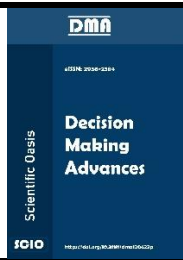




SCIENTIFIC OASIS

Decision Making Advances

Journal homepage: www.dma-journal.org
ISSN: 2956-2384

Artificial Intelligence Driven Sustainable Consumption Decisions of Generation Z: A Systematic Literature Review

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ARTICLE INFO

Article history:

Received 17 January 2026

Received in revised form 11 March 2026

Accepted 13 April 2026

Available online 19 April 2026

Keywords:

Decision Support Systems; MCDM; Green Consumer Behaviour; Sustainable Consumption; Artificial Intelligence; Generation Z

ABSTRACT

The need to engage in sustainable consumption is increasing, and extrapolating. Consumer decision-making on artificial intelligence (AI) is changing how people make decisions and consume products, providing better and more personalized advice based on data. Being a digital-native and sustainability-sensitive generation, Generation Z is one of the key factors that determine the future consumption trends; nevertheless, current studies tend to view AI and sustainable consumption in isolation. The given study attempts to fill this gap by applying systematic literature review with the help of the Dimensions.ai database. An initial list of 2,606 records was then found and 876 publications were selected based on PRISMA-based screening. The thematic and bibliometric analysis demonstrate such topics such as AI-based recommendation systems, influence on behaviour, trust and explainability, and connection with multi-criteria decision-making (MCDM). The research reveals that there exist substantial gaps in the combined framework and real-life application, and suggests a theoretical framework of the connection between AI, decision-making and sustainable consumption. The results provide useful information that researchers and practitioners can use to design smart systems that can spur sustainable consumption among the generation z.

1. Introduction

Artificial intelligence (AI) has become an innovative phenomenon in the contemporary consumer markets, as it essentially changes the way people search, compare, and buy services and goods. As digital technologies are quickly expanding, AI-based systems like machine learning algorithms, recommendation engines, and predictive analytics are gaining more and more popularity as a part of e-commerce systems and decision-support systems. The latest industry news shows that the percentage of online customer interaction being dictated by the AI-powered recommendation systems has increased considerably, and the preference towards the use of intelligent technologies

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<https://doi.org/10.31181/dma0002026171>

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in the decision-making process has become an increasingly important aspect of purchase patterns [1, 2].

At the same time, the threat to the climate change, resource depletion, and environmental sustainability experienced globally has increased the demands on responsible consumption. Sustainable consumption, which focuses on purchases based on environmentally conscious, socially conscious, and economically viable consumption, has been receiving much focus both by the consumers, businesses, and the policymakers. Here, Generation Z as people born in the digital age is an important group of customers as they are more and more digital and more and more aware of environmental concerns. Researcher's opinion discussed that Gen Z consumers are oriented towards ethical consumption and are largely persuaded by digital media in their decision-making [3, 4].

Although artificial intelligence and sustainable consumption are developing in parallel, the current research largely focuses on them separately, which leads to a disjointed interpretation of the impact of AI on the decision to make sustainable consumption choices, especially among the representatives of Generation Z. The absence of end-to-end research that incorporates AI technologies, behavioural and decision-making ideas in the sustainability context is present. Moreover, the impact of systematic decision-making methods, including the multi-criteria decision-making (MCDM) on the achievement of sustainable consumption by AI is under-researched.

The significance of the given study in the context of researching the specified gaps is that it presents a procedural and comprehensive literature review of the literature related to AI-driven sustainable consumption decisions of Generation Z. Combining the existing studies, this research work will provide an in-depth understanding of the most important trends, themes and challenges of this new area. The findings of this study may be applied in the development of AI-based recommendations systems, green marketing approaches, customized sustainability systems, and decision-support systems that help consumers to make environmentally friendly decisions. Also, policymakers can use these findings to provide data-driven policies and interventions, which can promote sustainable consumption pattern in younger generations.

The rest of this paper is organized in the following way: Section 2 is the literature review. Section 3 explains the methodology of the research. Section 4 gives bibliometric analysis of the chosen research. Section 5 outlines application of the presented study. The thematic analysis is presented in section 6. In Section 7, the gaps in research are outlined and discussed. Lastly, Section 8 wraps up the research and gives a direction to the research in future.

2. Literature Review

The intersection of artificial intelligence (AI) and sustainable consumption has become an important field of research over the past few years due to the levels of lightning technological progress and growing environmental anxieties. Machine learning, predictive analytics, and intelligent recommendation systems are all AI technologies that have played an important role in making consumer decision-making processes more efficient and more personal. These technologies also allow relevant information to be made available to the consumer and alternatives to be compared, and informed purchasing choices made in real time.

At the same time, the issue of sustainable consumption has become a prominent one in the face of the world environmental crisis in the form of climate change, natural resources shortage, and waste production. It focuses on the responsible consumption habits that would reduce the environmental impact and would enhance the social and economic well-being. Here, Generation Z, with its high level of online inclusion and nature consciousness, is becoming a very demanding category, which shapes the trend of sustainable consumption. Despite the fact that previous research has examined the application of AI in the field of marketing and consumer analytics, as well as

sustainable consumption behaviour, there is a lack of integration between the two fields as shown in Table 1. Moreover, findings of research on the role of AI-driven systems in shaping sustainable consumption choices among Generation Z in particular are not focused. This section reviews the literature that is available to establish the main developments, findings, and limitations in the field.

Table 1
Summary of Key Studies

Author(s)	Description	Key Findings	Limitation
Chan & Choi [5]	Reviews GenAI applications in marketing.	Four themes: consumer use, service, advertising, innovation.	Lacks focus on sustainability and decision frameworks.
Basu <i>et al.</i> [6]	Reviews AI, ML, and data analytics in digital marketing using SLR and bibliometric analysis.	Identifies five clusters: AI marketing, branding, e-commerce, personalization, and emerging tools; proposes Antecedent–Decision–Outcome framework.	Limited focus on sustainability and specific consumer groups like Generation Z.
Mehdiabadi [7]	Bibliometric study on brand storytelling and consumer behaviour in digital space (2015–2024).	Storytelling enhances engagement, trust, and loyalty; emerging trends include AI and AR/VR integration.	Limited focus on decision-making frameworks and sustainability aspects.
Irfan & Bryła [8]	SLR on green marketing strategies and consumer behaviour for sustainable food using bibliometric analysis.	Green marketing influences sustainable purchasing; need for cross-cultural and advanced methodological approaches.	Limited integration with AI and decision-making frameworks; heavy reliance on traditional quantitative methods.
Baca & Reshidi [9]	Examines impact of green branding practices on consumer purchase decisions using survey data.	Green positioning and packaging significantly influence purchase behaviour; brand commitment affects decisions.	Limited sample (students only) and lacks integration with AI-based decision-making approaches.
Zhang <i>et al.</i> [10]	Examines eco-friendly marketing and tourist behaviour using the S-O-R model in the hospitality sector.	Green marketing promotes sustainable behaviour; identity and perceived value strengthen eco-conscious actions.	Limited to tourism context and lacks integration with AI and advanced decision-making frameworks.
Shaayesteh <i>et al.</i> [11]	Examines the role of AI in promoting sustainable tourist behaviour in coastal tourism using MCDM approaches.	AI tools (VR, IoT, predictive analytics) enhance environmental awareness and sustainable practices.	Limited to tourism context and lacks focus on Generation Z consumer decision-making.
Bhatnagr & Rajesh [12]	Examines AI features in digital banking using Expectation Confirmation Theory for Gen Y and Z.	AI attributes (animacy, intelligence, anthropomorphism) enhance satisfaction and continuance intention; Gen Z values anthropomorphism more.	Limited to banking context and specific region (India); lacks focus on sustainability and broader consumer decisions.
Gupta <i>et al.</i> [13]	Examines factors influencing millennials' adoption of AI chatbots using fuzzy-AHP.	Media appeal is the most important factor; privacy risk is least influential in chatbot adoption.	Limited to millennials and specific region; lacks focus on sustainability and broader consumer decision contexts.
Pradhanawati, & Pinem [14]	Examines the influence of AI on purchasing decisions of Generation Z in emerging countries using a survey method.	Perceived usefulness and ease of use positively influence AI adoption; social media usage is not significant.	Limited sample size and geographic scope; lacks focus on sustainability and advanced decision-making frameworks.

