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SRI-VIPRA

Project   **Report**

of 2023: SVP-2349

"Mapping the Publications on Sustainable Fashion:

A Bibliometric Analysis"

IQAC

Sri Venkateswara College

University of Delhi
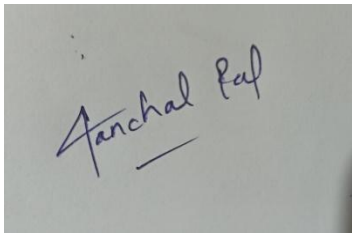
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SRIVIPRA PROJECT 2023

Title: Mapping the Publications on Sustainable Fashion: A Bibliometric Analysis

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This is to certify that the aforementioned students from Sri Venkateswara College have participated in the summer project SVP-2349 titled "Mapping the Publications on Sustainable Fashion: A Bibliometric Analysis". The participants have carried out the research project work under my guidance and supervision from 15 June, 2023 to 15th September 2023. The work carried out is original and carried out in an online/offline/hybrid mode.

Pooja Jain.

Signature of Mentor

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1. **Abstract**

The literature available on sustainable fashion has witnessed a notable growth in the last few decades, supported by a rising interest in industrial as well as consumer behaviour shown by academic scholars. This study maps the academic literature on consumer behaviour towards sustainable fashion. The paper highlights the current state of the literature and identifies significant gaps in the existing research literature on consumer behaviour towards sustainable fashion, using bibliometric tools. Through reference and keyword searching approaches, the study retrieved 326 research papers from the Scopus database. The utilization of performance analysis methodologies has played a crucial role in the recognition of influential publications, prolific contributors, nations of origin, and affiliations thereby contributing significantly to the advancement of the knowledge in the realm of behavioural biases for sustainable fashion. Employing scientific mapping techniques like bibliographic coupling has yielded invaluable insights into the conceptual and intellectual framework of this bailiwick. Ultimately, the research directions outlined in this study serve as a guide for prospective research in this domain filling existing gaps.

Keywords: Bibliometric analysis, sustainable fashion, green consumerism, ethical fashion, sustainability

2. Introduction

In the academic and policy literature, there is a growing interest in sustainability and sustainable development. For more than 20 years, these two ideas have dominated the field of international development policy. Recent occurrences like climate change, the race to reduce fossil fuel emissions, the switch to renewable energy, and the shift to a circular economy have accelerated the push for sustainability and sustainable development in the policy sphere (Aven 2020; Leal Filho et al. 2019; Ozili 2021; Wackernagel, Hanscom, and Lin 2017).

While O'Riordan (1985) dubbed sustainable development (SD) a "contradiction in terms," Redclift (1987, p. 1) indicates that it may simply be "another development truism" due to the wide variations in how the term is used and perceived. Despite being essentially conceptual, these interpretational issues have some semantic underpinnings. According to Tolba (1984a), the terms "sustainable development" and "ecologically sustainable or environmentally sound development" are frequently used interchangeably. This view is distinguished by two things: (a) the understanding of "sustainability" as "ecological sustainability," and (b) the conceptualization of SD as a change-process with (ecological) sustainability added to its list of goals. Sustainable development, on the other hand, can also be defined as "successful" development, "sustained growth," or "sustained change."

Prior research has looked at a number of topics in the literature on sustainability and sustainable development, including the determinants of sustainability and sustainable development (Vinuesa et al. 2020), promoting sustainable development through the construction of infrastructure and innovations (Thacker et al. 2019; Silvestre and Irca 2019), and the various approaches to sustainable development (Lee et al. 2018; Chindavijak, Phusavat, and Kess 2016; Chichilnisky 2011; Hassan, Wright and Struthers 2013).

According to the research, social, economic, and environmental components make up the majority of sustainable development or sustainability (Ranjbari et al., 2021; Duic et al., 2015; Clune and Zehnder, 2020; Kumar and Anbanandam, 2019). There is also broad agreement that sustainable development and sustainability are multidimensional concepts that are realized through the interaction of their social, economic, and environmental dimensions (Lehtonen, 2004; Golusin and Ivanovi, 2009). The technological or technical dimension (Penzenstadler and Femmer, 2013; Finkbeiner et al, 2010), the cultural component (Brocchi, 2010), the knowledge dimension (Mebratu, 2001), etc., were among the other dimensions of sustainable development or sustainability that were introduced in other research (Sustainability and sustainable development research around the world Ozili, Peterson K).

Prior to sustainable development, the main flaw in approaches was a lack of sectoral integration in developing plans and putting them into practice on a practical basis (Garcia-Feijoo et al., 2020). Focusing on a particular sector over other development sectors had the unfavorable effect of causing divergent outputs, which in turn led to the trend-setting of wide targets (Morley et al., 2017). The worldwide development agenda as well as the nations' development strategies and programs were decided upon taking into account the SDGs. Despite the fact that the SDGs are global in scope, member states are free to choose which objectives to implement based on the resources they have at their disposal, their socioeconomic priorities, and their chosen rate of change (Eisenmenger et al., 2020).

The introduction of SDGs has sparked numerous systematic research to comprehend, order, and assess the advancement of targets adopted by nations. According to these research' findings (Kroll et al., 2019; Mensah, 2019; Weitz et al., 2018), thorough, evidence-based, trustworthy, and timely appraisal of accomplishments toward fulfilling national objectives in a variety of socioeconomic contexts is encouraged. The social, political, environmental, and economic viability of the globe currently depends on decisions taken in relation to the SDGs. Understanding the global context based on an examination of the SDGs' progress, difficulties, and opportunities is essential and must be studied.

Allen et al. (2018) conducted an evaluation of national progress and approaches to achieving the SDGs in various countries based on current literature, which is one of the qualitative SDGs review studies. The roles and opportunities offered by ICTs and AI for achieving the SDGs were examined in Caiado et al.

(2018) M. Mishra et al. 1–3. The SDGs can be utilized to address the societal causes of mental diseases, and they can be enhanced to help prevent mental disorders, according to a thorough analysis by Lund et al. (2018). The potential effects of the coronavirus pandemic on the SDGs were examined by Leal Filho et al. in 2020.

Persson et al. (2016) amended the SDGs based on alignment and internalization and examined their inclusion, advancement, and implementation issues. In recent years, scholars have additionally investigated the SDGs topic using quantitative assistance, such as meta-analysis and bibliometric analysis, to augment the current qualitative studies of SDGs research. Yamaguchi et al. (2023) conducted a bibliometric analysis of the SDGs literature to evaluate the development and consolidation of scholarly work from 2015 to 2022 that was obtained from the Web of Science core collection and descriptive bibliometric analysis. This was one of these quantitative studies. The findings demonstrated that the field of SDGs is rapidly expanding, with a trend toward research area diversification. The business sector, education, and poverty are the major topics of the numerous bibliometric research on SDGs that are now being published (Pizzi et al., 2020; Prieto-Jiménez et al., 2021; Yu and Huang, 2021).

Globally, the textile and garment industry has received much criticism for its negative impacts on the environment and society (Keeble, B.R. The Brundtland Report: "Our Common Future". Med. War 1988,Borowy, Defining Sustainable Development for Our Common Future: A History of the World Commission on Environment and Development (Brundtland Commission); Routledge: London, UK, 2013. Norton, B. Sustainability, Human Welfare, and Ecosystem Health. Environ. Values 1992, Jonathen, W.; Hamid, S.; Hauke, E.; Mekala, K.; Brodie, B. Confronting Climate Risk). It was revealed that the fashion sector produced an astounding 92 million tons of textile waste in 2015, and it is anticipated that this number will rise by 60% by 2030 (Comin, L.C.; Aguiar, C.C.; Sehnem, S.; Yusliza, M.-Y.; Cazella, C.F.; Julkovski, 2020). Furthermore, according to data from the UNECE (2018), a startling 85% of all textiles are thrown annually, with some ending up in landfills or being burned. The sector has also been connected to a number of social issues, including worker exploitation, poor working conditions, and violations of human rights (Jonathen, W.; Hamid, S.; Hauke, E.; Mekala, K.; Brodie, B. Confronting

Climate Risk. Mckinsey.com. Freudenreich, B.; Lüdeke-Freund, F.; Schaltegger, S. 2020, Nosratabadi, S.; Mosavi, A.; Shamshirband, S.; Kazimieras Zavadskas, E.; Rakotonirainy, A.; Chau, K.W. 2019).

