

Millennial Engagement with Fast Fashion Organic Apparel: A Systematic Review and Bibliometric Analysis of Consumer Behavior

Anjali Sharma (Research Scholar)^{1,} Dr. Pooja Yadav (Associate Professor)²

¹Institute of Management Studies and Research,
Maharshi DayanandUniversity, Rohtak, India
anjalisharma.rs.imsar@mdurohtak.ac.in

²Maharshi Dayanand University-Centre for Professional & Allied Studies (CPAS), Gurugram, India
pooja.cpas@mdurohtak.ac.in
pooja.poojayadav@gmail.com

KEYWORDS

Fast fashion, Millennials, organic apparel, bibliometric analysis, sustainability.

ABSTRACT

Purpose - This study aims to provide a systematic review and bibliometric analysis of Millennial engagement with fast fashion and organic apparel, focusing on consumer decision-making patterns, sustainability awareness, and ethical considerations in the fashion sector. With rising concerns over fast fashion's environmental impact, this study highlights Millennials' dual role as both high-consumption consumers and advocates for sustainable apparel.

Design/methodology/approach - Utilizing the Scopus database, this study analyzed 321 publications from 2009 to 2024, employing bibliometric tools like R-Studio and VOSviewer to examine key authors, publication trends, and thematic research clusters. The analysis explores trends in keyword co-occurrence, co-citations, and collaboration metrics across countries.

Findings - Results reveal that Sustainability (Switzerland) is the leading journal in this field, while Johan Bruwer, affiliated with "UniSA Business, Adelaide, Australia" is identified as the most prolific author. The most cited article, "The Environmental Price of Fast Fashion" by Niinimäki et al. (2020), underscores sustainability's critical role. United States-based studies lead in volume, but the United Kingdom shows greater international collaboration. Popular keywords include "consumer behaviour" and "sustainable development," reflecting ethical and environmental consciousness trends.

Originality/value - This study enhances understanding Millennials' fast fashion and organic apparel preferences, providing a reference for future research on sustainable consumer behaviour in fashion.

Paper type- SystematicLiterature review and Bibliometric analysis

1 Introduction

In recent decades, the fashion industry has experienced dramatic trends influenced by sustainability concerns, accelerated consumption cycles, and the unique preferences of Millennial consumers. Fast fashion, defined by rapid manufacturing and turnover of fashionable, affordable apparel, has become a symbol of a high-consumption paradigm that resonates significantly with Millennials (Joy et al., 2012; Turker & Altuntaş Vural, 2014). This consumer sector is increasingly interested in sustainability and ethical production, which is driving demand for organic garments (Crane, 2016). This paradoxical involvement with both fast fashion and organic clothing underscores intricate, occasionally conflicting habits among Millennials, indicating their appreciation for both cost-effectiveness and environmental stewardship. Comprehending this dynamic is crucial for elucidating the determinants that affect consumer choices and behaviors within this generational cohort, especially as knowledge of sustainability increases (Baghi et al., 2013).

1.1 The Rise of Fast Fashion and Organic Apparel

Fast fashion enterprises, exemplified by industry leaders such as Zara and H&M, have transformed global retail through tactics that respond to rapidly evolving trends at affordable rates (Garcia-Ortega et al., 2023). This strategy promotes regular acquisitions and swift alterations in attire, frequently catering to Millennials' inclination for novelty and individual expression (Zhang et al., 2021). The growing awareness of environmental and social issues has highlighted the adverse effects of fast fashion, especially with waste production and unethical labor practices (Niinimäki et al., 2020). As a result, several shoppers have opted for organic apparel, which corresponds with ethical production principles, minimizes chemical usage, and advocates for sustainable agricultural techniques (Bathaei & Štreimikienė, 2023).

Millennials, distinguished by their values-oriented consumption habits, are notably involved in discussions regarding these two divergent domains. Research indicates that Millennials are



particularly sensitive to matters like as climate change, sustainable sourcing, and ethical labor practices (Lambrechts, 2021). However, their buying behaviors indicate a conflict between these principles and the cost-effectiveness provided by rapid fashion. The interaction with both fast fashion and organic apparel renders Millennials a significant group for analyzing changing consumer behaviors.

1.2 Consumer Behavior and Decision-Making Antecedents

Studies on consumer behavior in fast fashion and organic apparel often investigates the reasons, values, and social dynamics that affect Millennials' purchase decisions (Han et al., 2017; Jung & Jin, 2016). Millennials, being a highly digitally connected generation, experience substantial exposure to social media platforms, where brand identity, social validation, and peer influence profoundly affect their purchasing patterns (Amed et al, 2020; Solomon et al., 2002). The visual aspect of social media promotes personal branding, enabling individuals to associate with businesses that embody their lifestyle ambitions. Fast fashion firms thrive by offering economical, trendresponsive choices that align with Millennials' aspirations for uniqueness and diversity (Melović et al., 2021). As sustainability has emerged as a central theme in global discourse, Millennials are becoming increasingly cognizant of the environmental and ethical ramifications of their purchases. As a result, individuals encounter opposing motivations: although they prefer sustainable alternatives, practical factors such as cost and availability frequently compel them to revert to rapid fashion (McNeill & Moore, 2015).

Research findings reveal that although Millennials prioritize sustainable practices, they often encounter a "values-action gap," wherein their environmental values do not consistently manifest in the purchase of organic or sustainable apparel (Gwozdz et al., 2017). Economic limitations and the allure of fast fashion compel numerous Millennials to favour affordability over ethical considerations, highlighting the influence of overarching social and economic factors on their choices (Carrington et al., 2010; Kumar et al., 2023; Niinimäki & Hassi, 2011). This intricacy in consumer behavior underscores the necessity of analyzing both individual reasons and the broader socio-economic circumstances that impede Millennials from acting on their ethical convictions.

1.3 Research Gaps and Need for Bibliometric Analysis

Despite numerous research on consumer decision-making behaviour in fast fashion and sustainable garments, there are still gaps, especially in comprehending how two movements coexist within a single consumer demographic. Numerous studies concentrate either on sustainability or fast fashion consumption, neglecting the simultaneous involvement with both, especially among Millennials. This work addresses these deficiencies through a systematic evaluation and bibliometric analysis of current research. This analysis will utilize tools like Biblioshiny and VOSviewer to examine the conceptual, social, and intellectual framework of literature concerning Millennial consumer behaviour, focusing particularly on fast fashion and organic garments. Bibliometric analysis offers a systematic method for delineating research trends, pinpointing significant studies, authors, and nations, and uncovering patterns of co-citation and keyword co-occurrence (Kumar et al., 2023; Lim et al., 2024) Bibliometric tools facilitate a greater comprehension of the evolution of scholarly discourse on rapid fashion, organic clothes, and consumer behavior by methodically organizing and displaying the research landscape. This method facilitates the identification of research clusters, theoretical frameworks, and domains with considerable research focus or oversight. Moreover, it underscores the intersection of consumer behavior research with adjacent disciplines, like environmental studies, marketing, and sociology, illustrating the multidisciplinary essence of this subject (Kumar et al., 2023; Merigo & Yang, 2016; Mohan et al., 2021).