Naveed & Ali [15]	Proposes similarity measures using interval-valued intuitionistic fuzzy hypersoft sets for decision-making problems.	Developed efficient and flexible decision-making method for handling uncertainty and complex data.	Highly theoretical; lacks real-world application and relevance to consumer behaviour or sustainability.
Sivamayilvelan <i>et al.</i> [16]	Develops an explainable AI-based recommender system using reinforcement learning and large language models.	Improves decision transparency and performance; enhances outcomes using explainable recommendations.	Focused on debt collection; lacks application to sustainable consumption and consumer behaviour contexts.
Rolando [17]	Examines impact of AI-based recommendation systems on consumer purchase decisions in e-commerce.	Personalization, trust, and accuracy significantly influence purchase intention; strong model explanatory power.	Small sample size and limited context; lacks focus on sustainability and specific demographic groups like Gen Z.
Basheleishvili & Kapanadze [18]	Develops a decision support system using AHP and ELECTRE for human resource evaluation.	Integrated MCDM approach improves accuracy and reliability of decision-making.	Limited to HR domain; lacks application to consumer behaviour and sustainability contexts.
Bunea <i>et al.</i> [19]	Examines Gen Z perceptions of AI in online shopping using TAM and survey data.	AI exposure, knowledge, and ease of use positively influence purchase intention; usefulness mediates decisions.	Focused on online shopping; lacks sustainability perspective and integration with decision-making frameworks.
Kumari <i>et al.</i> [20]	Examines circular consumption behaviour among Gen Z using SEM framework.	Circular attitude and environmental awareness drive behaviour; satisfaction and social approval mediate well-being.	Lacks integration with AI technologies and decision-support frameworks.
Brand <i>et al.</i> [21]	Compares sustainability preferences of Generation X and Z using choice-based conjoint analysis.	Gen Z shows higher preference for sustainable products and social labels in online shopping.	Lacks integration with AI technologies and decision-making frameworks.
Parzonko <i>et al.</i> [22]	Examines pro-environmental behaviour of Generation Z compared to older groups using survey analysis.	Gen Z shows lower engagement in pro-environmental behaviour; economic factors strongly influence actions.	Limited geographic scope and lacks integration with AI and decision-making frameworks.
Juma-Michilena <i>et al.</i> [23]	Examines pro-environmental behaviour of Gen Z using TPB across multiple countries.	Attitude, beliefs, and intrinsic motivation influence behaviour; cross-cultural differences observed.	Limited integration with AI technologies and decision-making frameworks.

2.1 Research gap

Although there is an increasing literature on the artificial intelligence and sustainable consumption, a number of these gaps still exist. Current literature is dispersed in its nature and focuses on AI technologies and sustainable consumer behaviour as two separate phenomena without offering a combined viewpoint. Furthermore, there are rather few studies directly addressing Generation Z, although they are digitally oriented and environmentally sensitive. Also, the questions regarding the transparency, explainability, and the trust to AI systems are not studied properly.

2.2 Novelty of the Study

This research is a new contribution as it includes a holistic and combined analysis of the use of artificial intelligence in making sustainable consumption decisions and a particular case of Generation

Z. This research integrates AI, sustainability, and consumer decision-making into one framework unlike the past research where the studies discuss these areas individually. The paper uses systematic literature review method on a large amount of data to define significant trends, themes, and research directions.

2.3 Research Question

The research questions to be used in the study are as follows:

- i. What are the major research themes of AI-based sustainable consumption?
- ii. What are the key gaps to the current literature?
- iii. What is the way to combine AI with the decision-making systems in order to improve sustainable consumption?

2.6 Objectives of the Study

This study is guided by several interconnected objectives aimed at deepening the understanding of AI-driven sustainable consumption. It seeks to conduct a systematic review of the existing literature in this domain, while critically examining the role of artificial intelligence in shaping the consumer behaviour of Generation Z. Furthermore, the research aims to identify prevailing themes and emerging trends within the field, as well as to highlight existing gaps that warrant further scholarly attention. Ultimately, the study aspires to develop a comprehensive conceptual framework for sustainable decision-making supported by artificial intelligence.

3. Methodology

This paper follows a systematic literature review (SLR) methodology to thoroughly examine how Generation Z makes sustainable consumption choices by using artificial intelligence. The search in the literature was made with the help of the Dimensions.ai database because it is widely covered with the multidisciplinary research publications. The strategy of the structured search of the keywords was created with the help of Boolean operators, and this strategy combined such terms as artificial intelligence, sustainable consumption, Generation Z, and decision-making. Figure 1 above presents the results of the initial search that resulted in 2,606 records without filters.

