build new policies or regulatory measures with the help of government interventions (Muhamad et al., 2023) encourage the adoption of Industry 5.0 technologies while also guaranteeing beneficial environmental and social consequences.

**Negative influence of digital technology on SC**

The introduction of technology-enabled digital interfaces has provided marketers with a credible platform, especially social media to influence their sustainable consumption behavior (Wibowo et al., 2020; Yıldırım, 2021) and support their substantial participation in co-creating and influencing the product or service they are selling (Ravazzani & Hazée, 2022). Today, consumers rely on the authoritative information and evaluations (whether positive or negative) that are offered by other consumers WOM regarding sustainable products and services which influence the customers’ perceived risk associated with product purchasing (Jiang et al., 2021). Even though not all engaged consumers constantly submit positive comments concerning a brand selling sustainable products, some customers have a negative attitude toward sustainable products (Sabir et al., 2020, 2022; Halim et al., 2022; Mahmood et al., 2023). The expansion of social media has made it easier for customers to swiftly convey negative feedback in the form of blog writing or posting unfavorable comments regarding sustainable products...
(Labrecque et al., 2022). Thus, this hampers customers from using the products and influences the overall sustainable consumption behavior of the customers.

Despite the fact that there is substantial theoretical evidence suggesting that negative customer feedbacks are more compelling than good ones, the SC literature has, up to this point, put the majority of its attention on the positive side of sustainable consumption (Tomșa et al., 2021). Considering that future research must integrate the concepts of SC expressions that are both positively and negatively valanced (Mahmud et al., 2020; Tomșa et al., 2021; Sipilä, 2021; Acuti et al., 2022). Research should be conducted consistently to detect and confirm the potential risk that posts having negative WOM regarding sustainable products on social media may bring to the overall reputation of the brand. Studies need to be conducted to determine whether millennials react positively towards social media posts that have a positive or negative WOM concerning SC, and how they react to these expressions. Thus, it is anticipated that this kind of study, which applies to a wide range of industries and categories such as other than the fashion or automobile industry will provide valuable insights into the growth of this developing field (Strähle & Grüff, 2017; Radziszewska, 2021).

Marketers have a strategic obligation to concentrate on identifying the technological factors that minimize the sustainable consumption behavior of the customers. Future studies should be conducted to identify the determinants that can negatively influence the sustainable consumption pattern of individuals. Future studies should also identify the role of gender which might diversify in case of negative WOM on social media regarding sustainable consumption (Horrich et al., 2024; Rasheed et al., 2024). In the digital arena, where SC behavior is still a major concern, appropriate strategies are required. This is because the possible consequences of such behavior can have severe short-term and long-term effects on the environment as well as the reputation of the companies (Khan et al., 2022; Lavuri et al., 2023). Despite that, marketers should not ignore any negative reviews, but they should also follow up on them with improvement strategies to mitigate the negative impact of such reviews.

Conclusion

The implication of SC has grown over the past few years, where customers have transformed from being information receivers to active participators on social media platforms through its reviews and WOM. Customers are engaging with numerous brands to promote "value co-creation," which helps marketers actively address customers' issues by offering sustainable and creative products and services that they desire. This review provides a brief analysis of four key study topics to enhance both the theoretical and empirical understanding of sustainable consumption in the digital age.

Despite that, the researchers contend that investigating additional technical considerations in conjunction with SC may yield valuable findings and implications. Researchers can explore the factors that encourage customers to purchase sustainable products and services through several touch-points. In addition, academic attention is required to explore how companies may use SC to support human and environmental well-being. Thus, future research should involve a collaborative effort between behavioral psychologists and philosophers of science to conduct an interdisciplinary investigation that examines the transparency and ethical aspects of AI in influencing customers’ sustainable consumption behavior (Khakurel et al., 2018; Mahmood et al., 2020). Consequently, research needs to examine the impact of a company's sustainable production practices, as part of its CSR efforts, on improving SC behavior by promoting favorable emotions and attitudes towards these companies. Not only that, a need to do empirical research on the behavior of online consumers regarding the increasing options for customizing sustainable products and services
(Gajdzik et al., 2023) and the influence of SC on customers' love or loyalty towards that brand (Rehman et al., 2021; Khalid et al., 2023). However, it is anticipated that this study will increase awareness of the fascinating field of SC within the changing digital world by showcasing some intriguing research ideas.

Acknowledgement

I am deeply grateful for the invaluable guidance, unwavering support, and insightful feedback provided by my supervisor throughout this research endeavor at Times institute Multan, Pakistan. Their expertise, encouragement, and dedicated mentorship have played an instrumental role in shaping my academic journey as a PhD Scholar and the successful completion of this review paper.

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