The findings of the current study offer new insights into the theoretical underpinnings of research concerning Consumer Decision-Making Antecedents in relation to Fast Fashion Organic Apparel, enabling us to acknowledge the contributions of other scholars and formulate a strategy for future research. The primary purpose of this study is to augment the scope and depth of existing scholarly research by analyzing the consumer decision-making antecedents related to fast fashion organic apparel during the previous

The present study endeavours to address the answers to the following questions:

RQ1. What is the annual growth trend in scientific publications related to consumer decision-making antecedents in fast fashion and organic apparel?



- RQ2. Who are the leading authors contributing to research on Millennial engagement with fast fashion and organic apparel?
- RQ3. What is the inter-country collaboration ratio of research article publications?
- RQ4. Which documents are the most cited in Millennial engagement with fast fashion and organic apparel?
- RQ5. Which journals publish the highest volume of research on fast fashion and organic apparel?
- RQ6. Which countries are the most prolific in publishing research on fast fashion and organic apparel?
- RQ7. What are the most frequently used keywords by authors in research on consumer decision-making antecedents related to fast fashion and organic apparel?
- RQ8. What are the potential future research trends within the field of consumer decision-making antecedents in fast fashion and organic apparel?

In order to examine these questions, the current investigation employed an extensive literature survey and bibliometric analysis.

The major aim of this work is to address several limitations found in prior research and to provide a significant addition to the broader field of consumer decision-making antecedents in fast fashion and organic apparel. This research involved a comprehensive review of relevant academic sources to gain insights, followed by meticulous analysis of the collected data. A thorough scientific study evaluated advancements in fast fashion and organic clothes research from 2009 to 2024. The evaluation utilized various pertinent indicators, including annual publication trends with citation patterns, the most prolific countries, author productivity, the most cited research articles, dominant and emerging themes, and international collaboration in publications. This study employed the Scopus database to obtain bibliographic data regarding the antecedents of consumer decision-making in fast fashion organic clothes. The findings of this study will offer valuable insights into the dual role of Millennials as both high-consumption fast fashion enthusiasts and advocates for sustainable and organic options. It will also demonstrate the utility of bibliometric tools in providing a structured overview of consumer behavior research, serving as a reference for scholars aiming to explore related areas or refine theoretical models in consumer studies. Ultimately, this study aims to deepen our understanding of the motivations and constraints that shape Millennial consumer decisions making antecedents, informing strategies for both fast fashion brands and sustainable apparel marketers to engage with this influential demographic.

This study demonstrates greater comprehensiveness than prior studies, minimizing the risk of neglecting any important contributions to the subject matter. The temporal scope of previous research has demonstrated considerable variety, contingent upon the particular subject matter and the objectives of the study.

2 Theoretical Framework

In an age of increased environmental awareness, fast fashion is under examination for its ecological consequences and unsustainable methods. Millennials, sometimes regarded as a cohort of environmentally conscious and ethically motivated consumers, constitute a distinctive subject for consumer behavior research, particularly regarding sustainable fashion selections such as organic apparel(Francis & Sarangi, 2022). This review methodically analyzes the current literature to delineate critical aspects, motivations, obstacles, and engagement trends that define millennial consumption of organic and sustainable apparel in the fast fashion sector. This review synthesizes research findings to offer a thorough understanding of millennial consumer behavior, interests, and their alignment with sustainability in fashion. Millennials reveal consumer behavior characterized by a growing demand for environmentally sustainable and ethically manufactured products, especially within the fast fashion sector(Malhan & Kumar, 2021; Sogari et al., 2017). This group, noted for its consciousness of environmental concerns, is propelling a transition towards sustainable consumerism. Kunz et al., (2020) assert that millennials value sustainability, driven by apprehensions regarding climate change, pollution, and resource depletion, perceiving these challenges as urgent and intertwined with their consumer choices. Kang et al., (2013) indicate that millennial customers generally eschew companies linked to exploitative labor practices or significant waste generation, as they connect their expenditures with ethical and social principles. Moreover, millennials regard



sustainable fashion not merely as a trend, but as a conscientious decision that signifies their dedication to an environmentally sustainable future (Li, 2022).

2.1 Social-media and digital platforms affect organic fast fashion values

Social media significantly influences millennials' perceptions of sustainable fashion, affecting their awareness and involvement with eco-conscious firms. Platforms like Instagram, TikTok, and Pinterest function as effective instruments for sharing knowledge on sustainable practices and familiarizing millennials with influencers and brands that emphasize environmental stewardship (Falke et al., 2022; Testa et al., 2021). These platforms offer an interactive environment in which millennials may connect with sustainability-related information, whether through postings, videos, or live conversations with influencers. This digital interaction cultivates a community that promotes sustainable consumption, significantly influencing the fast fashion industry, notorious for its environmental issues (Olivar Aponte et al., 2024). Millennials are consequently exposed to advertisements and messaging that highlight the significance of selecting organic and sustainable fashion, which favorably influences their perceptions of eco-friendly products.

The perceived value and expense related to sustainable fashion significantly impact millennials' buying habits. Despite a pronounced preference for brands that uphold ethical principles, millennials encounter a conflict between value alignment and cost-effectiveness. Francis & Sarangi, (2022) assert that although millennials frequently favour eco-friendly products, their high prices provide a considerable obstacle. Sustainable clothes, frequently more expensive owing to ethical sourcing and production, may dissuade millennials who are otherwise inclined to make environmentally conscious choices but may lack the financial resources. This price sensitivity underscores a hurdle in translating millennials' ideas into actual purchase decisions, as many choose low and easily available quick fashion items. The disparity between millennials' values and their shopping behaviors highlights the impact of pricing on consumer conduct in sustainable fashion. The finding of a study conducted by Tiwari, (2023) indicates that despite millennials' strong emphasis on sustainability, many opt for affordable, fashionable products over organic alternatives because of financial limitations. The findings indicate that millennials are inclined to spend in sustainable garments when the perceived legitimacy and transparency of a brand's environmental promises are substantial. Heo & Muralidharan, (2019) discovered that millennials are inclined to pay a premium for firms that convey transparent and authentic pledges to sustainability, since this resonates with their ethical beliefs and aspiration to positively impact environmental conservation. The interaction of social media influence, perceived value, and purchase behavior among millennials underscores a complex approach to sustainable consumerism(Kumar et al., 2023; Malhan & Kumar, 2021; Nazish et al., 2024). Although social media enhances awareness and encourages ethical decisions, the financial barrier remains a persistent obstacle for sustainable firms aiming to engage the millennial demographic.