The rise of fast fashion, whose business model emphasizes the quick and frequent turnover of designs and trends, typically at low prices, is recognized as a major contributor to the aforementioned issues (Nosratabadi, S.; Mosavi, A.; Shamshirband, S.; Kazimieras Zavadskas, E.; Rakotonirainy, A.; Chau, K.W. Sustainable Business Models: A Review. Sustainability 2019; Lee, E.-J.; Choi, H.; Han, J.; Kim, D.H.; Ko, E.; Kim, K.H. 2020). Consumers buy more clothing than they need and toss it out prematurely as a result of the faster cycle of production and consumption (Borowy, I. Defining Sustainable Development for Our Common Future: A History of the World Commission on Environment and Development (Brundtland Commission); Routledge: London, UK, 2013.). It is crucial to recognize that China, the world's largest producer of textiles and apparel, occupies a prominent position in the fast fashion industry and has a sizable fast fashion market (Roozen, I.; Raedts, M.; Meijburg, L. Do verbal and visual nudges influence consumers' choice for sustainable fashion J. Glob. Fash. Mark. 2021). Despite the significant environmental and social difficulties raised by China's fast fashion sector, awareness of and action to solve these issues are developing.

After the 1992 Rio Earth Summit, "sustainability" became a well-known concept in the fashion business. Brands began looking for solutions to lessen their adverse effects on the environment and people. SF is built on sustainability and incorporates it in any or all phases of its lifespan, minimizing negative effects on the environment and biodiversity while upholding social responsibility. In contrast to sustainability, which is associated with durability and long-term product utilization, fashion has a finite shelf life and changes with seasonal trends. This makes the phrase "sustainable fashion" sound contradictory (Clark, H. Fash. Theory 2008). The terms eco-, green-, and ethical-fashion are sometimes used interchangeably, and SF is a subgroup of the slow fashion movement (Carey, L.; Cervellon, M.-C. Ethical fashion dimensions: Pictorial and auditory depictions through three cultural perspectives. J. Fash. Mark. Manag. Int. J. 2014). B2C marketing is the term for marketing initiatives focused on the final users of a good or service. Fashion companies generally engage in business-to-consumer (B2C) retailing, both online and off. The primary forces behind B2C marketing are demand and consumer behaviour (Salmeron, J.L.; Hurtado,

J.M. Modelling the reasons to establish B2C in the fashion industry. Technovation 2006). The main issue for fashion B2C marketing is to stay current with fashion. Two of the biggest barriers to SF consumption are its higher costs and less accessibility (Sharma, N.; Saha, R.; Rameshwar, R. I Don't Buy LED Bulbs but I Switch off the Lights" Green Consumption versus Sustainable Consumption. J. Indian Bus. Res. 2019, Spielmann, N. Green is the New White: How Virtue Motivates Green Product Purchase. J. Bus. Ethics 2021, Atthirawong, W.; Panprung, W. A Study on the Consumers' Buying Behaviour towards Green Products in Bangkok. Int. J. Manag. Appl. Sci. 2017, Gleim, M.R.; Smith, J.S.; Andrews, D.; Cronin, J.J., Jr. Against the Green: A Multi-method Examination of the Barriers to Green Consumption. J. Retail. 2013, Peattie, K. Green Consumption: Behaviour and Norms. Annu. Rev. Environ. Resour. 2010, Moser, A.K. Thinking green, buying green? Drivers of pro-environmental purchasing behaviour. J. Consum. Mark. 2015, Perry, A.; Chung, T. Understand attitude-behaviour gaps and benefit-behaviour connections in Eco-Apparel. J. Fash. Mark. Manag. Int. J. 2016).

Marketing initiatives targeted towards business buyers are referred to as B2B marketing. Fashion companies can sell their goods to other businesses, such as for uniforms and corporate gifts. Fashionably in (which links fashion houses to manufacturers and suppliers), Sauvecotton (which sells fashion materials), and Wholsesalebox (an online platform for wholesale distribution of fashion products) are a few examples of B2B businesses in the garment sector. Purchasing environmentally friendly raw materials and technology is the second part of fashion B2B marketing. For instance, a technique that enables the waterless dying of fabric can lower a fashion brand's water impact.

The purpose of this study is to determine how and to what degree consumer behaviour and fashion preferences are influenced by sustainability issues. To be more accurate, the study attempts to answer to the following research questions (RQ).

RQ1: What is the descriptive bibliometric information on publication on sustainable fashion?

RQ2: What is the descriptive bibliometric information of co-authorship on sustainable fashion?

RQ3: What are the literature's themes and focuses?

RQ4: What are the literature's key takeaways for potential directions of further study?

The paper is structured as follow: Section 1 provides introduction, section 2 provides a literature review of the research; section 3 describes the research methodology; section 4 discusses the results and section 5 describes the limitations of the study the conclusions, implications and future research avenues.

3. Literature Review

The study focused on fashion design elements' role in promoting sustainable fashion and continuous product value, highlighting classical, transformative, patterned, multimaterial, and decorative elements. It offered valuable insights for designers seeking to sustain product value (Zhou X.; Miyauchi R.; Inoue Y, 2023). Explored the socio-emotional identities of Handloom artisans in Sri Lanka and their potential influence on new product development. It emphasized the importance of recognizing artisan contributions and adapting artisan-oriented approaches in product development, with potential applications for similar industries in the South Asian region (Gopura S.; Wickramasinghe A, 2022). The segmented fashion consumers based on emotional and shopping characteristics, revealing three distinct clusters of consumers and their varying motivations for sustainable fashion consumption. This classification provides a basis for tailored marketing strategies (Haines S.; Lee S.H.M, 2022). Gen Z consumers' shopping journeys through social media, highlighting the role of social relationships, entertainment, information, and visual content in their gratification-seeking behaviour. It also emphasized the significance of resale sites for sustainable fashion choices. Instagram as a platform for promoting sustainable fashion. It highlighted the emergence of a positive community of content creators using the #SustainableFashion hashtag to advocate for sustainable fashion solutions on the platform. This study positioned Instagram as a valuable medium for sustainable fashion communication (Siregar Y.; Kent A.; Peirson-Smith A.; Guan C, 2023). Spanish consumers perception and purchase intentions towards sustainable fashion, offering implications for sustainability marketing strategies. It focused on sustainability as a form of governance from a social perspective(Jiménez-Marín G.; Galiano-Coronil A.; Tobar-Pesántez L.B, 2022) The study explores the Zero Waste Indonesia community's social media campaign, emphasizing the role of Instagram in promoting eco-friendly awareness and women's empowerment for environmental care. It highlights how digital platforms can effectively mobilize social movements and knowledge sharing for sustainable fashion (Jiménez-Marín G.; Galiano-Coronil A.; Tobar-Pesántez L.B, 2022). The factors influencing

sustainable fashion purchasing behaviour in Brazilian consumers, incorporating moral obligation, awareness of consequences, and previous behaviour. It underscores the importance of attitude and perceived behavioural control in shaping purchase intentions (Floriano M.D.P.; de Matos C.A, 2022). The study examines the impact of sponsored and non-sponsored social media influencer (SMI) posts in promoting sustainable fashion brands. It suggests that non-sponsored posts are more persuasive, and the benefit association (self vs. other-oriented) affects message authenticity and behavioural intention (Kapoor P.S.; Tagore A.; Dua S, 2023). The textile industry's environmental and social challenges and the role of Big Data in addressing these issues. It categorizes sustainable challenges and explores how Big Data can provide insights and solutions (Marquesone R.F.P.; Carvalho T.C.M.B, 2022). Explores the perspectives of Generation X and Y consumers regarding sustainability initiatives in the European fast-fashion industry. It reveals that consumers' environmental consciousness influences their purchase decisions and highlights the need for targeted marketing efforts (Papadopoulou M.; Papasolomou I.; Thrassou A, 2022).

