Textile & Leather Review

ISSN 2623-6281 | www.tlr-journal.com | 10.31881/TLR

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How to cite: Cui C, Shaari N. Consumer in Sustainable Textiles: A Scientometric Review. Textile & Leather Review. 2023; 6:559-581. https://doi.org/10.31881/TLR.2023.084

How to link: https://doi.org/10.31881/TLR.2023.084

Published: 19 October 2023

Consumer in Sustainable Textiles: A Scientometric Review

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Article
https://doi.org/10.31881/TLR.2023.084
Received 20 August 2023; Accepted 12 October 2023; Published 20 October 2023

ABSTRACT
In the realm of textiles, numerous brands are endeavouring to embrace sustainable development and prioritize consumer orientation. Nevertheless, during the actual sales process, sustainability is frequently communicated to consumers through the medium of sustainable fabrics, often failing to elicit profound resonance among them. This study uses scientometry to conduct a comprehensive and quantitative analysis of the current status of the textile industry based on consumers, aiming to explore the current situation and development direction between consumers and the sustainable behaviour of the textile industry. From 2014 to 2023, the Scopus database included 1010 articles related to the clothing field, based on user-oriented research. The analysis results of this study are as follows: 50 research keywords appear in the knowledge base; 8 current research areas; 10 research hotspots; 10 important knowledge references in this field; Practitioners have a better understanding of the current status and trends of sustainable development in the clothing field under user guidance. The research results provide suggestions for the sustainable development of the textile industry, promote effective communication between the textile industry and consumers on a sustainable level, and help improve the consumer stickiness and sustainable development of the textile industry.

KEYWORDS
consumer, sustainable textiles, scientometric analysis

INTRODUCTION

The textile industry plays a significant role in individuals' daily lives and holds a pivotal position as a crucial economic sector. Nevertheless, from a long-term sustainability perspective, the textile industry is recognized for its considerable environmental and social challenges. In light of the escalating consciousness regarding environmental preservation, the concept of sustainable development has become a prevailing principle across various industries, including the textile industry [1]. Issues such as material pollution, large quantities of textile waste, and the utilization of animal fur have raised concerns about the textile industry's adherence to sustainable development practices [2].

The intricate relationship between the textile industry and consumers adds further complexity to this matter. Overconsumption has led to the phenomenal growth of the fast fashion industry, a trend that has also spread to the textile industry. It affects ecological sustainability, social equity, and economic sustainability [3]. Without consumer demand, the textile industry supply chain would fail to thrive. However, consumers' diverse textile preferences often contribute to wasteful practices that cannot be

resolved solely through recycling efforts. Consumer psychology has a deep internal impact on the pursuit of sustainability [4]. Schiano et al. also pointed out that consumer cognition is a key factor in achieving product sustainability [5]. It is necessary to explore the relationship between consumers and the sustainable development of textiles.

In the past decade, scholars from various disciplines conducted extensive research on the sustainable development of the textile industry. These studies involved multiple fields, such as sustainable consumption behaviour, sustainable production, ethical textiles, consumer psychology, consumer cognition, sustainable design, product design, and the circular economy [6-13]. It was difficult to grasp the research focus and current situation among these numerous studies.

A literature review is an effective way to delve deeper into a specific academic field. Several studies reviewed literature related to textile sustainability. Some scholars have reviewed industrial sustainable innovation from the perspective of the textile industry's practical processes. For example, Islam et al. conducted a review of environmentally sustainable practices in various manufacturing processes in the textile industry and developed a conceptual framework to guide sustainable practices in textiles [14]. Budi analyzed the current status and practice of sustainable innovation in the textile industry from three dimensions: sustainable textile product innovation, sustainable process innovation, and sustainable organizational innovation, emphasizing ecological innovation and regulatory development as the main development directions [15].

Other research reviews from a consumer perspective involve consumer intentions, consumer behaviour, and consumer psychological cognition. Tey et al. examined the key drivers that influenced consumers' willingness to pay extra for purchasing sustainable apparel products [16]. Ray and Nayak summarized marketing research based on the consumer perspective, emphasizing that existing research mainly focused on consumer behaviour, purchasing behaviour, and attitude-behaviour differences, but there was a relative lack of relevant research on circular economy and sustainable innovation [3]. Using the concept of autonomous motivation from autonomous determinism, Gilal argued that consumer psychology and intrinsic needs could predict consumer behaviour more accurately than more mature predictors such as "attitudes," "subjective norms," or "past behaviour" [17]. Hu et al. believed that for the industry to match consumers, it is necessary to conduct a scientific analysis of consumer psychology and an in-depth study of factors affecting consumer satisfaction [18]. Patwary et al. used the consumer psychology research framework to analyze consumers' understanding of the circular economy and its important role in promoting the sustainable development of the industry [19].