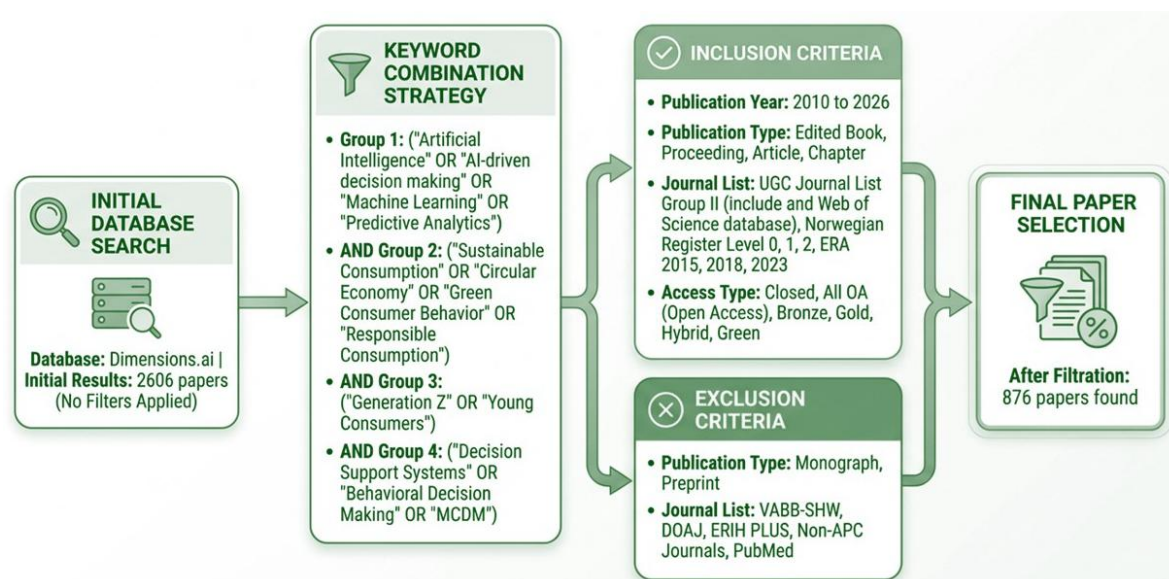


Fig. 1. Flowchart of proposed methodology

Inclusion and exclusion criteria were predefined with an aim of ensuring that the selected studies are relevant and of a high quality. The inclusion criteria are publications published between 2010 and 2026 presented in articles, conference proceedings, book chapters, and edited books in the databases of the recognized ones like UGC CARE II (Web of Science, SCOPUS), Norwegian Register, and ERA rankings. There are also several types of access such as open access and closed access. Monographs, preprints and publications contained in databases like DOAJ, ERIH PLUS and PubMed were eliminated as exclusion criteria. Having filtered and filtered by title and abstract, a final list of 876 publications was obtained to proceed to the analysis.

The research is conducted in the PRISMA framework with an identification, screening, eligibility and inclusion processes to be transparent and reproducible. In data analysis, bibliometric methods are applied with VOSviewer to analyse the trends in researches, patterns of citation, most active authors, and countries in terms of contributions. Also, collaboration patterns are analysed in terms of network visualization methods. This is a mixed methodology which improves the strength of the research design as it combines systematic review processes with sophisticated bibliometric evaluation.

4. Bibliometric Analysis

4.1 Annual Publication, Citation and Field of Research Trends

The results of the annual publications, patterns of citation, and research domains can help to learn more about the development and the influence of the studies related to the artificial intelligence-based sustainable consumption. The analysis of the trends in publications contributes to determining the rise and maturity of the research field with time, and the citation analysis shows the significant works and the general academic contribution. Moreover, the evidence of the trans-disciplinary character of the topic is presented in the distribution of the research on the topic to such areas as computer science, environmental studies, and business management, among others. These indicators combined provide an overall picture of research development, its major contributors, and the new directions of the research.

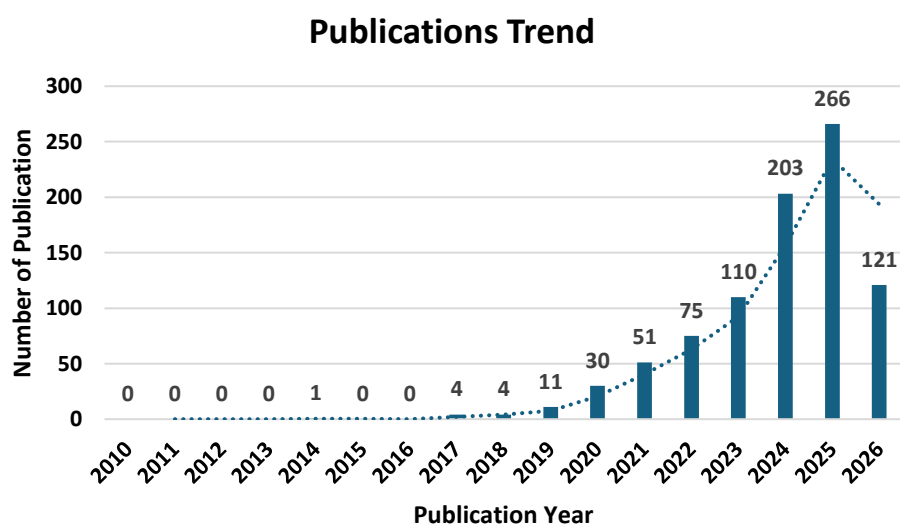


Fig. 2. Annual Publication Trend (2010–2026)

The trend of the annual publication suggests a precise and uninterrupted increase in the studies on artificial intelligence-based sustainable consumption choices of Generation Z. The 2010-2016

period is not very active, which indicates that the current research field is still in its early days, and it has first appeared in 2014 as Figure 2 demonstrates. The growth then will increase gradually in 2017-2018, and then become very high in 2019, as the number of publications grows at an unparalleled rate because of the progress in AI and the increasing awareness of business sustainability. The highest number of publications is 266 in 2025 indicating a high level of academic interest. To 2026, 121 publications have already been registered to 24-03-2026 indicating a continued increase and has indicated that the total output of the year is likely to go higher than the previous records.

The citation trend indicates that there is a high and exponential increase in the academic impact of research as indicated in Figure 3. Between 2010 and 2016, the number of citation activities is insignificant, which means that the field is still in its infancy. The growth starts gradually in 2017-2019 and dramatically in 2020 and onwards due to the increased awareness and topicality of the subject. The number of citations rapidly increases, reaching 246 in 2021 and reaching its peak in 2025, with 2,955 citations. In the case of 2026, 897 citations have already been achieved up to 24-03-2026 indicating that the influence is still strong and that the total citations in the year are bound to rise considerably.

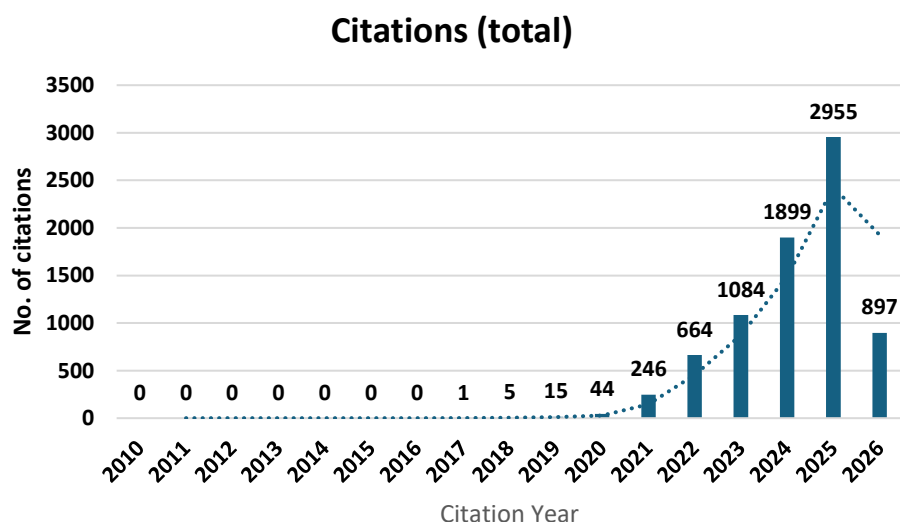


Fig. 3. Annual Citation Trend (2010–2026)

The spread of the area of research shows the high level of interdisciplinary of the studies. Most publications fall in the fields of Information and Computing Sciences (401) and Commerce, Management, Tourism and Services (395), which reveals that both technological and business aspects are very much incorporated as they can be seen in Figure 4. There is also a moderate contribution of engineering and design related fields and other fields like Human Society and Environmental Sciences are also representative of the rising social and sustainability concern. The contributions to the research field have also significantly expanded as evidenced by other disciplines such as economics, education, law, and philosophy. Generally, the trend indicates that this is a multidisciplinary field that is developing with an incorporation of technology, management, and the sustainability views.