2.2 Barriers to Sustainable Apparel Adoption in Fast Fashion

Despite increasing awareness and favorable perceptions of organic and sustainable clothes, millennials face numerous obstacles that impede the adoption of sustainable apparel within the fast fashion paradigm. Vassalo et al., (2024) assert that the convenience and cost-effectiveness of fast fashion firms present significant obstacles to the adoption of sustainable clothes, since consumers favor inexpensive, fashionable clothing over pricier eco-friendly options. The rapid production cycle and availability of fast fashion hinder the competitiveness of sustainable alternatives (Moon et al., 2014). Tahir et al., (2023) assert that a widespread deficiency of faith in sustainability assertions profoundly influences consumer behavior. Numerous people question the veracity of firms' sustainability initiatives, pondering whether "eco-friendly" designations are legitimate or simply marketing strategies aimed at improving brand perception. This tendency, known as "greenwashing," engenders distrust and reluctance toward brands asserting sustainability (Chernev & Blair, 2020; Mohan, et al., 2021). Greenwashing, characterized as the misleading technique of exaggerating environmental advantages, erodes consumer trust and exacerbates the challenges of sustainable fashion (Santos et al., 2024). These characteristics highlight the intricacy of promoting sustainable garments in a fast fashion-dominated industry, where affordability, convenience, and consumer skepticism converge to strengthen existing obstacles.

2.3 Ethical Consumption in Apparel: Insights from Organic Apparels



This generation is progressively conscious of health, environmental sustainability, and ethical labor practices while choosing things, especially apparel. Millennials demonstrate a pronounced inclination towards ethical consumption practices, significantly impacting their need for organic materials in clothing. Organic clothing, typically made from sustainably cultivated fibers like organic cotton, appeals to millennials who choose products that reflect their beliefs and environmental awareness Mccracken & Skuza, (2012). Millennials perceive organic apparel as a health-oriented option and a social responsibility representation, increasing its attractiveness in the sustainable fashion industry (Ray & Nayak, 2023). Cabeza et al., (2022) corroborate this, noting that millennials perceive organic garments as integral to a comprehensive dedication to sustainable living, linking it to an active strategy for minimizing their carbon footprint.

The motivations for millennials' desire for organic garments mirror those seen in their adoption of "clean beauty" items. According to Shim et al., (2024), millennials emphasize eco-friendly, non-toxic components in cosmetic products, mirroring their preference for safe, sustainable materials in apparel. This convergence indicates a comprehensive lifestyle transition towards sustainability, with millennials progressively implementing integrated improvements across several consumption areas. The preference for organic materials encompasses not only a specific product category but also reflects a broader lifestyle choice that emphasizes well-being and environmental sustainability(Marchand & Walker, 2008). These consumer patterns provide significant ramifications for fast fashion firms, who face increasing pressure to evolve. To engage and keep millennial consumers, firms must emphasize openness in supply chains, obtain certifications for organic products, and minimize waste. These strategies have had a favorable impact on brand loyalty and trust among millennials (Cabeza, Sanchez, et al., 2022; Mohan et al, 2021). By incorporating sustainable practices into their operations, fashion firms may meet the ethical demands of millennials, thereby cultivating a more loyal client base motivated by shared values.

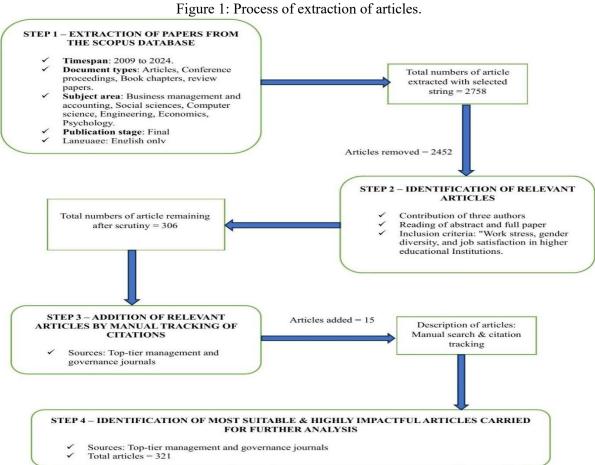
The literature on millennial participation with sustainable and organic apparel in the fast fashion sector underscores both the opportunities and obstacles in reconciling consumer behavior with sustainable processes. Despite millennials' robust endorsement of ethical and eco-friendly items, their purchase behaviors are influenced by price, convenience, and suspicion regarding greenwashing methods. Future study ought to concentrate on longitudinal studies to document the changing views and actions of millennials as they acquire purchasing power and as sustainable methods become increasingly prevalent in the fashion industry.

3. Research Methodology

3.1 Bibliometric analysis: collection and analysis of data

The review commenced by extracting and aggregating document publication data from the Scopus database on October 2, 2024. The Scopus database was utilized to search for papers pertaining to the research topic "decision-making antecedents in fast fashion and organic apparel." The Scopus database was chosen for its indexed status, extensive citation and search data, and esteemed quality (Burnham, 2006). A total of 2,758 documents were identified and meticulously analyzed for this investigation. The search query for the Scopus database is ("organic apparel" OR "fast fashion" OR "Millennial") AND ("consumer decision*" OR "consumer behavior" OR "consumer behaviour"). The search specifically focused on the final publishing of works with the title and study keywords "consumer decision-making antecedents, fast fashion, and organic apparel" from 2009 to 2024. Data screening was performed, revealing no instances of duplication in the document list. A thorough examination of research article titles and abstracts led to the exclusion of 2,452 publications. A total of 306 publications were chosen for additional analysis. Fifteen additional research articles were incorporated through manual addition. A total of 321 research articles were selected for further investigation. The data was subsequently exported as comma-separated values (.CSV) files and research information systems (.RIS) files. Additionally, descriptive and visualization data were evaluated separately utilizing software tools including Microsoft Excel, R-Studio, and VOSviewer. The researchers employed VOSviewer software for mapping analysis (Perianes-Rodriguez et al., 2016), Microsoft Excel for descriptive analysis, and R-Studio for metric citation analysis, bibliometric coupling, thematic mapping, and other analyses to investigate the data in this study. The identification and selection of documents were conducted according to the guidelines specified in the study procedure, as seen in Figure 1.