Based on the above premises, in the existing scientific literature, the focus is on textile sustainability from the perspective of materials, and research from the consumer perspective focuses more on consumer behaviour, and there is a lack of literature review on consumer psychology and cognition,

and evaluation of research progress and trends on this topic to benefit multiple stakeholders. In addition, some existing reviews mainly use manual review methods, which are prone to bias in terms of limitations of subjective interpretation, the number of articles reviewed, and lack of producibility. Recognizing the aforementioned limitations, this study employs scientometric analysis to examine the literature concerning textile design under the influence of consumers. By conducting a comprehensive and quantitative review of relevant research, including keyword co-occurrence analysis, document co-citation analysis, cluster analysis, and keyword emergence analysis. Through these methodologies, extensive exploration is undertaken to uncover the current research horizons, prominent areas of investigation, and emerging research directions within the field of sustainable textiles based on consumer. This study aims to present the research status, prevailing research hotspots, and future research trends in this specific field. Finally, based on the research results, this study offers potential recommendations for future relevant researchers and industry stakeholders.

MATERIALS AND METHODS

This study adopted scientometrics as a research method. Scientometrics is a research approach that utilizes quantitative analysis and statistical techniques to examine and evaluate various aspects of scientific and scholarly literature [20]. Its objective is to objectively reveal patterns, dynamics, and the impact of scientific publications, as well as the relationships between authors, institutions, and research topics [21]. Various scientometric indicators are used as analytical tools for these assessments. The implementation process of the scientometrics research methodology involves three stages: tool selection, data collection, and data analysis.

Tool Selection

Numerous visualization tools are available for scientometric analysis, including Bib Excel, Publish or Perish, Cite Net Explorer, and VOS Viewer. However, CiteSpace stands out as a prominent software application developed by Professor Chen Chao-mei [22]. CiteSpace offers advanced capabilities for visualizing burst detection, betweenness centrality, and heterogeneity within networks of cultural information. In this regard, CiteSpace provides a valuable, timely, replicable, and flexible approach to tracking research trends and identifying crucial evidence [23]. Utilizing CiteSpace for literature analysis enables the identification of cutting-edge fields, the clustering of specialized research areas, and the examination of research trends through the identification of emerging values. Its application enhances the comprehensive understanding of the scholarly landscape and facilitates insightful observations regarding research dynamics.

Data Collection

This paper employed Scopus as the primary data source to conduct a comprehensive examination of the prevailing scholarly research landscape on the subject of 'Consumers in Sustainable Textiles' across various academic domains and international contexts.

To expound in detail, during the phase of data collection, this study prioritized the acquisition of papers characterized by high quality and marked relevance. This research categorically classified these materials utilizing a rigorous peer-review process, thereby ensuring the selected journals adhere to the high standards of scientific rigour. The selection of search terms was predicated upon their relevance to the domains of consumer and sustainable textiles.

The keyword 'sustainable textile' is more detailed in its coverage, including sustainable design or textile design and the textile industry. The inclusion/exclusion criteria set limitations on the type of document to journal articles to obtain documents that have been through a stringent peer-review process. The language was limited to English (Table 1).

Table 1. Inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
The article discusses consumers in sustainable textiles.	The article does not discuss consumers in sustainable textiles.
Documents type: Journal articles	Conference proceedings, book chapter, trade journal, etc.
Research area: Art and humanities; Business, management and accounting; Social science	Research area outside Art and humanities; Business, management, and accounting; Social science
Language: English	Non-English language

A rough search in the Scopus databases yielded more than 5000 articles. After applying the inclusion/exclusion criteria, 1332 papers were obtained. The research chose the time range from 2014 to 2023. The selection of this temporal scope is primarily aimed at ensuring that the acquired information maintains a high degree of contemporaneity and practical significance in the textile industry. Moreover, research conducted within the past decade is often more indicative of the trends, trajectories, and frontiers within the realm of textiles and consumers. Additionally, opting for a literature range spanning the recent decade facilitates the discernment of interconnections amongst research endeavours focused on consumer studies within the textile domain, while simultaneously imposing constraints on the volume of literature. This circumscription enables more effective management and analysis of the limited information, thereby mitigating the risk of information overload. According to the above criteria, a total of 1332 original research articles were retrieved.

Then, a preliminary screening of these documents was carried out, duplication and incomplete information were removed, and a total of 1010 research documents were obtained.