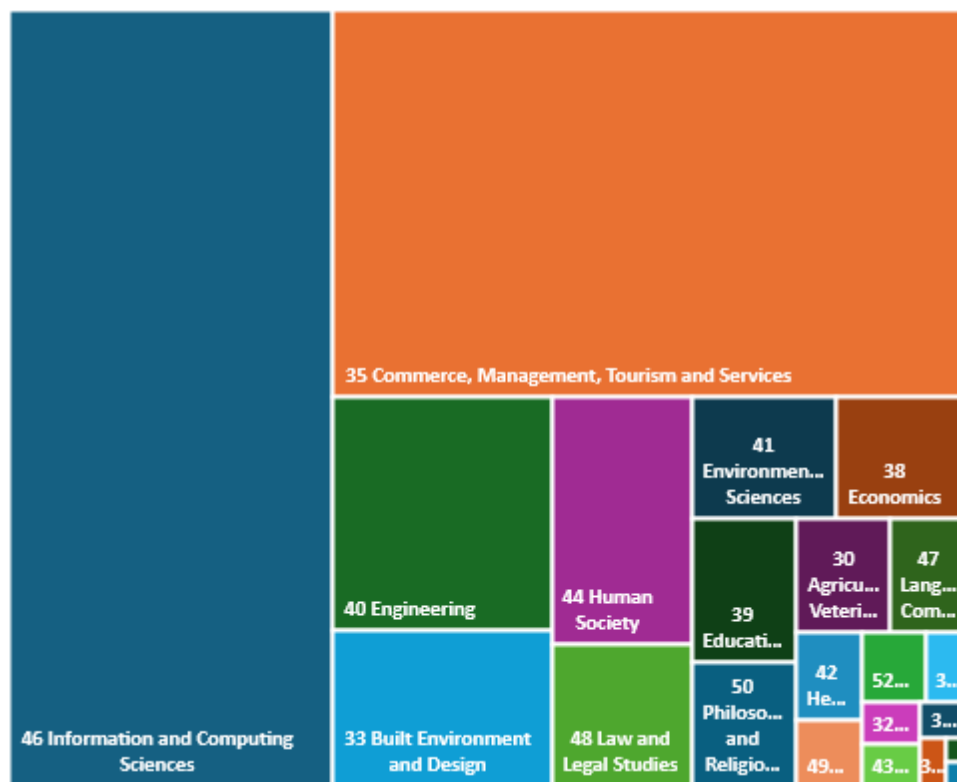


Fig. 4. Tree Map Representation of Research Category Distribution

4.2 Most Productive Journals

Most productive sources have been analysed, indicating that the literature on artificial intelligence-based sustainable consumption choices of Generation Z is mostly offered in conference publications and book series, especially Springer Nature. The most published journals are Lecture Notes in Networks and Systems (120), Advances in Economics, Business and Management Research (74) and Springer Proceedings in Business and Economics (48), which demonstrates a high flow of publications through emerging and conference-based journals. Nevertheless, journals with high impact like Sustainability (Q1, CiteScore 7.7) and the International Journal of Consumer Studies (Q1, CiteScore 14.9) have much higher citation impact even though they have fewer publications as presented in Table 2. This indicates that even though the output in terms of research in indexed proceedings is high, the best input in terms of influence lies in the top-tier journals.

Table 2
Most productive sources

Sl. No.	Sources	Publication	Citation	Quartile	Cite Score	Impact Factor	Publisher
1	Lecture Notes in Networks and Systems	120	364	Q4	1.2	-	Springer Nature
2	Advances in Economics, Business and Management Research	74	65	-	-	-	Atlantis Press
3	Springer Proceedings in Business and Economics	48	123	Q4	0.7	-	Springer Nature
4	Studies in Systems, Decision and Control	48	105	Q4	1.5	-	Springer Nature

Table 2
Continued

Sl. No.	Sources	Publication	Citation	Quartile	Cite Score	Impact Factor	Publisher
5	Lecture Notes in Computer Science	38	97	Q2	2.4	-	Springer Nature
6	Smart Innovation, Systems and Technologies	30	77	Q4	1.2	-	Springer Nature
7	Communications in Computer and Information Science	23	41	Q4	1.1	-	Springer Nature
8	Lecture Notes in Mechanical Engineering	18	125	Q4	0.4	-	Springer Nature
9	Sustainability	15	294	Q1	7.7	3.3	MDPI
10	International Journal of Consumer Studies	14	589	Q1	14.9	7.6	John Wiley & Sons

4.3 Leading Authors

The review of leading authors permits to identify the most important contributors to the area of research of artificial intelligence-based sustainable consumption patterns of GenZ people. Joshi, Sudhanshu and Sharma, Manu can be taken as the most fruitful and productive author with 7 publications and 383 citations which means that it has a great academic impact. The other prominent authors are Al-Sharafi, Mohammed A. and Dwivedi, Yogesh K. who have high influence as citing authors but fewer publications as illustrated in Figure 5.