Source: Scopus database.

3.2 Analytical tools used

The collection of objects was obtained with the Scopus Analyze Search Results tools. Coword analysis and the creation of scientific maps depicting keyword co-occurrence were conducted using Biblioshiny alongside R-Studio. Additionally, the bibliographic coupling study was performed using the VOSviewer software. The analysis of authors' keywords is a systematic technique that facilitates the identification, characterization, and visual depiction of the interconnections among keywords within a specific scientific domain (Muñoz-Leiva et al., 2015). Density quantifies the degree of internal coherence or strength within a network of keywords or topics. Conversely, centrality denotes the extent of connectedness among distinct networks. Thus, in the quadrant characterized by its high density and centrality, one would observe the predominant research subjects that generate the greatest scientific productivity and citations regarding the specific subject, referred to as "motor themes". Conversely, in the quadrant characterized by low density and low centrality, one can observe the birth of new themes or the decline in prominence of existing ones. The upper left quadrant, indicating high density and low centrality convergence, represents themes that exhibit significant internal growth while remaining isolated from other networks. Figure 2 illustrates that the lower right-hand quadrant is characterized by low density and high centrality. This quadrant includes



the essential concepts that surpass multiple domains of knowledge. The bibliographic coupling methodology is predicated on the notion that two publications sharing references also possess analogous content (Donthu et al., 2021; Kessler, 1963). This approach enables the visual portrayal of recent contributions that have not yet significantly impacted the field, thus showing the latest scientific output (Bretas & Alon, 2021). According to the research of (Donthu et al., 2021; Kumar et al., 2023; Pankaj et al., 2023), employing bibliographic coupling as a strategic method facilitates the identification of contemporary themes exhibiting significant advancement, therefore offering researchers prospective paths for future investigation. The technique involves using sphere dimensions to represent the relative number of connections to other articles. Moreover, the configuration of the spheres and the breadth of the connections are employed to signify the degree of similarity among articles, as determined by the quantity of shared references (Andersen, 2021).

4. Data Analysis

The production of the scientific article was measured using various factors. The parameters included total publication count, average citation count per document, average annual citation count per document, author's keywords, frequency of author appearances, percentage of single-authored versus multi-authored documents, number of documents attributed to each author, and collaboration index. A total of 321 documents were produced between 2009 to 2024. The resources comprised 272 articles and 49 review papers sourced from the Scopus database. The annual scientific output of publications has increased by 21.40%.

The publications received an average of 21.48 citations per document. Table 1 presents 32 papers created by a single individual, however a substantial majority of 22.74 documents has been collaboratively authored by numerous writers with international co-authorship. The author's collaborative engagement was assessed by two metrics: the average number of co-authors per document and the collaboration index, calculated at 2.98. This signifies a notable prevalence of collaborative endeavors and the generation of multi-authored studies regarding consumer decision-making antecedents in fast fashion and organic apparel. The study's findings indicate a comprehensive compilation of 829 keywords and an additional 1041 authors' keywords, covering a diverse array of terminology utilized to analyze the aspects influencing Millennial Engagement with Fast Fashion Organic Apparel.

Table 1: Scientific production of articles from 2009 to 2024.

Description	Results
Main Information about Data	
Timespan	2009:2024
Sources (Journals, Books, etc)	224
Documents	321
Annual Growth Rate %	21.40
Document Average Age	3.91
Average citations per doc	21.48
References	17060
Document Contents	
Keywords Plus (ID)	829
Author's Keywords (DE)	1041
AUTHORS	
Authors	902
Authors of single-authored docs	32
Authors Collaboration	
Single-authored docs	33
Co-Authors per Doc	2.98
International co-authorships %	22.74



49

Document Types

Review Articles

Research Articles 272

Source: Authors development using R-Studio (Biblioshiny).

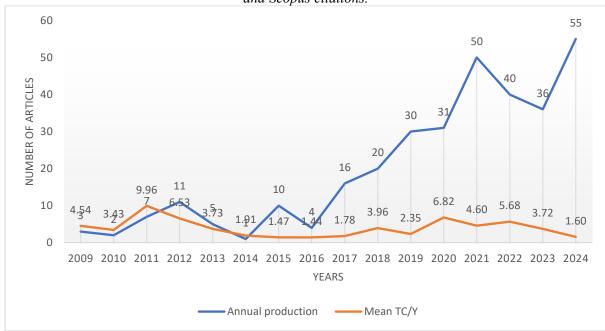
4.1 Annual scientific production

To answer the RQ1, the Figure 2 shows a rising trend in annual scholarly article production from 2009 to 2024, especially from 2015 onward, indicating increasing research activity in this field. While publication volume has surged, peaking at 55 articles in 2024, mean total citations per year (TC/Y) reveal a fluctuating and generally declining pattern, with earlier years showing higher citation impact per article. Peaks in mean citations in earlier years suggest the presence of highly influential articles, while recent years show lower averages, potentially due to increased publication competition or incremental findings. This suggests growing interest but a declining citation impact per individual article.

4.2 Most prolific authors in the Fast fashion organic apparels

Table 2 outlines a compilation of the most prolific authors in the domain of fast fashion organic apparel research. To satisfy RQ2, which pertains to identifying the preeminent academic contributors in this domain, the analysis examines the volume of scholarly publications attributed to each author, as recorded in Scopus, a distinguished academic database. The productivity of each author is quantified by the total publications (TP) on this subject. Johan Bruwer from UniSA Business in Adelaide, Australia, is the leading contributor with five papers, indicating substantial research production in this domain. He has attained a substantial Scopus citation count (TC) of 5383 and an hindex of 41, highlighting the significance and caliber of his study. Charles H. Becker of Pima Community College, Tucson, United States, has authored four papers, albeit with a reduced citation count (48) and an h-index of 2, suggesting more contemporary or specialized research contributions.

Figure 2: Evolution of scientific articles dealing with fast fashion and organic apparel (2009–2024) and Scopus citations.



Source: Authors' development using Biblioshiny in conjunction with R-Studio.