Data Analysis

Utilizing the citation analysis software, namely CiteSpace, as a pivotal research instrument, this investigation undertook a comprehensive examination of the scholarly literature concerning the subject matter. Co-occurrence analysis, co-citation analysis, and cluster analysis were systematically employed to discern underlying patterns and relationships within the collected data. The ensuing elucidation delineated the sequential stages of the analytical procedure.

Firstly, the co-occurrence analysis of keywords was carried out. A total of 1010 documents were imported into Cite space, and keywords that appeared in at least two different documents within the time range of 2014-2023 were obtained through keyword co-occurrence analysis, and the annual slice was selected as 1. These high-frequency keywords derived from co-occurrence reflected the research focus and the different time intervals in which they occurred. An emergence analysis was carried out based on the contribution of keywords, enabling the evolution trend of consumer orientation in the sustainable development of the clothing industry could be obtained from the changes, and it could provide references for trend keywords for future potential hot research.

Secondly, a common citation analysis of the literature was conducted. Highly cited papers in a research field were influential. The highly cited literature obtained through the analysis could provide insight into the knowledge framework involved in this study.

Third, a literature cluster analysis was performed. Documents in the same cluster had a high degree of similarity in subject matter. Through in-depth analysis involving key feature identification, internal relationship analysis, and subject interdisciplinary analysis, researchers could understand the cooperation between disciplines and the development of research frontiers.

RESULTS AND DISCUSSION

Keyword Co-occurrence Analysis

The designated keywords within a research article are chosen by the author to succinctly encapsulate the central themes and subject matter. Analyzing these keywords helps unveil the intricate interplay between consumer preferences and their implications for fostering sustainable advancements within the textile sector. This examination sheds light on the dynamic relationship between consumer-oriented considerations and the overarching framework of sustainable development in the realm of textile production. Through the keyword clustering analysis of the 1010 articles screened out in the

previous stage, this research obtained a keyword network relationship diagram is obtained, as shown in Figure 1.

Figure 1. Keyword Co-occurrence

Through the cluster analysis of keywords, the system screened out a total of 374 keyword nodes. Based on the results of the initial cluster analysis, the representations with similar semantics were coded again and classified into one category. For example, terms like textile/Clothing/Apparel/Clothes were classified into one category, and Luxury/Luxury Brands/Luxury Textile/Luxury Brands were grouped into one category. According to this keyword classification standard, among the keyword nodes obtained by clustering and arranged by the frequency of keyword occurrences, the top 50 nodes are characterized by keyword prevalence, the statistics are listed in Table 2. These 50 nodes contain a total of 1279 keyword co-occurrence frequencies, accounting for 83% of all co-existing keywords.

As shown in Table 2, the following keywords are the most frequently used: Fashion/Clothing/Apparel/Clothes (179 times), Sustainability (84 times), Textile Industry/Clothing Industry/ Apparel Industry/Garment Industry (83 times), Consumer Behaviour (76 times), E-Commerce/Marketing/Commerce (75 times), Design (49 times), Product Design (48 times), Luxury/Luxury Brands/Luxury Textile/Luxury Brand (45 times). It can be seen from this that the textile industry, sustainable design, commercial markets, product design, luxury brands, and consumer behaviour are important components for fostering the sustainable development of the textile industry. The remaining 42 keywords in Table 2 cover the following aspects.

Table 2. High-frequency keywords of sustainable textiles based on consumer

No	Frequency	Key Word	No	Frequency	Key Word
1	179	Textile/Clothing/Apparel/Clothes	26	13	Circular Economy
2	84	Sustainability	27	12	Innovation
3	83	Textile Industry/Clothing Industry/ Apparel Industry/Garment Industry	28	11	Surveys
4	76	Consumer Behaviour/ Consumer Behaviour	29	11	India
5	75	E-Commerce/Marketing/Commerce	30	10	Case Study
6	49	Design	31	10	Brand Loyalty
7	48	Product Design	32	10	Supply Chain Management
8	45	Luxury/Luxury Brands/Luxury Textile/Luxury Brand	33	9	Consumption Behaviour
9	37	Social Media	34	9	Perception
10	36	Purchase Intention	35	9	Augmented Reality
11	36	Textiles	36	8	Covid 19
12	35	Fast Textile	37	8	Identity
13	34	Sustainable Textile	38	8	Recycling
14	33	Textile Design/Clothing Design	39	8	Millennials
15	29	Consumer/Consumers	40	7	Supply Chains
16	29	Retailing/Retail/Textile Retail	41	7	Generation Y
17	28	Sustainable Development	42	7	Business Models
18	23	Online Shopping/Electronic Commerce	43	7	Materialism
19	21	Sales	44	7	Design Process
20	20	Decision Making	45	6	Corporate Social Responsibility
21	19	Brand Image/Branding	46	6	Collaborative Consumption
22	16	Textile Industry	47	6	Knowledge
23	15	Textile Retailing	48	6	Brand Attitude
24	14	Design/Methodology/Approach	49	6	Communication
25	14	Textile Marketing	50	6	Business Model