Circular Fashion and Australian SMEs: how Australian fashion small to medium enterprises (SMEs) overcome challenges in adopting circular fashion principles. It highlights the advantages of SMEs in embracing circular economy practices and creating closed-loop business models (Piller L.W.). (Medcalfe S.; Miralles Miro E, 2022) focuses on slow fashion adoption in the context of Indian handloom. It identifies barriers and support mechanisms affecting this transition, shedding light on the challenges and opportunities for sustainable handloom practices. It examines factors influencing slow fashion adoption in the context of Indian handloom, the impact of COVID-19 on sustainable fashion consumption, policies to promote sustainable fashion behaviours, perceived brand benefits in sustainable fashion, and a novel stakeholder analysis approach for sustainable fashion supply chains (Okur N.; Saricam C.; Iri A.R.; Sari I, 2023, Hur E.; Faragher- Siddall E,). Findings reveal the barriers and support mechanisms affecting slow fashion adoption, the influence of environmental concern and knowledge on sustainable fashion consumption, the role of policy interventions such as eco-labelling and education, the impact of perceived brand benefits on consumer behaviour, and the significance of stakeholder roles in sustainable fashion supply chains. These studies collectively contribute to a holistic understanding of sustainable fashion's multifaceted dynamics and the strategies to enhance sustainability in the industry.

The study explores how interactional dynamics between (non) human market actors co-codify markets across social media platforms. It introduces the concept of "sticky market webs of connection" and emphasizes the interplay between (non)human actors in shaping digital markets (Schöps J.D.; Reinhardt C.; Hemetsberger A, 2022). Consumer Preferences for Sustainable Fashion: The study investigates consumer preferences for sustainable fashion in Spain, particularly in the context of green clothing. It highlights the importance of price as a critical purchasing driver and identifies distinct consumer clusters based on sustainability beliefs (Blas Riesgo S.; Codina M.; Sádaba T, 2023). The attitudes of fashion designers in South Africa toward sustainable fashion. It identifies neutralization techniques that influence negative attitudes and underscores the need to reduce barriers to adopting sustainable practices (Muposhi A.; Nyagadza B.; Mafini C,2023). Symbolic Meanings of Green Clothing: The study explores the impact of perceived symbolic meanings (status, environmentalism, innovation, fashion symbols) of green clothing on consumer purchase intentions. It highlights the role of consumer attitudes and the moderating effect of consumer mindsets (Bak S.; Kitapç H, 2023). Geographical Indications in Fashion: The proposes policy recommendations for expanding geographical indications (GIs) to the fashion industry. It explores how GIs can enhance trust in sustainable fashion claims and safeguard identity and heritage. (Cavagnero S.; Giordano S, 2022). The factors influencing second-hand clothing purchases in Indonesia. It considers hedonism, guilt, ecological concern, and price consciousness as determinants of purchase intention and actual purchase. (Syahrivar J.; Kusuma K.; Pahlevi R.A.; Wei Y.; Chairy C.; Genoveva G,2023).

Sustainable retail fashion organizations and their transformative impact on wellbeing within a service ecosystem. It identifies themes related to embedded core purpose, relevance of fit, and the breadth and depth of messaging, and their associations with various dimensions of wellbeing (Dodds S.; Palakshappa N.; Stangl L.M ,2023). Importance of design methods that foster emotional durability in sustainable fashion products. It emphasizes the role of digitally transformable fashion design in creating dynamic and sensory interactions, showcasing case studies and design strategies to inspire fashion designers (Dodds S.; Palakshappa N.; Stangl L.M, 2023). RFID technology in fashion explores the potential long-term benefits of implementing Radio Frequency Identification (RFID) technology in the fashion industry, with a focus on Vietnam. It identifies cost as a critical barrier but highlights the advantages of RFID in terms of speed, precision, and sustainability (Dodds S.; Palakshappa N.; Stangl L.M, 2022). Activism and Twitter

Discourse: Delves into how activists use tweets to open subdiscussions on material starting points related to sustainable fashion. It introduces the concept of Twitter argumentation within a larger polylogical argumentation context, challenging brand claims about ethical practices (Greco S,2023). Ethical Tensions in Hybrid Organizations: Examines tensions and paradoxes within women-oriented hybrid organizations in the sustainable fashion industry. It identifies ethical dualities related to business strategy, sustainability, and wellbeing, shedding light on the complexities of ethical decision-making (Palakshappa N.; Dodds S.; Grant S, 2023). Sustainable fashion apparel consumption and its predictors, with a focus on generational cohorts in Taiwan. It underscores the role of environmental consciousness, perceived value, and perceived risk, highlighting the need for multi-generational marketing strategies (Lin P.-H.; Chen W.-H, 2022). Fashion Challenges explores minimalist-inspired fashion challenges, such as "Project 333" and the "Six Items Challenge," as tools to encourage sustainable fashion consumption. It examines their potential to promote garment reduction, re-use, and repair while considering their impact on fashion identities (Martin-Woodhead A, 2023).

Fashion conservation and repair practices, both within and outside museum contexts. It highlights the deepening and changing meanings of garments as conservators interact with them, emphasizing the importance of preservation and memory (Odabasi S, 2023). Sustainable fashion brands utilize social media to communicate with consumers. It analyses visual and textual content posted by these brands, highlighting the alignment of content with their sustainability goals and the impact on user engagement. (Zhao L.; Lee S.H.; Li M.; Sun P, 2022). Mass customization (MC) as a sustainable alternative to mass production (MP) in the fashion industry. It examines the environmental implications of adopting MC and explores policy options, emphasizing the need to balance customization with sustainability (Alptekino lu A.; Örsdemir A, 2022).

Sustainability cues, such as eco-labels and blockchain technology, used by fashion companies to communicate their commitment to reducing plastic waste. It explores how these cues influence consumer preferences and purchasing behaviour. (Fani V.; Mazzoli V.; Acuti D, 2022). Information disclosure games within fashion supply chains, considering the role of eco-labels and blockchain technology in communicating environmental efforts. It sheds light on how blockchain technology can impact

sustainability practices (Guo S.; Sun X.; Lam H.K.S, 2022). Influence of environmental attitudes on purchase intentions and behaviours in the context of sustainable fashion. It highlights the role of perceived environmental knowledge and concerns in shaping consumer preferences (Leclercq-Machado L.; Alvarez-Risco A.; Gómez-Prado R.; Cuya-Velásquez B.B.; Esquerre-Botton S.; Morales-Ríos F.; Almanza-Cruz C.; Castillo-Benancio S.; Anderson-Seminario M.D.L.M.; Del-Aguila-Arcentales S.; Yáñez J.A, 2022). Solar-based trigeneration system that utilizes a solar heat source and an ammonia–water binary mixture as a working fluid. It analyses the system's performance and energy efficiency, emphasizing its potential for sustainable energy generation (Almatrafi E.; Khaliq A.; Kumar R.; Bamasag A.; Siddiqui M.E, 2023).