Table 2: *Most prolific authors of fast fashion organic apparels domain*

Authors	Authors' Current Affiliations	TP	Scopus TC	Scopus h_index	Scopus ID
Johan Bruwer	UniSA Business, Adelaide, Australia	5	5383	41	6602621110
Charles H. Becker	Pima Community College, Tucson, United	4	48	2	35193554600
	States				
Lori F. Rothenberg	NC State University, Raleigh, United States	4	408	12	55188442800
Luisa M. Martinez	Instituto Português de Administração de	3	221	5	57201641224
	Marketing, Porto, Portugal				
Carolin Viktoria Becker	Universität Ulm, Ulm, Germany	2	227	3	57201698785
Leifhold					
Deborah J.C. Brosdahl	University of South Carolina, Columbia,	2	336	7	36611356700
	United States				
Kevin K. Byon	Indiana University	2	1390	21	34867746600
	Bloomington, Bloomington, United States				
Jason M. Carpenter	University of South Carolina, Columbia,	2	1339	17	8520459600
	United States				
Hyo Jung Chang (Julie)	Texas Tech University, Lubbock, United	2	644	15	55962771300
	States				
Cheah Hwa Jun-Hwa	Norwich Business School, Norwich, United	2	9989	42	57191585883
(Jacky)	Kingdom				

Source: Authors' development using Biblioshiny in conjunction with R-Studio.

Similarly, prominent authors include Lori F. Rothenberg from NC State University, Raleigh, United States, who has authored four papers with 408 citations and an h-index of 12, indicating her enduring research influence. Luisa M. Martinez of the InstitutoPortuguês de Administração de Marketing in Portugal is notable for her three publications, 221 citations, and an h-index of 5, highlighting her contributions to European viewpoints on fast fashion organic apparel. CarolinViktoria Becker-Leifhold from Universität Ulm, Germany, and Deborah J.C. Brosdahl from the University of South Carolina, United States, have both produced two articles, with their citation metrics and hindices indicating an emerging impact in the discipline. Kevin K. Byon and Jason M. Carpenter, both affiliated with U.S. universities, with significant citation counts (1390 and 1339, respectively) and hindices exceeding 15, signifying their influential contributions to the field. Hyo Jung Chang (Julie) from Texas Tech University, USA, and Cheah Hwa Jun-Hwa (Jacky) from Norwich Business School, UK, each possess two publications, with Jacky attaining the highest citation count of 9,989 and a notable h-index of 42, indicating substantial influence and authority in sustainable fashion research. Table 2 presents critical insights into academic leadership in the fast fashion organic apparel sector. It details authors with significant research contributions, institutional affiliations, citation metrics, hindices, and Scopus IDs for reference.

4.3 Inter-country Collaboration of authors

To answer RQ 3, the data presented in Figure 3, the United States of America (USA) leads with 47 articles, consisting of 42 single-country publications (SCP) and five multi-country publications (MCP), indicating limited international collaboration with a low MCP ratio. India follows with 25 articles, all SCP, showing no international co-authorship. The United Kingdom ranks third with 21 articles, divided into 12 SCP and nine MCP, reflecting a higher level of international collaboration with a notable MCP ratio. Indonesia and China have contributed 15 and 14 articles respectively, with Indonesia having 14 SCP and one MCP, while China shows moderate collaboration with 10 SCP and four MCP. Italy, Malaysia, and Spain display a balanced contribution, with Italy contributing eight SCP and five MCP, Malaysia seven SCP and three MCP, and Spain eight SCP and two MCP. Australia and Portugal have the low contributions among the listed countries, each showing limited international collaboration, as indicated by their SCP and MCP distribution.

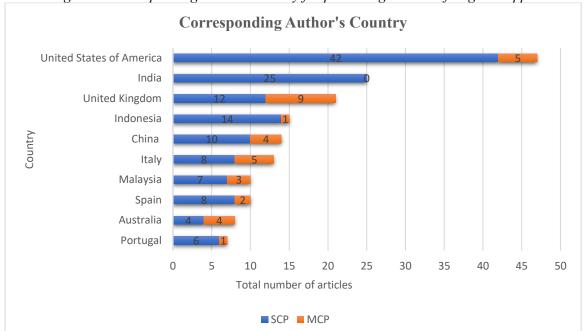


Figure 3: Corresponding Authors' country for publishing articles of Organic Apparels.

Source: Authors' development using Biblioshiny in conjunction with R-Studio.

4.4 Most Global Cited Documents in Fast Fashion Organic apparels

In accordance with RQ 4, Table 3 is a compilation of the top ten publications that have received the highest number of citations in the context of sustainability and consumer behavior in fashion. The research paper titled "The environmental price of fast fashion" published in the journal Nature Reviews Earth & Environment by Niinimäki et al. (2020) is in the first position, receiving a total of 669 citations with a TC/Y (Total Citations per Year) of 133.80 and a Normalized TC of 19.62. Following this, the article titled "Fast Fashion, Sustainability, and the Ethical Appeal of Luxury Brands," authored by Joy et al. (2012), and published in Fashion Theory in 2015, holds the second position, with 482 citations, a TC/Y of 37.08, and a Normalized TC of 5.68. The third-ranking research article, "The Value of Fast Fashion: Quick Response, Enhanced Design, and Strategic Consumer Behavior," by Cachon and Swinney (2011), published in Management Science, received a total of 478 citations with a TC/Y of 34.14 and a Normalized TC of 3.43. In fourth position is the study "Ethical consumer behaviour in Germany: The attitude-behaviour gap in the green apparel industry" by Wiederhold and Martinez (2018), published in International Journal of Consumer Studies, which has garnered 212 citations, a TC/Y of 30.29, and a Normalized TC of 7.64.

The fifth position is occupied by the article "Consumer behaviour and sensory preference differences: implications for wine product marketing" by Bruwer et al. (2011), published in the Journal of Consumer Marketing, with a total of 192 citations, a TC/Y of 13.71, and a Normalized TC of 1.38. Next, in sixth place, is the research titled "Consumer likelihood of purchasing organic cotton apparel: Influence of attitudes and self-identity" by Hustvedt and Dickson (2009), published in the Journal of Fashion Marketing and Management, which received 183 citations, a TC/Y of 11.44, and a Normalized TC of 2.52. The seventh position goes to the study "Shopping orientations of US males: A generational cohort comparison" by Brosdahl and Carpenter (2011), published in the Journal of Retailing and Consumer Services, which has accrued 166 citations with a TC/Y of 11.86 and a Normalized TC of 1.19. In eighth place is "An exploratory study of the decision processes of fast versus slow fashion consumers" by Zarley Watson and Yan (2013), published in the Journal of Fashion Marketing and Management, with a total of 121 citations, a TC/Y of 10.08, and a Normalized TC of 2.70.