In the clustering of keywords, paramount frequency is attributed to social media, online shopping, and electronic commerce. This part involves the promotion and online sales of textile products. Numerous studies have shown that due to the impact of COVID-19, discussions on this part have shown rapid growth since 2020. The interaction between textile brands and consumers on social networks is becoming more and more frequent, and the stickiness between online brands and users appears more in luxury brands than low-priced brands [24]. The virtual transactions involving textile products within the domain of online sales constitute an essential facet that warrants attention. Remarkably high-value items are frequently purchased by consumers before any tangible physical interaction. The dematerialization of modern textile products has moved online, attracting consumers with early forms of marketing, followed by the recontextualization of materiality and consumer understanding of self,

all catalyzed by online consumption [25]. Social media promotes the impact of cosmopolitanism, global social identity, and knowledge of green clothing and perceptions of sustainable textiles. Sustainable textile designers can use social media to raise awareness and promote sustainable clothing [26]. Collaboration between brands and consumers through user-generated content platforms presents new challenges for textile brands. Media marketers need to learn new skills, such as world-building, collaboration, and how to design engaging experiences [27].

Secondly, regarding the field of consumers' purchase intentions, discussions have taken place to varying degrees from the perspectives of the consumer market and consumer psychology. Through an empirical analysis of consumer behaviour, it has been found that utilitarianism, aesthetics, and sensory stimulation positively influence the impact of price awareness on purchase motivation, while the success of window displays has a negative impact on consumers' purchase motivation [28]. At the same time, the brand's status, and the consistency of brand promotion and products play an important role in the purchase intention of textile products, and a high level of self-consistency strengthens the impact of product marketing on consumers' purchase intention. These findings have a guiding significance for the textile industry [29]. Based on this, a brand experience scale developed for consumers' purchase intention can be developed to evaluate the influence of brand experience on consumers' purchase intention. The scale results can help the textile industry to understand dimensions other than functionality more clearly. Manufacturers and distributors in the textile industry can enhance consumers' purchase intentions through products and services, and thus foster brand loyalty [30].

Thirdly, "Fast Textile" is another significant area of focus, with the keyword appearing 35 times. According to the trend chart, there is expected to be a surge in the number of publications at this node in 2022 and 2023, which also indicates that fast textile will become a research hotspot in the next short period. The fields associated with fast textile are very extensive, involving environmental attitudes, big data analytics, sustainable textile, design process, sustainable development, textile retailing, Omni channel, online consumer behaviour, segmentation, aesthetics, market segmentation commerce, circular business model, retail, apparel hoarding, supply chain management, value chain, textile design, retailing, recycling, environmental impact, generation, clothing, product returns, business models, consumer behaviour, sustainable consumption, ethical consumption, influencer marketing, circular economy, theory of planned behaviour [31-43]. Fast textile excels in rapid response, whether it is the speed of inventory replenishment or the rapid introduction of diversified textile styles. This agility is aimed at catering to uncertain textile trends and consumer demand; however, it poses challenges in maintaining product quality and incurs environmental costs. The conspicuous consumption produced by fast textiles has a direct impact on the identity construction of female consumers, following or showing the self-image of consumers. Textile consumers' perception of the

degree of product customization will increase with the depth of the participation process, and as the customer engagement point moves upstream to design, the expected willingness to consume will also increase. Steering the apparel system towards ecological sustainability requires a comprehensive strategy, and studies have analysed fast textile recycling through material flows [44]. It is found that this category of products has a high reuse rate, but a very low recycling rate, which means that a large number of recycled fast textile products are incinerated for other uses, continuing to pose environmental problems. Therefore, at the beginning of the industrial chain, we must start to solve the problem of sustainable development. From a corporate perspective, improved management through mass customization of design may not only help mitigate the pace of fast textiles but also have significant sustainability impacts. From the perspective of designers, fast textile designers of many brands rely on textile trends, sales data, and product analysis to obtain inspiration for new product development [45]. Designers should guide consumers to increase their sensitivity to quality, emphasizing quality, design, sustainability, and ethics.