Research trends in fashion design conducts a quantitative analysis of fashion design research, visualizing research trends, author collaborations, institutional contributions, and emerging topics. It underscores the interdisciplinary nature of fashion design research and identifies evolving research fronts (Zou Y.; Pintong S.; Shen T.; Luh D.-B, 2022). Consumer Interaction with Digital Humans in Fashion: With the ongoing COVID-19 pandemic accelerating digital transformation in the fashion industry, this study delves into consumer attitudes towards interacting with digital humans. It quantitatively analyses consumer propensity to engage with AI-driven digital entities in the context of fashion. The results provide valuable insights for fashion businesses looking to innovate their e-commerce practices and incorporate digital humans into their operations (Silva E.S.; Bonetti F,2021).

Green Marketing explores the relationship between a firm's green marketing strategies and its reputation improvement among customers. It emphasizes the importance of a company's environmental positioning and suggests that adopting recognized environmental marketing strategies across various aspects of the business can enhance its reputation (Woo E.-J, 2021).

 The fashion industry's environmental impact, this study investigates the effectiveness of nudging as a tool to encourage consumers to make sustainable fashion choices. The research employs verbal and visual nudges on a retailer's website and examines their influence on consumers' preferences and willingness to pay for sustainable apparel (Roozen I.; Raedts M.; Meijburg L, 2021). Product development in the fashion

industry plays a pivotal role, and this paper focuses on making these processes environmentally sustainable. It identifies key steps in fashion product development, classifying them into traditional, new, and sustainable processes. The study analyses factors essential for achieving sustainability in fashion product development, considering the triple bottom line (TBL) framework (Fung Y.-N.; Chan H.-L.; Choi T.-M.; Liu R, 2021).

Psychosocial Predictors of Sustainable Clothing Purchase Intention: Italian women's intention to purchase sustainable clothing, this research integrates the Theory of Planned Behaviour (TPB) and the Value-Belief-Norm (VBN) approaches. It identifies personal norm and attitude as strong predictors of intention, highlighting the importance of values, awareness of consequences, and personal norms in shaping sustainable fashion choices (Carfora, Valentina; Buscicchio, Giulia; Catellani, Patrizia, 2021). Reuse is a sustainable strategy in fashion retail, but its management is complex. This study examines a reuse-based mall and uncovers obstacles and implications in managing such initiatives. It employs institutional logics to analyse the interplay of different logics (shopping mall, reuse, work integration) and how they affect the success of the mall (Hedegård L.; Gustafsson E.; Paras M.K,2020). Inherent Managerial Contradictions in Sustainable Retail: This study highlights the presence of inherent managerial contradictions in sustainable practices in fashion retail. It emphasizes the need to acknowledge and balance multiple logics in fashion retail management and suggests that competence in all logics is essential for sustainable solutions.

 Supply chain resilience is a crucial concern for the fashion industry, particularly in the context of sustainability and risk. This study seeks to develop an integrated approach using quality function deployment to mitigate supply chain risk. By deploying resilience capabilities and features, the research aims to provide the fashion industry with a practical method to build resilient and sustainable supply chains (Hsu C.-H.; Chang A.-Y.; Zhang T.-Y.; Lin W.-D.; Liu W.-L, 2021). Sustainable fashion brands aim to balance sustainability and product appeal. This study investigates the positioning strategies used by fashion brands to achieve this balance, focusing on the case of an Indian social enterprise, Upasana. Through qualitative research methods, the study explores how brands address sustainability and product functionality in their positioning (Bandyopadhyay C.; Ray S, 2020). Wrist Position Identification in 3D

Clothing Design: With the advancement of virtual reality and computer-aided design in fashion, accurately identifying wrist positions is essential. This paper proposes a method that employs a fixed-step search algorithm to determine the wrist's position in 3D clothing design. The research demonstrates the accuracy and efficiency of this method in comparison to existing approaches (Chen Y.; Hou Q.; Hong Y.; Gao W, 2022). Awareness of sustainability in the fashion industry, there remains a gap between companies and consumers in terms of perceptions and attitudes. This qualitative study employs in-depth interviews to gather insights from both sides and proposes solutions to bridge this gap, including emotional-based marketing and collaborative fashion consumption (Ertekin Z.O.; Atik D, 2020). Rural communities in Brazil engaged in activities such as rubber production, regenerative cotton, weaving, and lacework for the fashion industry. It highlights how these communities contribute to sustainable livelihoods, biodiversity conservation, and gender justice while participating in the fashion supply chain (Rüthschilling E.A.; Artuso E.F, 2022). This study examines clothing mending and making practices among Norwegian consumers. It explores the prevalence of these activities, demographic factors, and their correlation with environmental opinions.

This research discusses curriculum interventions aimed at integrating sustainability into fashion business education. It explores how sustainability can be incorporated into teaching resources, case studies, lectures, and assessments to guide students in addressing real-world ethical and sustainability challenges in the fashion industry.Collaborative Fashion Consumption for Sustainability: This paper lays the conceptual foundation for collaborative fashion consumption (CFC) as a means to promote sustainable clothing. It introduces a CFC definition, typology, and environmental effect's structure. This conceptual framework can guide future empirical research in the field (Iran S.; Schrader U, 2017). Improving Recommender Systems for Sustainable Fashion: Recommender systems play a vital role in suggesting sustainable fashion products to customers. This research proposes an Item Session-Based Recommender (ISBR), Attribute Session-Based Recommenders (ASBRs), and Feature-Weighted Session-Based Recommenders (FWSBRs) to enhance recommendation system performance. FWSBRs are shown to outperform other methods, addressing the cold-start item problem (Hwangbo, Hyunwoo; Kim, Yangsok, 2019).

The fashion industry is undergoing significant changes due to evolving consumer lifestyles and increased competition. Sustainability and the circular economy are emerging as pivotal factors for long-term competitiveness. Younger generations, particularly Generation Z, are increasingly concerned about sustainability. This study explores the influence of sustainability and circular economy principles on Generation Z's perception of the fashion industry. A survey conducted in collaboration with Insubria University provides insights into Generation Z's behaviour, preferences, and gender-related differences regarding sustainable fashion and circular economy practices. The findings align with theoretical expectations, emphasizing the significance of sustainability in shaping Generation Z's fashion preferences.

The growing importance of sustainable fashion product consumption (SFPC) and the need to bridge the gap between consumer concerns about sustainability and their actual consumption behaviours. It emphasizes the role of marketers in encouraging SFPC and explores the psychological factors that contribute to the attitude-behaviour gap in sustainable fashion. The review discusses the application of Heider's balance theory and consumer luxury brand experiences to explain the psychological factors influencing SFPC. It also references empirical research involving focus group interviews, direct observations, and post-behaviour interviews to support new propositions related to SFPC.

4. Research Methodology

The purpose of the present study is to map the present knowledge in the field of consumer behavioural biases in sustainable fashion. This study, thus, adopts the bibliometric analysis method for the literature review, a technique widely used to map the evolution of the mindset and to identify the key elements (i.e. countries, authors, journals) in different research areas (Cobo et al., 2011, 2012; Morris and Van der Veer Martens, 2008). Bibliometric methods encompassing the performance analysis and scientific mapping provides invaluable insights about the dynamic nature of the sustainable fashion industry (Cobo et al. 2011; Baier-Fuentes et al. 2019). It is a systematic domain-based review (Paul and Criado, 2020) which

analyses an extensive amount of published research to highlight statistics, figure out trends, compare and contrast findings and identify knowledge gaps and future research avenues.