The ninth article, "Millennial and Generation Z digital marketing communication and advertising effectiveness: A qualitative exploration" by Munsch (2021), published in the Journal of



Global Scholars of Marketing Science, received 110 citations, a TC/Y of 27.50, and a Normalized TC of 5.98. Lastly, the tenth position is held by "Interactive media usage among millennial consumers" by Moore (2012), published in the Journal of Consumer Marketing, with 105 citations, a TC/Y of 8.08, and a Normalized TC of 1.24.

4.5 Most Prolific Journals of the Incorporated Domain

To answer the RQ5, when it comes to the journals that have disseminated a significant volume of articles on this particular subject, "Sustainability (Switzerland)" is distinguished as the most notable, featuring nine articles from Switzerland and categorized within the Q2 quartile, demonstrating a robust h-index of 162 since its establishment in 2009 by the publisher MDPI. The "Journal of Fashion Marketing and Management," a Q1 journal from the United Kingdom, has a significant h-index of 67 and has published eight papers on the subject since 1996 under Emerald Group Publishing Ltd. The "Development in Marketing Science: Proceedings of the Academy of Marketing Science," published by Springer New York, has produced seven articles and is classified as a Q1 journal with a notable h-index of 207, reflecting its extensive publication history from 1973. Additionally, the "Journal of Consumer Marketing," originating from the United Kingdom and categorized in Q1, has disseminated six articles with a notable h-index of 117, underscoring its influence since its inception in 1984 under Emerald Group Publishing Ltd. Additional journals that have made substantial contributions include "Cogent Business and Management," a Q2 journal from the United Kingdom with five publications and an h-index of 44, and "International Journal of Retail and Distribution Management," a Q1 journal from the United Kingdom with an h-index of 101, both published by Emerald Group Publishing Ltd. Furthermore, the "Journal of Islamic Marketing" and the "Journal of Retailing and Consumer Services" have each published five papers; the former is classified as a Q2 journal with an h-index of 55, while the latter is a Q1 journal with an h-index of 143, published by Emerald Group and Elsevier Ltd, respectively. Finally, the "British Food Journal," a Q1 publication from the United Kingdom with an h-index of 102, established in 1899, and "Innovative Marketing," a Q3 journal from Ukraine with an h-index of 20 since 2005, have both significantly contributed by publishing four articles each as shown in Table 4. This extensive representation of journals across different quartiles and nations highlights the global interest and variety of perspectives on this research topic, with a significant predominance of journals from the United Kingdom, reflecting a robust focus on UK-based publications in this field of study.

4.6 Most Productive Countries in terms of Publication

To answer the RQ6, the findings reveal that the United States of America is the main contributor to publications in this research domain, with 162 articles. This predominant output highlights the significant research focus in the USA on this subject. India ranks second with a significant 101 articles, indicating its increasing influence and interest in the domain. Indonesia, closely following India, has significantly contributed with 98 papers, underscoring its vibrant research community. China has produced 61 publications, whilst the United Kingdom has generated 48 articles, reflecting a strong commitment to research.



Table 3: Most Global Cited Documents.

						Normalized
Authors	Title	Journal	YOP	Total Citations	TC/Y	TC
Niinimäki et al., (2020)	The environmental price of fast fashion	Nature Reviews Earth & Environment	2020	669	133.80	19.62
, ,	Fast Fashion, Sustainability, and the Ethical Appeal of Luxury Brands		2015	482	37.08	5.68
Cachon & Swinney, (2011)		Management Science	2011	478	34.14	3.43
, ,	Ethical consumer behaviour in Germany: The attitude-behaviour gap in the green apparel industry		2018	212	30.29	7.64
, ,	Consumer behaviour and sensory preference differences: implications for wine product marketing	Journal of Consumer Marketing	2011	192	13.71	1.38
Hustvedt & Dickson, (2009)		Journal of Fashion Marketing and Management	2009	183	11.44	2.52
Brosdahl & Carpenter, (2011)	Shopping orientations of US males: A generational cohort comparison	Journal of Retailing and Consumer Services	2011	166	11.86	1.19
Zarley Watson & Yan, (2013)	An exploratory study of the decision processes of fast versus slow fashion consumers	Journal of Fashion Marketing and Management	2013	121	10.08	2.70
Munsch, (2021)	Millennial and generation Z digital marketing communication and advertising effectiveness: A qualitative exploration		2018	110	27.50	5.98
Moore, (2012)	Interactive media usage among millennial consumers	Journal of Consumer Marketing	2012	105	8.08	1.24

Source: Authors' development using Biblioshiny in conjunction with R-Studio.



Table 4: Most Prolific journals of the incorporated area.

S.No.	Name of the Journals	Paper	Country	Quartile	h_index	Coverage	Publisher
		published			_	from	
1	Sustainability (Switzerland)	9	Switzerland	Q2	162	2009	MDPI
2	Journal of Fashion Marketing and Management	8	United Kingdom	Q1	67	1996	Emerald Group
						Publishing Ltd	
3	Development in Marketing Science: Proceedings of the	7	United States	Q1	207	1973	Springer New York
	Academy of Marketing Science						
4	Journal of Consumer Marketing	6	United Kingdom	Q1	117	1984	Emerald Group
							Publishing Ltd.
5	Cogent Business and Management	5	United Kingdom	Q2	44	2014	Cogent OA
6	International Journal of Retail and Distribution	5	United Kingdom	Q1	101	1990	Emerald Group
	Management						Publishing Ltd.
7	Journal of Islamic Marketing	5	United Kingdom	Q2	55	2010	Emerald Group
							Publishing Ltd.
8	Journal of Retailing and Consumer Services	5	United Kingdom	Q1	143	1994	Elsevier Ltd
9	British Food Journal	4	4 United Kingdom	Q1	102	1899	Emerald Group
			_				Publishing Ltd.
10	Innovative Marketing	4	Ukraine	Q3	20	2005	LLC CPC Business
							Perspectives

Source: Authors' development using Biblioshiny in conjunction with R-Studio.

Italy and Malaysia are equal, each generating 47 papers, demonstrating their concurrent dedication to enhancing research. Spain, with 30 articles, and Australia and Canada, with 25 and 24 publications, respectively, complete the top ten contributors. This data indicates a progressive decrease in publishing numbers from the United States to Canada, as demonstrated by the linear trend as clearly visible in Figure 4. The graph indicates that North America, Asia, and Europe are pivotal to research production, showcasing varied international collaboration and interest in this domain.