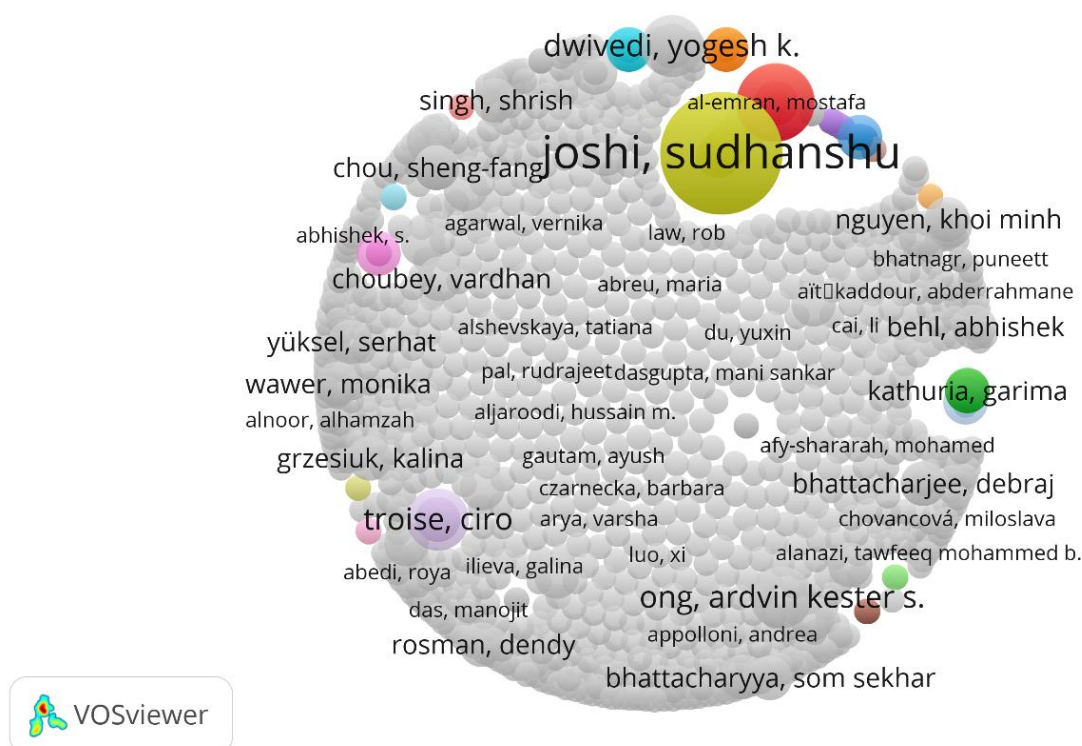


Fig. 5. Network Analysis of Top Authors

Also, there are other authors like Arpacı, Ibrahim and Paul, Justin who have a considerable number of citations thus demonstrating the quality and relevance of their work. The VOSviewer network further recommends the collaboration linkages between authors and these indicate the presence of an interconnected and developing research community in this area.

4.4 Top Institutions

Top organization analysis shows the Doon University to be the best productive institution with 7 publications and 383 citations showing high output as well as the impact of the research on the academic field. The other 2 significant participants in the field are Amity University and Lovely professional university whose publications are 6 and 6 respectively as illustrated in Figure 6. It is worth noting that the Management Development Institute and the National University of Malaysia have a high citation influence meaning that their quality and relevance of their research is high although they do not have many publications. The involvement of other institutions in the globalization of this domain in the other institutions like Manchester Metropolitan University and Symbiosis international university also emphasizes this aspect. The visualization of the VOSviewer network shows that there are collaborative clusters of the institutions which implies the existence of an interconnected and growing research landscape.

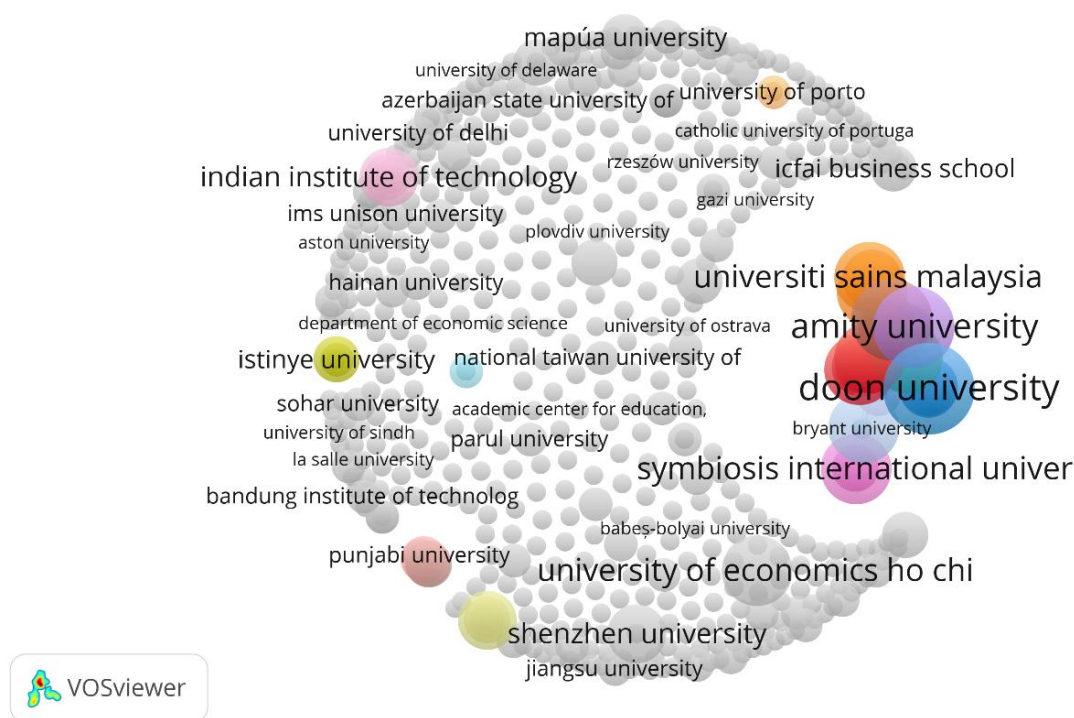


Fig. 6. Network Analysis of Top organisations

4.5 Top Country-wise Research Contribution

The description of highest contributing countries shows that India is the most productive country in terms of publications (98) and citations (2237) and, thus, has a great impact in this area as illustrated in Figure 7. China and the United Kingdom are the next significant contributors, with the UK exhibiting a high influence of citation (1234) which is an indicator of the research influence.

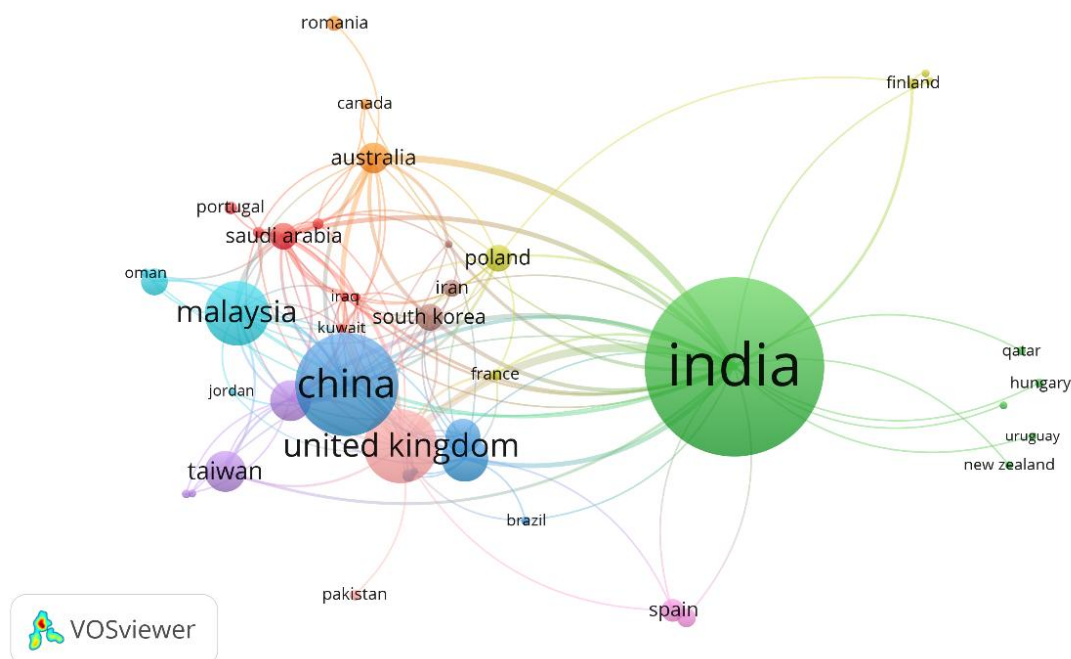


Fig. 7. Network Analysis of Top Country

There are also significant contributions of the same by countries like Malaysia and the United States and this goes to show that many countries are interested in this field of research. Also, other countries such as Taiwan, Turkey, Italy, Australia and Poland are not the least in terms of their contribution to research, which points out to a geographically diversified research environment. The network visualization through VOSviewer also shows that there is a major collaboration between countries and this collaboration is mainly centred around India which proves its centrality in the global research network.