4.1 Database, keywords and inclusion criteria

Research is defined as the systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions, as per the oxford dictionary. The references cited indicate the key variables affecting the area being identified, researched, and establishment of relationships among the variables. (Bornmann and Mutz 2015; Mallawaarachchi et al. 2020). Therefore, a compiled and comprehensive literature search not only pools the existing knowledge but also identifies the research gaps for further studies (Rousseau et al. 2008; Denyer and Tranfield 2009). The literature hunt for this study analyses the research conducted on consumer behaviour towards sustainable fashion. The sample collected for this study is fairly spread over time, i.e. from 2012 to 2023. Scopus, which has one of the most extensive and comprehensive databases for research literature on the topics in the areas of social sciences, has been used to search the existing studies (Aznar-Sánchez et al. 2019; Couckuyt and Looy 2019). Scopus was chosen as the database for retrieving the literature because Scopus (1) is the biggest repository of abstract and citation data (Mugomeri et al. 2017; Zyoud and Fuchs-Hanusch 2017) (2) has the flexibility to debug and process data (Aznar-Sánchez et al. 2019) (3) has a rapid update frequency (Borret et al. 2018).

The title keyword for our search was "sustainable fashion". Literature no older than 2011 has been used for the purpose of this study. The present study considered research papers published in peer-reviewed journals only in the English language. All the papers in other languages have been excluded for this study. This study considered the academic studies published in the domain of business and society. Thus, the study does not take into consideration the literature on sustainable fashion published in other domains.

4.2 Bibliometric Analysis

The bibliometric analysis was conducted using the Vos Viewer software. The analysis was used to identify the most influential authors, journals, and keywords in the field of sustainable fashion and consumer behaviour in the last decade.

Vos Viewer is a bibliometric software that enables visualising and analysing bibliographic networks. It helps in identifying patterns, trends, and relationships within a research field. Using Vos Viewer, the analysis focused on three main aspects: influential authors, journals, and keywords. For the analysis of influential authors, the co-authorship network was visualised, and the centrality of each author was calculated. The centrality metric is a measure of an author's influence based on the number and quality of their collaborations with other authors.

The analysis also looked at influential journals in the field of sustainable fashion and consumer behaviour. The co-citation network was visualised to identify the most frequently cited journals. The centrality of each journal was calculated to determine their influence within the research community.
Additionally, the analysis identified the most frequently occurring keywords in the field. The co-occurrence network of keywords was visualised and analysed to identify the most important and frequently used keywords. This helps in understanding the main research topics and areas of interest within the field of sustainable fashion and consumer behaviour.

Overall, the bibliometric analysis using Vos Viewer provided a comprehensive understanding of the most influential authors, journals, and keywords in the field of sustainable fashion and consumer behaviour.

5. Data Analysis

5.1 Bibliometric analysis of the keywords
A comprehensive examination was conducted to detect commonly employed keywords and phrases within the titles and abstracts of the research papers. Keywords identified by the software and occurred more than 5 times in the Scopus database in use were enrolled in the final analysis. Of the 1,527

keywords, 56 met the threshold. The keywords that appeared most were "sustainable fashion" (total link strength 239) and "sustainability' (total link strength 300) which had a strong link to "fast fashion" and "sustainable development". Further, "sustainable development" and "consumption behaviour" were another two keywords with the total link strength of each more than 80.

Figure 1

Bibliometric analysis of the keywords in publications on Sustainable Fashion.

Co-occurrence of keywords. The size of nodes indicates the frequency of occurrence. The curves between the nodes represent their co-occurrence in the same publication. The shorter the distance between two nodes, the larger the number of co-occurrences of the two keywords.

5.2 Bibliometric analysis of the citations and publications

Table 1: Top 10 most cited research papers

Research papers (Top 10 most cited)	No. of citations
Innovative and sustainable business models in the fashion industry: Entrepreneurial drivers, opportunities, and challenges	238
Sustainable fashion consumption and the fast fashion conundrum: fashionable consumers and attitudes to sustainability in clothing choice	208
Data quality challenges for sustainable fashion supply chain operations in emerging markets: Roles of blockchain, government sponsors and environment taxes	204
What is sustainable fashion?	191
Design of Sustainable Supply Chains for Sustainable Cities	173
Sustainable Fashion Supply Chain: Lessons from HandM	169
Sustainable Markets: Motivating Factors, Barriers, and Remedies for Mobilization of Slow Fashion	148
Consumer behaviour in sustainable fashion: A systematic literature review and future research agenda	143
Mean-downside-risk and mean-variance newsvendor models: Implications for sustainable fashion retailing	139
Ethical consumer behaviour in Germany: The attitude-behaviour gap in the green apparel industry	128

Table 1 shows the top 10 research papers which have been cited the greatest number of times. Among these top 10 research papers, the most cited paper is on the topic "Innovative and sustainable business

models in the fashion industry: Entrepreneurial drivers, opportunities, and challenges", followed by "Sustainable fashion consumption and the fast fashion conundrum: fashionable consumers and attitudes to sustainability in clothing choice".

Table 2: Top 14 Journals which have published minimum 5 research papers and those papers have been cited minimum 5 times.

S.No.	Source Documents	No. of Citations
1	Sustainability (Switzerland)	62
2	Journal of Fashion Marketing and Management	25
3	Fashion Practice	16
4	Journal of Global Fashion Marketing	12
5	International Journal of Fashion Design, Technology and Education	11
6	Research Journal of Textile and Apparel	8
7	International Journal of Consumer Studies	7
8	Sustainability: Science, Practice and Policy	7
9	Fashion Theory - Journal of Dress Body and Culture	6
10	Fashion, Style and Popular Culture	6
11	International Journal of Production Economics	6
12	Journal of Business Research	6
13	Journal of Cleaner Production	6
14	Fashion and Textiles	5

Table 2 shows the top 14 Journals which have published minimum 5 research papers and which have been cited minimum 5 times on Sustainability fashion. Among these the Sustainability, a peer-reviewed Journal published by MDPI; Journal of fashion marketing and management;and Fashion Practice are top 3 journals whose research papers have been cited 62, 25 and 16 times respectively.
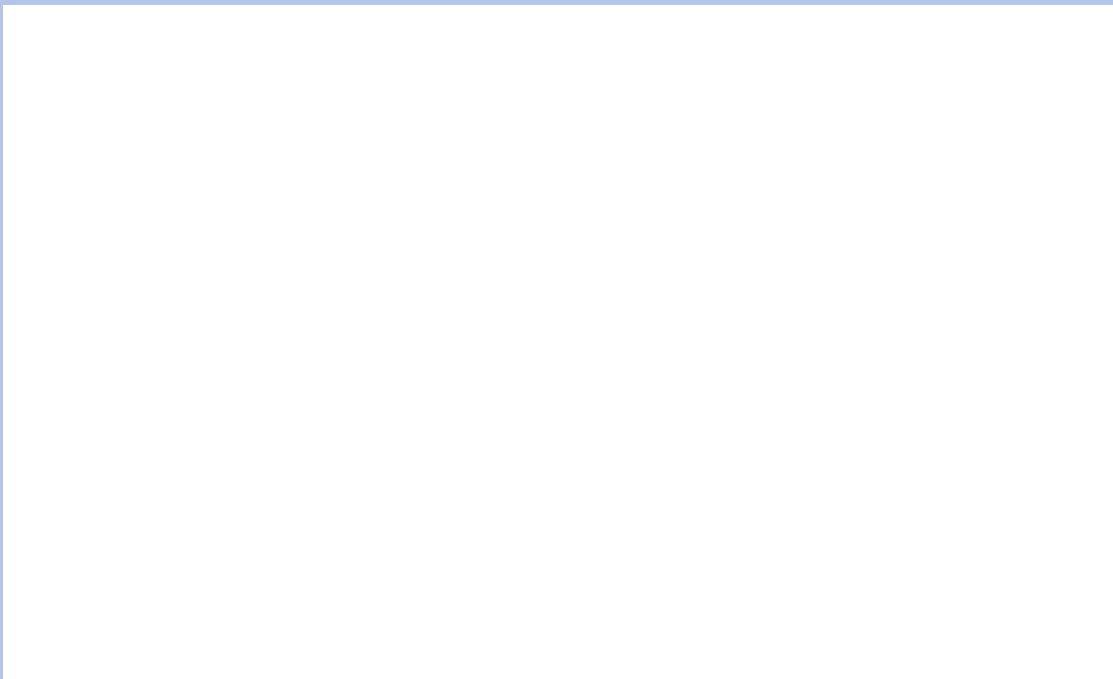
Figure 2

Top Institutes/ Departments and their contribution in publishing the research and the average year of publication.