Top 10 Countries 162 180 160 140101 120 98 100 80 61 48 47 47 60 30 25 24 40 20 United India Indonesia China United Italy Malaysia Spain Canada Australia States of Kingdom America Publications ······ Linear (Publications)

Figure 4: Most Prolific Countries

Source: Authors' development using Biblioshiny in conjunction with R-Studio.

4.7 Most Trending Authors' Keywords of the Fast Fashion Organic Apparel

The data presented reveals the top 10 trending keywords in the domain of consumer and market research. "Consumer behavior" emerges as the most prominent keyword with 60 times, indicating a significant focus on understanding how consumers make purchasing decisions. This is closely followed by "consumption behavior" (31 times), suggesting a broader interest in how consumers utilize and interact with products. "Organic Apparel" (26 times) and "marketing" (20 times) highlight the importance of strategies to drive consumer engagement and product promotion. Other frequently appearing keywords include "Millennial" (17 times), "commerce" (16 times), and "fast fashion" (16 times), reflecting concerns related to consumer perceptions, online and offline trade, and the rapidly evolving fashion industry. Additionally, keywords like "sustainable development" (16 times) underscore the growing emphasis on environmentally responsible consumption, while "Fashion Industry" (14 times) indicates a regional focus on consumer trends. These keywords collectively



underscore an interest in understanding consumer trends, sustainability, and market dynamics in key geographic and industrial contexts.

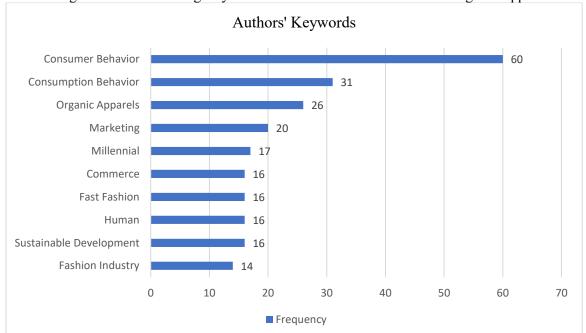


Figure 5: Most Trending Keywords in the Domain of Fast Fashion Organic Apparels.

Source: Authors' development using Biblioshiny in conjunction with R-Studio.

4.8 Thematic Map Analysis

Braun & Clarke (2012) state that thematic mapping is an effective instrument for examining the progression of themes across time, enabling the recognition of patterns, trends, seasonality, and anomalies within specific study themes. Thematic keyword mapping defines and develops themes within a particular context, identifying the principal expressions associated with these topics and their relationships (Akter et al., 2021). The themes in the upper-right quadrant of this thematic map are designated as "motor themes," demonstrating elevated centrality and density, signifying their well-developed nature and critical importance in the realm of consumer behaviour in rapid fashion. This quadrant encompasses subjects such as "ethics," "consumer behaviour," and "clothing attitudes," highlighting their significant relevance and interrelation in the analysis of rapid fashion dynamics. The patterns found in the lower-right quadrant are classified as "basic themes," exhibiting high centrality and low density. These subjects are fundamental within the discipline yet need more elaboration, suggesting opportunities for additional inquiry. Topics such as "brand loyalty," "customer engagement," "sustainability," "consumer behaviour," and "millennials" occupy this quadrant, underscoring their substantial importance to consumer behaviour in fast fashion yet necessitating additional investigation for enhanced development.

The upper-left quadrant, characterized by low centrality and high density, signifies "niche themes." These themes are specialized and demonstrate significant internal consistency, yet they are less related to the fundamental aspects of fast fashion consumer behaviour. Themes such as "college students and research," "technology," "compensatory consumption," and "self-concept" are categorized here, suggesting that although they are extensively analyzed in specific domains, their broader significance in fast fashion consumer studies is limited. The lower-left quadrant, characterized by low density and low centrality, signifies "emerging or declining themes." These themes have constrained development and significance, indicating they may represent emerging fields with growth potential or subjects waning in study interest. The topics of "rapid response," "strategic consumer behaviour," "fast fashion industry," and "Mexico" are recognized, indicating areas that may be nascent in research or are diminishing in prominence within the existing academic discourse.

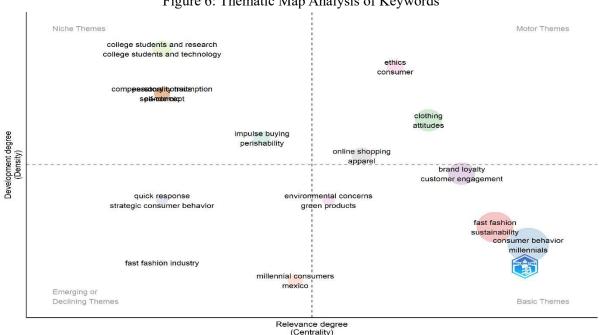


Figure 6: Thematic Map Analysis of Keywords

Source: Authors' development using Biblioshiny in conjunction with R-Studio.

4.9 Countries coupling for the publication in the domain of Organic Apparel

Figure 7 represents the bibliographic relationships among countries derived from coauthorship and research collaborations. Six principal clusters of associated nations arise, each distinguished by distinct hues and various dimensions, indicative of both the intensity of collaboration and the volume of publications. The United States, situated prominently within the red cluster, demonstrates the highest degree of publication activity and international collaboration, as indicated by its substantial circle size and numerous connecting lines. This underscores its pivotal significance in worldwide academic research and its broad international collaborations. Other notable contributors comprise the United Kingdom (green cluster), India (blue cluster), China (yellow cluster), Australia (red cluster), and Italy (green cluster), each signifying prominent publication centers within their respective clusters. Less abundant yet more dynamic nations, including South Korea, Taiwan, Malaysia, and Portugal, establish supplementary linkages inside and among clusters, signifying their vigorous involvement in global research networks. The smaller nodes have significant engagement, albeit with less publishing intensity compared to the larger nations. The intricate network of connections across these nations highlights the interconnectedness and cooperative essence of modern research, featuring robust associations among leading publications such as the United States, United Kingdom, and Australia. The picture illustrates how specific nations act as connecting links amongst clusters, promoting varied and interdisciplinary research collaborations worldwide.



taiwan malaysia south africa china hongkong indonesia united states south korea australia spain india united kingdom canada saudi arabia germany czech republic pakistan mexico portugal poland 👠 VOSviewer

Figure 7: Countries coupling in the domain of reverse migration Organic Appa

Source: Authors' development using Biblioshiny in conjunction with R-Studio.