5. Application of AI in Sustainable Consumption

Artificial intelligence (AI) and sustainable consumption have substantial practical implications in many industries as demonstrated in Table 3. With the growth of Generation Z using digital channels to make decisions, AI-powered systems may be instrumental in providing a sense of direction in making environmentally-conscious consumption decisions.

5.1 Smart Recommendation Systems and Decision Support

The most technologically developed field of usage would be AI-based recommendation systems aimed at pushing customers to make environmentally friendly decisions. Another work that was foundational is the value-sensitive design framework that formalized the concept of how the recommendation algorithm can be tailored so as to enable sustainable consumption through designing environmental values explicitly through optimization goals [24]. This was further developed into a multi-objective optimization model of sustainable basket recommendations with the trade-off between consumer preference satisfaction and minimization of environmental impact being an explicit Pareto optimization [25].

Table 3
Applications of AI in Sustainable Consumption

Application Area	AI Technology Used	Description	Practical Benefits	Target Stakeholders
Smart Recommendation Systems	Machine Learning, Recommender Systems	Suggest eco-friendly products based on user preferences	Promotes sustainable purchasing behaviour	E-commerce platforms, Consumers
Green Marketing Strategies	Predictive Analytics, AI Algorithms	Personalized marketing of sustainable products	Improves customer engagement and awareness	Marketers, Businesses
Decision Support Systems (DSS)	AI + MCDM	Assists consumers in selecting sustainable alternatives	Enhances rational and transparent decision-making	Consumers, Researchers
Carbon Footprint Tracking	AI, IoT	Monitors and evaluates environmental impact of consumption	Encourages responsible consumption	Governments, Individuals
Sustainable Supply Chain Management	AI Optimization Models	Improves efficiency and reduces environmental impact	Enhances sustainability in logistics	Industries, Manufacturers
Smart Retail Platforms	AI-driven Analytics	Integrates sustainability filters in online shopping	Enables informed purchasing decisions	Retailers, Consumers
Policy Design and Implementation	Data Analytics, AI Models	Supports evidence-based sustainability policies	Improves policy effectiveness	Policymakers, Government
Consumer Behaviour Analysis	Machine Learning, Big Data	Analyses Gen Z consumption patterns	Helps design targeted interventions	Researchers, Businesses

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Si *et al.* [26] launched a precision advice framework of green products which specifically responds to the cognitive fluency - the concept that customers find it difficult to handle complicated carbon footprint labels and obscure certification criteria, and that generative AI can alleviate that information-processing load to enable low-carbon purchase decisions. This is a significant improvement over the previous systems where products were merely rated based on their environmental performance, to systems that actively redefine and package the sustainability information to the consumer. The model of consumer adoption applied by Silalahi [27] to the AI-based sustainable recommendations suggested that the use of sustainability aspects such as carbon footprint information of a product on the AI-driven platform increases the interest in green options.

The dual GREEN circle model, developed by Yin, Xu, and Wang [28] is another framework that incorporates generative AI in the green consumption marketing, with simulations of carbon footprint tracking as a form of interactive mechanism.

5.2 Environmental Awareness and Carbon footprint tracking tools.

Tracking of carbon footprint has become the key connecting point between AI capacity and consumer behavioural change. Published in The Innovation, Ding *et al.* [29] offered a mass-scale analysis of the carbon footprint of global generative AI per se, with future carbon emission trends being predicted to 2035 and the paradox of applying the carbon-intensive AI tools to innovate to reduce carbon being outlined. This aspect of self-reflexivity or the environmental price of AI is becoming more and more applicable to the generation Z consumer who is sensitive to the presence of authenticity and the greenwashing threat.

On the enterprise side, the Antoniuk and Koliada [30] came up with the methodology of evaluating the ecological footprint of generative AI by incorporating tools that directly monitor energy and water use and provides a framework of ensuring that AI-driven sustainability tools do not contravene the sustainability objectives. The rebound effect was met by Antoniuk and Koliada [31] directly because they contend that improvements in AI efficiency in sustainable development may lead to an overall rise in resource consumption, which is a key issue which any AI-based sustainable consumption platform should take into consideration.

5.3 Green Marketing Solutions to Gen Z.

The sustainable consumption behaviour of Gen Z has undergone a strong development, and certain high-citation researches have given the behavioural science background that AI applications are constructed. By categorizing Gen Z consumers in the US sustainable food market, Su *et al.* [31] developed a powerful baseline as marketers have applied typologies based on marketing in their research. Nikolic *et al.* [32] took it a step further with a Gen Z attitude and behaviour confirmatory factor analysis that found attitude-behaviour gaps to be substantial and that changes in the system regarding consumption patterns cannot be achieved by merely raising awareness.

Dragolea *et al.* [33] found the identifying factors to determine the sustainable behaviour forming in Gen Z, where green marketing strategies have a significant impact in designing, manufacturing, and marketing of green products. The nearest area of AI and Gen Z green marketing is the work by Zhan [34] which specifically examined the optimization of digital green marketing to appeal to Gen Z through a sustainable consumption lens and presented an intelligent recommendation engine based on big data to reconcile Gen Z consumption patterns with the principles of sustainable development. Sambo *et al.* [35] examined the level of Gen Z awareness regarding green promotion in emerging markets, where green publicity influences the green consumption behaviour among the population.

5.4 AI-Driven Consumer Behaviour Analysis and Behavioural Nudging

One of the most theoretical research looks at the influence of AI and the effects of consumer psychology. One of the most critical analyses of AI in marketing was given by Hermann [36], who posed the question of whether AI in marketing is a friend or a foe of sustainable consumption, and concluded that AI could support informed sustainable decisions, whereas growth and consumption imperatives inherent in AI-driven marketing systems tend to address the priority of sustainability. The author discussed the difference between nudging and boosting as AI-mediated psychological strategies of targeting behaviour to sustainable consumption, where nudging changes the structure of choice and boosting improves consumer competence with each having distinct ethical connotations.

Sharma and Sharma [37] used the UTAUT2 model to determine the impact of AI on the sustainable consumption behaviour and lifestyle choices of young consumers, which in turn allowed evaluating how AI-mediated personal experiences lead to better consumer engagement and sustainability, as well as finding some risks of overconsumption based on the same AI technologies. Lata and Rana [38] specifically analysed the impact of AI on Millennials and Gen Z consumer behaviour and determined that AI is transforming the patterns of consumption, socialization and decision-making of the so-called digital-native generations.