Table 3: Top Departments/Organizations with maximum number of research papers published

Department/Organization	No. of research papers published	Average Year of publication	Country
Glorious Sun school of Business andManagement	4	2016.75	China
Department of clothing and textiles, Yonsei university	3	2019.67	South Korea
Izmir University of Economics	3	2018.33	Turkey
Department of apparel, merchandising, design and textiles, Washington State university	2	2022.50	USA

Department of economics and management, University of Florence	4	2022	Italy

Table 3 - Top 5 Organisations / Departments with maximum number of research papers published. Among these Glorious Sun School of Business and management from China has published highest number of research papers i.e., 4.

Table 4: Top 10 most active countries of sustainable fashion publications having minimum 10 research papers published

Country	Documents	Citations
United States of America	62	1121
United Kingdom	39	608
South Korea	33	606
China	25	933
Australia	22	148
Hong Kong	15	623
India	15	43
Italy	14	512
Canada	13	354
Germany	13	219

Table 4 shows the top 10 most active countries of sustainable fashion publications. Among them, the USA is the topmost country with 62 publications and 1121 citations, followed by China having 25 publications and 933 citations.
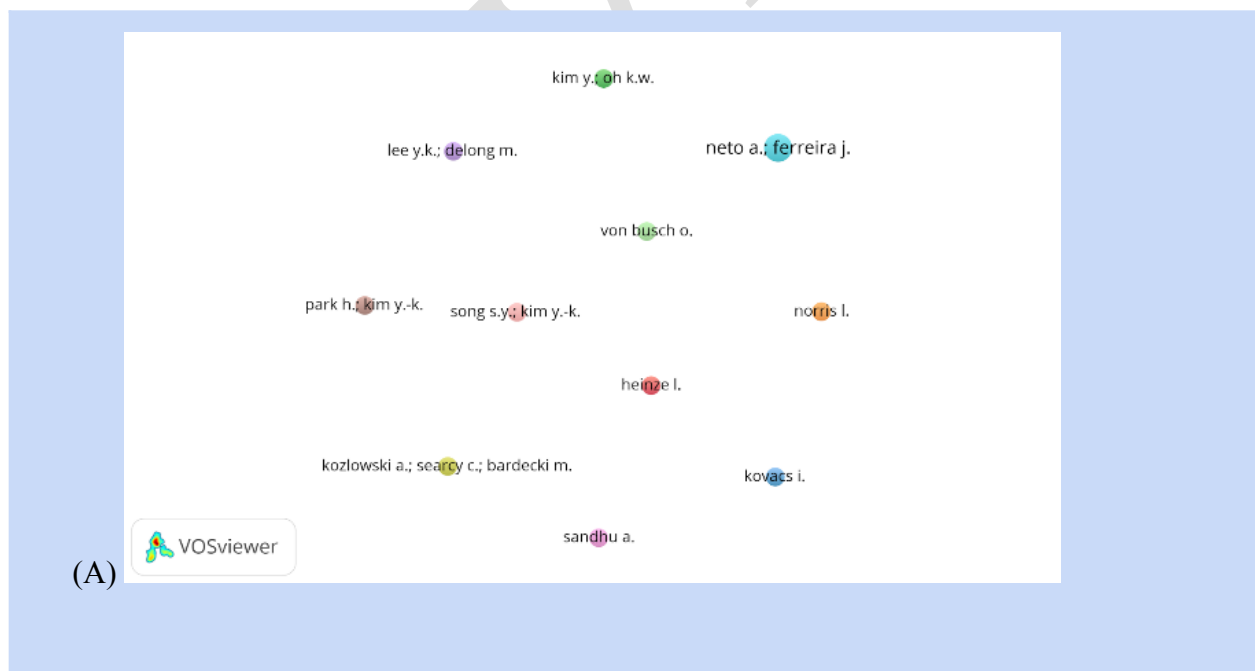
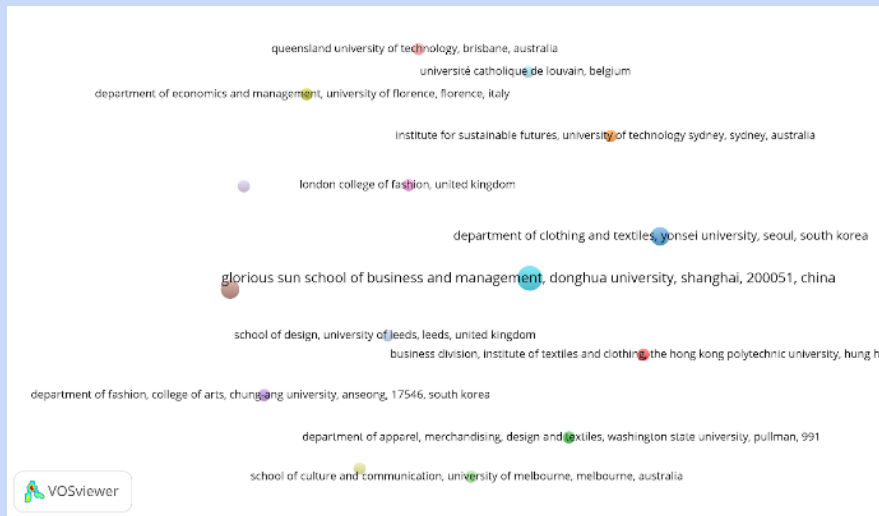### 5.3 Bibliometric analysis of the co-authorship

The co-authorship measures scientific interaction and relationships amongst networks, teams, institutions, and countries. The joint publication results from a collaboration between organizations and

representatives from different countries participating in a research program. Such research establishes relationships between teams (scientists, laboratories, institutes, and countries) to produce a scientific article. Co-authorship can identify, measure, and display the number of links established by individual contributors. Thus, co-authorship can be used to indicate these relationships (Ullah, Mati et al. 2022). This study uses a database of 50 articles and papers conducted by 312 authors in totality on sustainability in the fashion industry. There are 11prominent authors identified with a total link strength of 0.

Through the domestic and international literature search, it is revealed that 580 organisations have published theme related papers and 15 of them have over 2 publications.

The number of collaborators with the United States is 13 and the total link strength is 24 with 62 publications. The main partner of the U.S. is South Korea. Just as remarkably, the total link strength of the United Kingdom is 20 and the country cooperates with other 13 countries in the sharing of insights about sustainability in the industry of fashion (Figure 3).