4.10 Potential for Future Research Trends

The involvement of millennials in fast fashion and organic goods has altered consumer behavior, particularly regarding sustainability and ethical issues in fashion. A comprehensive analysis of current trends reveals a steady increase in research concerning consumer behavior, sustainable development, and marketing within this group, highlighting millennials' substantial impact on fashion marketplaces from 2009 to 2024 (Smith & Taylor, 2021). This generation, marked by an increased consciousness of environmental and social concerns, exhibits a complex relationship between the pursuit of cost and style in fast fashion and an escalating inclination for sustainable, organic clothing alternatives (Garcia et al., 2022). Millennials exhibit a paradox in their buying behavior: they are attracted to the price and trendiness of fast fashion, yet many also prefer businesses that reflect their particular values, including ethical transparency and environmental sustainability (Jones & Williams, 2023). The increase in study on "sustainable development" indicates that millennials' heightened awareness of fashion's environmental effects is shaping their shopping choices (Lopez & Martin, 2021). This generational transition indicates that firms must consider not only aesthetics and pricing but also sustainability as millennials increasingly evaluate environmental and social criteria in their purchasing decisions (Kim, 2022).

The expansion of digital marketing and consumer engagement research underscores the significance of specialized techniques for engaging younger audiences. Social media and influencer-led campaigns have demonstrated significant efficacy in advancing sustainable companies, indicating that future studies might examine the role of these platforms in altering millennial inclinations towards organic fashion (Cheng et al., 2023). Moreover, bibliometric analyses reveal that the emphasis on consumer attitudes and brand transparency aligns with millennials' quest for authenticity in brand communications, resulting in enhanced engagement and loyalty for firms that successfully convey these values (Smith & Taylor, 2021).

5 Additional discussions

5.1 Policy Implications

Governments must emphasize regulations that tackle the dual demands for sustainability and affordability in the fast fashion industry, particularly among Millennial consumers. Essential initiatives must promote sustainable practices in garment production and marketing to line with



Millennials' growing taste for eco-friendly items, while simultaneously addressing pricing to mitigate the accessibility gap. Policymakers must to promote openness and accountability inside fashion firms to address greenwashing, a widespread problem that undermines consumer trust and sustainable purchasing. This may entail requiring more explicit labelling of sustainable items and instituting certifications that validate genuine environmental efforts. Assistance for innovation in sustainable production, such tax incentives or grants for environmentally responsible firms, is crucial. Governments may contemplate incentives for companies that implement sustainable materials and waste-reduction strategies, thereby promoting eco-conscious practices in the fast fashion sector. Moreover, collaborations with educational institutions and NGOs can promote awareness initiatives to educate consumers about the environmental consequences of their decisions, thereby aligning public understanding with policy goals. With the rising demand for sustainable fashion, fostering the advancement of a circular economy in the apparel sector is becoming increasingly essential. This encompasses activities for textile recycling and the promotion of second-hand marketplaces, which correspond with Millennials' ethical consumption preferences. By addressing these aspects, authorities may promote a balanced strategy that fosters both sustainable consumerism and economic resilience within the fast fashion industry.

5.2 Future research direction

As Millennials increasingly engage with sustainable fashion amid the pervasive influence of fast fashion, it is crucial to direct future research toward the nuanced dynamics of this shift. Insights into the following areas would enrich understanding and contribute to advancing sustainable fashion practices:

- 1. Understanding the Price-Value Perception Gap: Future research should explore how Millennials balance cost and sustainability when purchasing fashion. Studies could examine how economic constraints and perceived value influence the willingness to pay for sustainable options, particularly as price-sensitive Millennials often default to fast fashion for affordability.
- 2. Influence of Digital and Social-Media: Investigating the role of social media and digital influencers in promoting sustainable choices is essential. Researchers should analyze the impact of influencer marketing on Millennials' sustainability choices, focusing on how authenticity and perceived brand transparency in digital spaces drive eco-conscious purchases.
- 3. Overcoming Greenwashing Skepticism: With growing consumer distrust in "green" branding, further research should explore strategies that can effectively bridge this trust gap. Assessing how brands can enhance credibility through transparent practices and genuine sustainability commitments could offer insights into improving consumer-brand relationships.
- 4. Cross-Cultural Comparison of Sustainable Consumption: Research comparing Millennials across diverse cultural backgrounds could provide valuable perspectives on how regional norms influence sustainable fashion adoption. Such studies would enable a deeper understanding of global versus localized sustainable fashion trends and motivations.
- 5. Longitudinal Studies on Behavioral Shifts: Longitudinal studies could track the evolution of Millennial attitudes and behaviors towards sustainability over time, offering insights into how consumer behavior may adapt as Millennials gain economic power and as sustainable options become more mainstream.

6 Conclusion

This study provides a comprehensive review and bibliometric analysis of Millennials' engagement with fast fashion and organic apparel, highlighting evolving consumer behaviours amidst sustainability concerns. The initial analysis illustrates a notable increase in publications on this topic from 2009 to 2024, reflecting growing scholarly interest in Millennials' paradoxical consumption patterns as they navigate between affordable, fast fashion and environmentally conscious organic options. Despite increasing awareness, a "values-action gap" remains evident, where economic constraints often compel Millennials to prioritize cost over ethical considerations, underscoring the tension between affordability and sustainability. Among the leading authors, Johan Bruwer stands out with the most publications in this domain, indicating his significant contributions to the field. In terms of inter-country collaboration, the United States shows the highest volume of publications, largely



composed of single-country publications (SCPs). However, limited international collaboration was noted compared to the United Kingdom, which exhibits a higher multi-country publication (MCP) ratio.

The most cited research article in this field, "The Environmental Price of Fast Fashion" by Niinimäki et al. (2020), underscores the pressing concerns regarding sustainability within fast fashion, highlighting its significant scholarly influence. Additionally, Sustainability (Switzerland) is identified as the leading journal with the largest number of published articles on fast fashion and organic apparel, reflecting its dedication to sustainability research.

Finally, the most trending topics within this domain include consumer behaviour, sustainability, and brand transparency, which are frequently discussed in the context of Millennials' purchasing motivations and ethical considerations. These findings affirm the interdisciplinary nature of consumer studies on Millennials, emphasizing themes like social media influence, ethics, and environmental consciousness as key areas of focus. In conclusion, this research reinforces the need for targeted, longitudinal studies to examine how Millennials' preferences evolve, and it calls for policy frameworks that balance affordability with ethical standards, aiming to bridge the gap between fast fashion's accessibility and the environmental aspirations of Millennial consumers.

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