Cao and Liu [39] gave empirical data of the Chinese Ant Forest platform which is one of the most successful real-life applications of AI-stimulated sustainable consumption. Their report on the 280 users showed that there is a linkage effect between online green consumption patterns and offline sustainable consumption behaviour with AI technology stimuli indirectly facilitating sustainable behaviour by increasing customer-perceived value and customer stickiness. Notably, the influence of emotional value ($\beta=0.121\beta=0.121$; $\beta=0.100\beta=0.100$) was stronger than social value ($\beta=0.043\beta=0.043$; $\beta=0.038\beta=0.038$).

5.5 Sustainable Supply Chain and Platform Design

At the systems level, a number of works deal with the restructuring of the infrastructure underpinning sustainable consumption as is displayed in Table 4.

Table 4

Application Domain

Application Domain	Representative Work	Key Contribution
IoT + AI platform	Wu & Li [40]	Designed an integrated IoT-AI guidance platform for sustainable consumption.
Circular economy	Martín-Hernández <i>et al.</i> [41]	Multi-scale review of AI/ML for sustainable production and consumption systems design.
Cloud sustainability	Bermejo & Juiz [42]	Systematic review of AI for cloud/edge ecosystem sustainability.
Digital technologies broadly	Petchimuthu & Palpandi [43]	Impact of AI, IoT on sustainable consumption and production models.

An early research agenda relating big data analytics to the promotion of sustainable consumption behaviour presented by Chandra and Verma [44] formed conceptual underpinnings of the data-intensive AI applications that came after.

5.6 Policy Design and Implementation

The policy aspect has been dealt with by theoretical and review-based research. Sargin [45] has given an extensive theoretical background on the discipline of guiding AI and smart applications towards sustainable consumption objectives through policy proposals to digital infrastructure financing, data privacy laws, and digital literacy programs, both globally and specifically to Turkey. Bemann and Hussmann [46] suggested the use of self-reflection instruments as AI-assisted mechanisms of developing deep sustainable consumption choices, which is a more human-focused way to design policies-relevant interventions.

The literature points to three obvious trend indicators:

- General to generative AI: The latest trend (2025-2026) places particular focus on generative AI as a tool of sustainable consumption - neither based on the old-fashioned

recommendation algorithm, but rather an LLM-driven solution that is able to explain, customize, and contextualize information on sustainability [26,46].

- ii. The reflexivity turn: Scholars are now starting to consider the environmental impact of AI as being a fundamental constituent of the sustainable consumption equation, rather than an externality. The conflict of AI carbon cost against its sustainability profits is becoming a research question instead of a note [29,30].
- iii. As a subject and co-designer: Previously, Gen Z was often viewed as a demographic group to be researched; more recent articles are starting to view them as active participants, the digital fluent and value orientations of whom can and ought to be used to design AI-sustainability systems, rather than targeted by them [34].

The existing body of literature is more skewed towards survey-based and theoretical studies, lacking a large number of large-scale experimental or longitudinal studies. Practical platform tests (such as the case of the Ant Forest [39]) are an exception, rather than a rule. Also, the majority of the empirical studies have a geographic ground (India, China, Turkey, Malaysia, Europe) and there is a significant lack of cross-cultural comparative research. The field could use stricter causal identification techniques and randomized controlled studies that determine whether AI interventions indeed change the scale consumption habits of Gen Z, other than the intended effects.

6. Thematic Analysis

The thematic analysis of the chosen literature supplies a systematic insight into the critical areas of research in artificial intelligence-based sustainable consumption choices of the Generation Z. Through a systematic review of the 876 studies chosen, a number of common themes have risen to the fore which indicate how AI technologies can be used to affect consumer behaviour, sustainability practices, and decision-making processes. These themes indicate the interdisciplinary nature of the subject that covers the technological advancements, behavioural and environmental views as indicated in Table 5. It can also be seen that there are emerging trends of AI and decision-support systems integration and the increasingly significant role of trust and explainability in AI-driven consumption.

Table 5

Thematic Classification of AI-Driven Sustainable Consumption Literature

Theme	Description	Key Focus Areas	Representative Findings	Research Implications
AI-based Recommendation Systems	Use of AI to suggest sustainable products and services	Personalization, e-commerce platforms, product filtering	AI improves eco-friendly product selection and influences purchase decisions	Enhances sustainable consumer behaviour through intelligent systems
Behavioural Influence of AI	Impact of AI on consumer attitudes and decision-making	Awareness, perception, digital engagement	AI shapes consumer preferences and promotes sustainable choices	Supports behaviour-driven sustainability strategies
Smart Sustainable Platforms	Integration of AI in digital platforms for sustainability	E-commerce, mobile apps, smart systems	Platforms enable informed and real-time sustainable decisions	Improves accessibility of sustainable options
Trust, Ethics and Explainable AI	Role of transparency and ethics in AI adoption	Trust, privacy, explainability	Lack of transparency reduces user trust in AI systems	Need for explainable and ethical AI models

Table 5
Continued

Theme	Description	Key Focus Areas	Representative Findings	Research Implications
AI + MCDM Integration	Use of AI with decision-making techniques	Multi-criteria decision-making, DSS	MCDM enhances structured and optimal decision-making	Provides robust decision-support frameworks
Circular Economy and Sustainability	AI applications in resource optimization and circular systems	Recycling, reuse, waste reduction	AI supports sustainable lifecycle management	Promotes long-term sustainability goals
Gen Z Consumer Behaviour	Unique characteristics of Gen Z in digital consumption	Digital literacy, environmental awareness	Gen Z prefers tech-enabled and sustainable solutions	Important for targeted marketing and policy design

7. Research Gap and Discussion

The fast development of literature on artificial intelligence-based sustainable consumption has produced valuable information; still, a number of burning gaps and unsolved problems exist. This section talks about these gaps in detail and gives a critical interpretation of findings of a bibliometric and thematic analysis of top cited research study presented in Table 6. It also brings out the importance of filling such gaps in enhancing theoretical knowledge and practical application in the same field.

The review of the top ten articles indicates that the current literature on consumer behaviour, artificial intelligence, and sustainability is not that integrated yet. The research on omnichannel retailing, social influence, and digital marketing can provide insight into the changing aspect of consumer decision-making in technology-driven settings; yet, it is not structured AI-based models to aid in sustainable decisions. Likewise, the studies on green marketing, food waste management, and electric vehicle adoption focus on sustainability but they do not sufficiently use artificial intelligence as a decision-support mechanism. In spite of the fact that some researchers investigate the use of AI in some domains like CRM systems, fashion and blockchain, they focus more on efficiency and technological progress than on sustainability returns. Also, there is a lack of research in the field specifically on Generation Z and AI-based sustainable behavior, the lack of cross-cultural and decision-focused analyses.