(A)

(B)
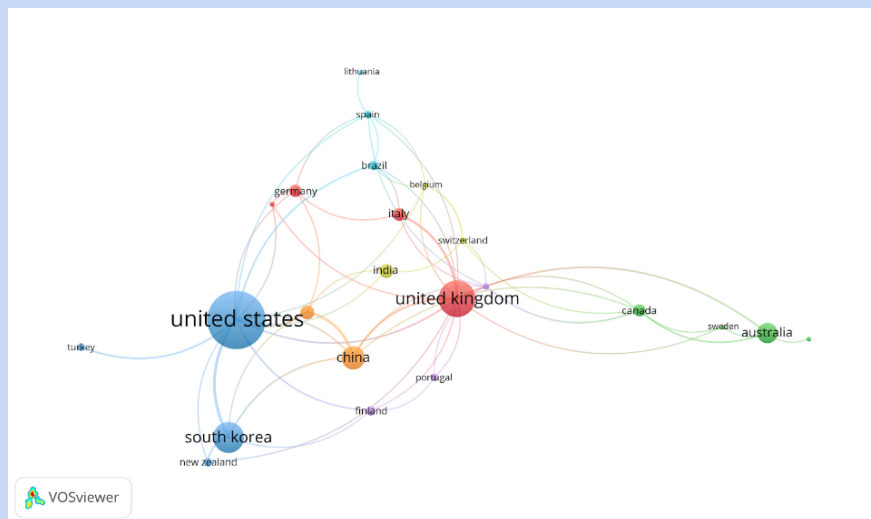
(C)

Figure 3

Bibliometric analysis of the co-authorship.

Figure 3 (A) The co-authorship map of authors which indicates the authors that cooperate in the field of sustainable fashion; (B) the co-authorship map of organisations. No organisation has related papers in our

database: (C) the co-authorship map of countries. The number of collaborators with The United States is 13 and the total link strength is 24 and with the United Kingdom is 13 and the total link strength is 30. Different colours indicate different clusters and the size of circles indicates the number of publications. The thickness of the lines represents the link strength of the countries.

5.4 Bibliometric analysis of the bibliographic coupling and co-citation

Bibliographic coupling refers to the examination of the connections between scholarly works based on the references they share in their bibliographies or reference lists. It is a bibliometric technique that gauges how closely linked or comparable research papers are, by looking at the sources they frequently mention.

Figure 4(A)

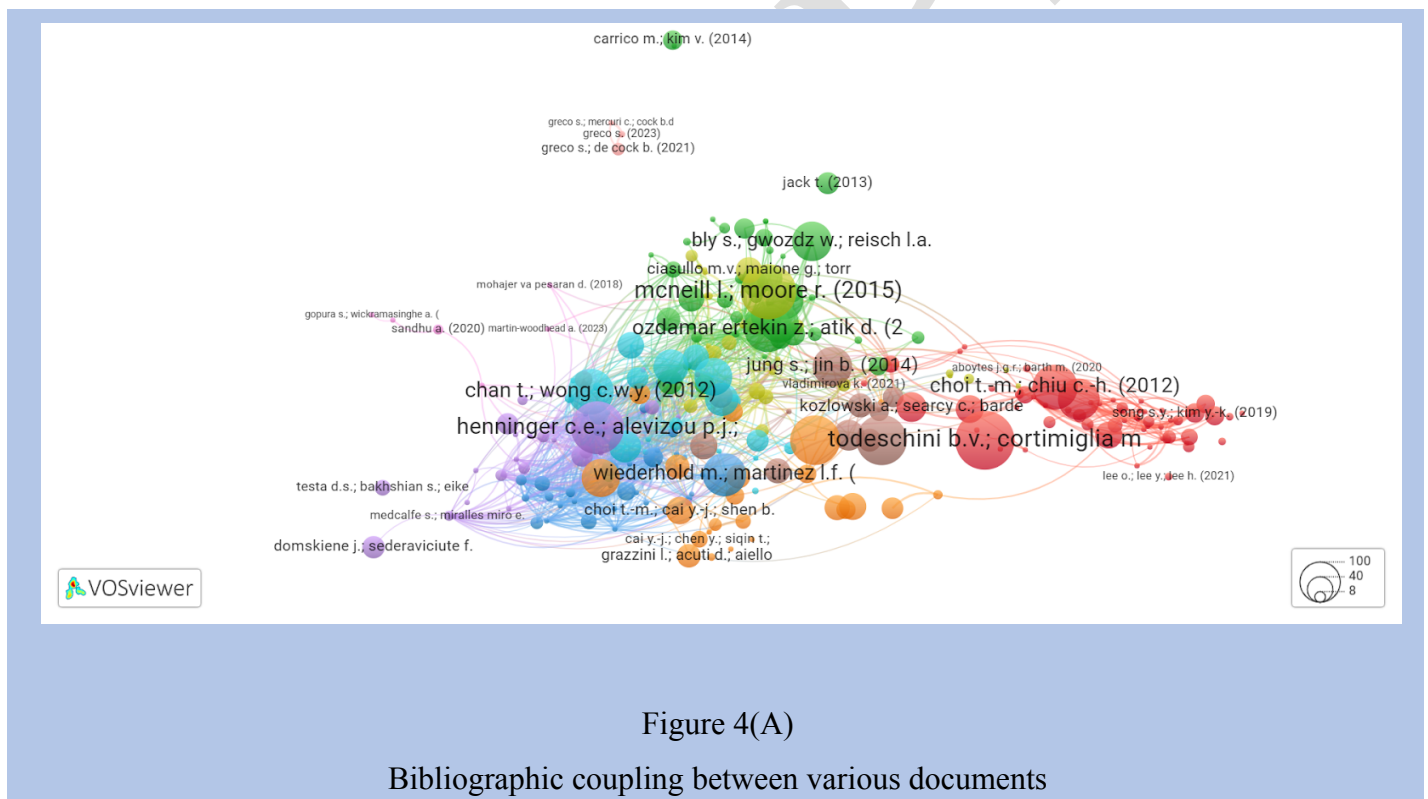Bibliographic coupling between various documents

Figure 4A has 10 clusters, first cluster (red colour) has the papers like "Innovative and sustainable business models in the fashion industry: entrepreneurial drivers, opportunities, and challenges" and

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"Mean-downside-risk and mean-variance newsvendor models: Implications for sustainable fashion retailing". Second cluster (green colour) has papers like "Sustainable Markets: Motivating Factors, Barriers, and Remedies for Mobilization of Slow Fashion" and "Entrepreneurial orientation and its effect on sustainability decision tradeoffs: The case of sustainable fashion firms". The third cluster (navy blue colour) has the papers like "Ethical consumer behaviour in Germany: The attitude-behaviour gap in the green apparel industry" and "Extending the theory of planned behaviour to understand the effects of barriers towards sustainable fashion consumption".
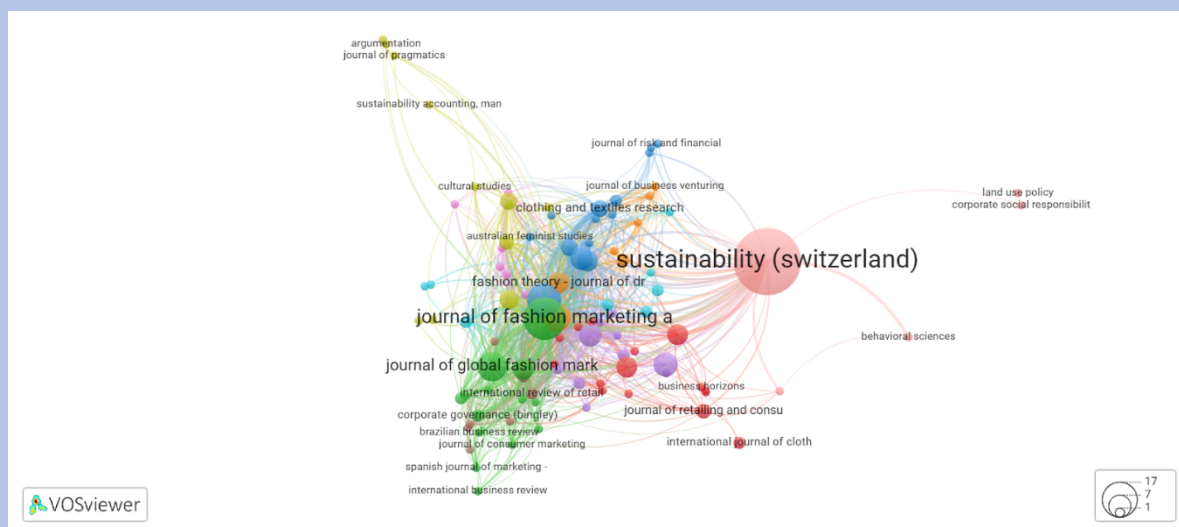
Figure 4(B)

Bibliographic Coupling between various document sources (publications).

In figure 4B there are 10 clusters, the top 3 being the red cluster with 15 items having journals like "Business Horizons", "International Journal of Production Economics" and "Journal of Cleaner Production"; green cluster with 14 items having journals like "Brazilian Business Review", "Competitiveness Review"; navy blue cluster with 14 items having journals like "Fashion Practice", "Business History" and "International Journal of Fashion Studies".

While "Sustainability (Switzerland)" has maximum documents published i.e. 62 but is part of 10th cluster of pink colour.

Figure 4(C)

Co-citation of various cited references

Co-citation is a concept in the field of bibliometrics and citation analysis that refers to the occurrence of two or more documents (typically research papers or articles) being cited together by other documents. In other words, when two or more works are frequently cited together by other researchers, they are said to have a co-citation relationship.

There are 4 clusters in green, blue, red and yellow with total 86 items and 1012 links. Among these various cited references, the most co-cited reference is Sustainable fashion and textiles: Design journeys written by Kate Fletcher; followed by Sustainable fashion consumption and the fast fashion conundrum: fashionable consumers and attitudes to sustainability in clothing choice written by Lisa McNeill and Rebecca Moore; Eco-clothing, consumer identity and ideology written by Kirsi Niinimäki; Fashion and Sustainability: Design for Change written by Kate Fletcher and L. Grose; The values and motivations behind sustainable fashion consumption written by Louise Lundblad and Iain A. Davies.

6. Discussions and Conclusion

Discussions

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Sustainability is a worldwide agenda and is receiving the attention of governments, non-government agencies like United Nations, businesses and people. Within the context of interaction between humanity and the environment, this concern represents a juncture where the disregard for human actions converges with the ethical responsibilities associated with consumption patterns.

As per studies conducted by Earth.org (2023), 92 million tonnes of textile waste is produced every year and the fashion industry is responsible for 20% of global waste water. These shocking statistics stem the need to adopt sustainability in the fashion industry. Lifestyle habits, consumers' personal preferences, purchasing decisions play a pivotal role in promoting sustainable consumption while also fostering corporate social responsibility, especially when it comes to fashion.

According to Statista, the younger generations, for example millennials and Gen Z accounted for an estimated 68 percent share of sustainable apparel revenue in the United States in 2022. Therefore, the heightened awareness among consumers regarding the environmental consequences of their actions has prompted businesses to intensify their efforts in crafting sustainable products and strategies, generating a heightened interest in the subject within research scholars. These reasons make it important to conduct a comprehensive analysis of the increased literature, by identifying the major drivers behind this change and how to move towards it. The present study shows the bibliometric analysis of the extant literature available on the subject, tracing its evolution overtime and identifying research gaps for future scholars.

Conclusions

Adopting a sustainable lifestyle is one of the factors that influence purchase behaviour in customers. The fashion industry is no stranger to this uproar and is changing for the better, incorporating a sustainable approach in product design and manufacture. Various scholars have attempted to understand and study consumers' approach to sustainability and sustainable fashion. This study aims to organise and analyse the existing literature on consumer behaviour towards sustainable fashion.

The present study presents a bibliometric analysis through which it identified the annual trends in publication, geographical locations of contributing organisations and journals, citation analysis,

co-authorship analysis, keyword analysis and bibliographic coupling. The current study unveils a progression in the field by deepening the understanding of the connections between impactful publications.

Our results elucidate a relative concentration of the more influential works in the United States and United Kingdom. Yet, as the research field continues to get popularised, many scholars from other countries have joined this discipline, covering different ideas. Sustainability, a peer-reviewed Journal published by MDPI is found to be the most productive and cited journal.

The present study contributes to the advancement of literature on consumer behaviour towards sustainable fashion in two ways. Firstly, this study conducts a bibliometric analysis of the recent literature (2012-2023) available on consumer behaviour towards sustainable fashion. Secondly, it highlights the gaps that can be covered by future research scholars on the discipline.

While the study is fairly extensive in scope, it does possess a few limitations. The search was exclusively conducted within the Scopus database, and the utilization of multiple databases could potentially provide further insights. This study does not consider any literature that was not peer reviewed or not published in the English language. Incorporating these resources into our analysis may offer valuable perspectives.

7. Limitations and scope for future research

Limitations

There are certain restrictions on the application of Scopus in this study. Although searching through citation databases enables the adoption of a strict and open procedure for the identification of pertinent publications, it should also be taken into account that the data included therein is updated daily (Xiao and Watson, 2019). As a result, the quantity of citations and documents is constantly fluctuating (Valenzuela-Fernandez et al., 2019).

The study recommends the adoption of business practices based on the use of new information technologies and social platforms, which enhance interactions between businesses and their clients, fostering peer-to-peer dialogue that leads to the creation of more effective product positioning and targeting strategies. The literature in this area has actually concentrated on the effects that the sustainable consumption paradigm has had on business models, ignoring instead to examine the variables that can affect the customer journey and alter consumer behaviours and habits. In this regard, the study points to the requirement for new managerial competencies aimed at managing market transitions and deciphering the updated logic of consumer orientation, choice, and purchase.

In this regard, the "rational" management approach is no longer adequate to produce a change in consumer behaviour that is sustainable; branding and marketing strategies should instead take into account the cultural context and the emotional demands related to the purchase. People actually need to enjoy their shopping experiences and feel a part of a group who share their beliefs, preferences, and way of life. Companies will therefore need to make an effort to personalize products, to increase trust between brand and customer, by adopting a vision that is no longer individualistic but extended to the community, in the knowledge that purchasing decisions are based not only on the quality and price of the product but also, and more importantly, on the sharing of social values.

Future Scope

Last but not least, bibliometric analysis has uncovered several intriguing gaps in the literature that may offer intriguing directions for further study. First, further study into E-commerce and product packaging could be quite intriguing. Despite the growth of online purchasing as a result of the constraints brought on by the coronavirus epidemic, the analysis of the effects of electronic commerce on environmental sustainability is a pertinent but understudied topic. The growth of the online sales channel and the associated logistics network undoubtedly has an impact on the environment, from storage-related transportation to last-mile delivery and returns management. Both the industry and the consumer perspectives could be used to discuss the issue of the connection between e-commerce and sustainability. Literature has written much about product packaging. Numerous studies have concentrated on the impact of colour, form, and textual content, whereas package material has nothing to offer. Understanding how a

material's nature affects several factors such as the perception of the product's sustainability, quality, and danger and for businesses, the buying intention would undoubtedly be a source of information seeking to create environmental sustainability plans. Future research should therefore might enhance the role that reused packaging and sustainable packaging materials play on the buying habits of consumers. In particular, it would be intriguing to comprehend the effect that packaging has on how consumers perceive a product sustainability. (Investigating sustainable consumption behaviours: a bibliometric analysis Donata Tania Vergura, Cristina Zerbini and Beatrice Luceri,2022)

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