Table 6
Summary of Research Gaps from Selected Top Papers

Rank	Paper	Citation	Description	Key Finding	Research Gap
1	Omnichannel Decision-Making [47]	351	Review of consumer behaviour in Omnichannel retailing	Consumer behaviour is evolving in digital retail	Lack of integrated AI-based decision frameworks
2	EV Adoption Behavior [48]	315	Study on factors influencing EV adoption	Attitude and norms affect adoption	Limited AI integration in sustainable decision-making
3	AI-based CRM in B2B [49]	248	AI applications in B2B marketing and CRM	AI improves digital marketing efficiency	Limited empirical studies and sustainability linkage
4	Food Waste Management [50]	150	Review on food waste and sustainability practices	Prevention strategies improve sustainability	Lack of AI-driven solutions for waste management

Table 6

Continued

Rank	Paper	Citation	Description	Key Finding	Research Gap
5	Gen Z & AI Sustainability [51]	148	AI use by Gen Z for sustainability	AI supports green behaviour	Limited cross-country AI decision models
6	Green Brand Evaluation [52]	141	Study on eco-label and brand perception	Credibility influences green purchase	Lack of AI-based evaluation models
7	Social Media Influencers [53]	137	eWOM strategies in digital marketing	Influencers impact consumer behaviour	Limited AI integration in influencer-driven decisions
8	Social Influence Behavior [54]	129	Review of social influence in consumer behaviour	Social factors shape decisions	Lack of AI-supported behavioural modeling
9	AI in Fashion (GAN) [55]	126	AI-generated product evaluation	AI enhances perceived value	Lack of sustainability-focused AI applications
10	Blockchain in Healthcare [56]	107	Barriers to blockchain adoption	Organizational and awareness issues	Limited integration with AI and decision frameworks

These gaps suggest that there is an urgent need to have a concerted research methodology that integrates artificial intelligence, sustainable consumption, and systematic decision-making models like multi-criteria decision-making (MCDM). Lack of explainable and transparent AI models further reduces trust and adoption by the users especially in the context of sustainability aspects. Also, majority of the research is based on theoretical or domain-based models with little real-world validation across areas like e-commerce, smart systems and policy frameworks. This combined view does not only enhance the theoretical clarity, but it also offers practical knowledge towards coming up with smart systems that can ensure sustainable consumption.

8. Conceptual framework for AI-based sustainable decision-making

The conceptual model starts with AI-based technologies, such as recommender systems, machine learning, and predictive analytics, which handle different inputs of data including the user preferences, the environment data, and the product information as shown in Figure 8.

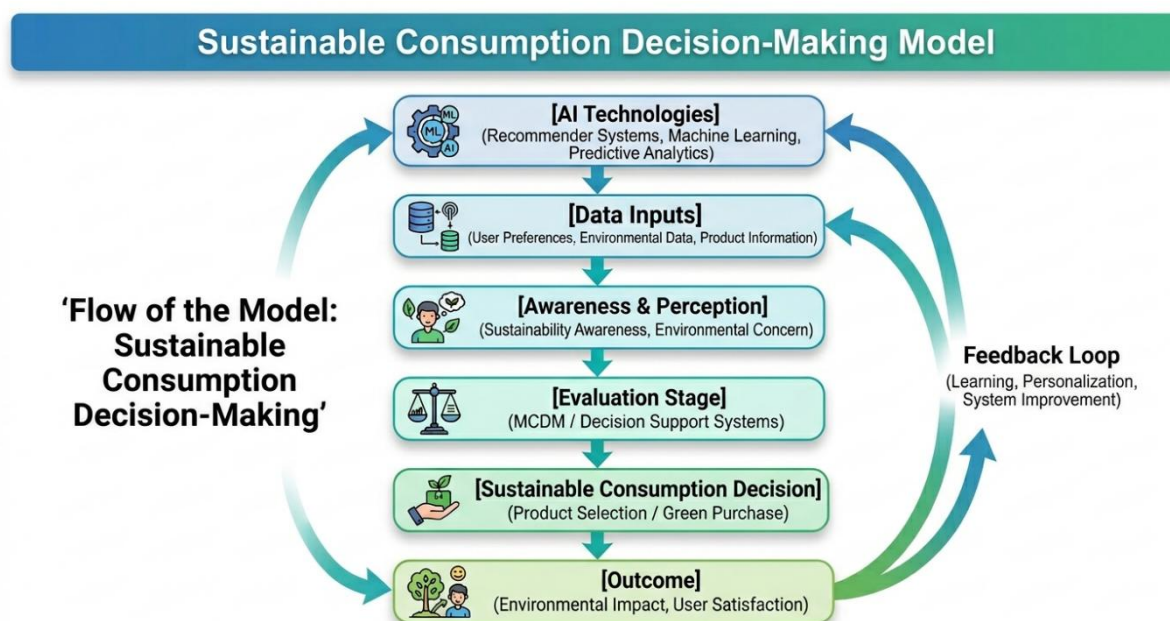


Fig. 8. Conceptual framework for AI-based sustainable decision-making

Those contributions lead to improvements in awareness and perception through raising the sustainability awareness and environmental concern among Generation Z customers. This is succeeded by evaluation phase, which involves the implementation of organized methods of measuring the alternatives through multi-criteria decision-making (MCDM) and decision support systems. Through this assessment, consumers are able to make sustainable consumption choices e.g. choosing friendly products. The results of these decisions include environmental impact, and user satisfaction are improved. Lastly, continuous learning and personalization with the help of a feedback loop, as well as system enhancement in future decision-making are possible.

8. Conclusions

This study represents systematic literature review of artificial intelligence-based sustainable consumption choices of Generation Z that shows the increasing role of combining advanced technologies with sustainability initiatives. The 876 publications analysis shows that the interest in the research has extensively grown over time, especially in the past 2020, which proves the field of interdisciplinary rapidly evolves. Among the major themes identified in the findings is the AI-based recommendation systems, behavioural influence, trust, and explainability, and the combination of AI and multi-criteria decision-making (MCDM). Another important aspect of the study is the paramount importance of the generation Z as a digitally native and sustainability-oriented group of consumers. In spite of these developments the research arena is still disjointed with little bringing together of AI, sustainability and developed decision-making systems. To manage this, the research suggests a conceptual model connecting AI technologies, decision making, and sustainable consumption results to be added to both theory creation and practical implementation.

9.1 Future Work

Further studies need to be directed to create the integrated AI-based decision-support systems which will combine the artificial intelligence with MCDM methods to make the sustainable decisions more transparent and effective. Explainable and ethical AI models are necessary to improve user trust and adoption especially where AI is used in sustainability-related services. The upcoming research should also focus on the behavioural analysis of Generation Z, specific to various areas, taking into account cultural, social, psychological aspects of the process. Also, the practical aspects of AI-based models of sustainable consumption (e-commerce, smart cities, and policy) should be studied and confirmed by researchers. Sustainable consumption systems could be even reinforced with the introduction of emerging technologies like the Internet of Things (IoT) and blockchain. Altogether, the theme of future work must be focused on the goal to eliminate the disconnection between theoretical frameworks and practical implementation, making sure that the intelligent systems should be developed and used efficiently to encourage sustainable consumption.

Acknowledgement

We wish to give our sincerest thanks to our mentors, colleagues, and sources of research, whose contribution and guidance added value to this research.

Conflicts of Interest

The authors declare no conflicts of interest.

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