Fourth, related research in the field of textiles has a direct reference to the field of fashion. The textile industry and the fashion industry are inseparable and both are involved in sustainable design, recycling, co-design, retailing, design process, customer satisfaction, environmental impact, artificial intelligence, computer-aided design, manufacture, and the human body. Every textile brand needs to balance the relationship between consumers, suppliers and competitors, which is full of complex connections and uncertainties. Artificial intelligence (AI) technology has played an advantageous role in the optimization decision-making process. AI technologies have found their way into design support systems, textile and apparel recommendation systems, smart tracking systems, quality control, textile and apparel forecasting, supply chain management or predictive analytics in social networks, and textile and apparel e-commerce [46]. In addition, in the field of textile design, collaborative design is widely used. Stakeholders from all industries can participate. Taking consumers as the centre, information sharing in all links, and communication realize the collaborative design of textiles [47]. The design process is planned through early communication, and the establishment of modular design and collaborative design systems is very important in the process.

As can be seen from the above research areas, decision-making is a crucial step. However, the current textile industry comprises such a complicated relationship network and industrial chain that the decision-making cannot only solely rely on individual expertise, it also depends on computer-aided manufacturing, analysis software, behavioural research, forecasting, big data, price dynamics, quality control, consumer needs, apparel supply chains, purchasing decisions, surveys. From a realistic point of view, the market economy has delegated part of the decision-making power of the clothing industry to consumers. The Omni channel decision-making process is associated with risks, and consumers employ specific strategies to avoid these risks [48]. Deepening research on consumer preferences can

have a direct impact on environmental and design sustainability. Textile brands should also take measures to influence consumers, such as the combination of brands to enhance consumption desire, uniqueness as the highlight of differentiation, and personalization to guide toward slow textile and sustainable development. A comprehensive consideration framework should be established for the four aspects of touch, enjoyment, aesthetics, and practicality directly perceived by consumers. In addition, for online sales in the textile industry, the online product experience tends to have a positive impact on consumers who are quite familiar with the brand. However, the influence of online word-of-mouth on consumers' online purchasing behaviour is not significant [49]. This conclusion provides a new idea for the textile industry, and the attention to the user experience cannot be limited to gender and age.

Keyword Bursts Analysis

Keywords with high citation frequency can reflect the main research content of a topic within a certain period. Research on keywords with high bustiness can capture hot spots and changes in the professional field [50]. This study conducts keyword emergence analysis on "Consumer in Sustainable Textile", selects the minimum duration as 2, and obtains 15 emerging keywords, as shown in Figure 2. The initial time of keyword emergence marks the time when the field represented by this keyword becomes a research hotspot, dark blue indicates the duration, and red marks the peak of emergence. By observing the keyword highlighting table, research trend forecasts can be provided for sustainable research in the apparel industry.

Keywords	Year	Strength	Begin	End	2014 - 2023
commerce	2014	3.55	**2014**	2016	
branding	2014	2.75	**2014**	2015	
consumer	2014	2.57	**2014**	2015	
textiles	2015	4.15	**2017**	2018	
perception	2017	3.69	**2017**	2019	
product design	2014	3.19	**2017**	2018	
computer aided design	2017	3	**2017**	2018	
big data	2018	2.56	**2018**	2019	
case study	2016	2.42	**2018**	2020	
instagram	2019	2.84	**2019**	2020	
apparel industry	2015	2.65	**2019**	2020	
clothes	2020	3.53	**2020**	2021	
fashion retail	2021	2.48	**2021**	2023	
knowledge	2021	2.48	**2021**	2023	
artificial intelligence	2021	2.48	**2021**	2023	

Figure 2. Top 15 keywords with the strongest citation bursts

This study selects the research scope from 2014 to 2023 and finds that the academic circles focus on brands, big data, textile business, artificial intelligence, retail decision-making, etc. Among them, there are three keywords related to computer-aided technology, namely "computer-aided design", "big data" and "artificial intelligence", which fully demonstrate the tremendous changes that technology has brought to the textile industry in the past ten years. Through further observation, it is found that the core keywords in the past three years are "artificial intelligence", "knowledge", "textile retail", and "clothes". It shows that in the current textile industry sales channels, whether online or offline, Artificial intelligence will continue to exert force. Practitioners in the textile industry must grasp this node and make effective efforts for sustainable development.

Keyword cluster analysis

Cluster analysis allows the investigation and detection of key themes, structures, and interrelationships. It is a research hotspot obtained by comprehensively analysing a large number of literature keywords over some time. It is a highly refined and summarized core content of the research field. In this study, Cite Space software was used to cluster keywords and generate a keyword clustering knowledge map, as shown in Figure 3.

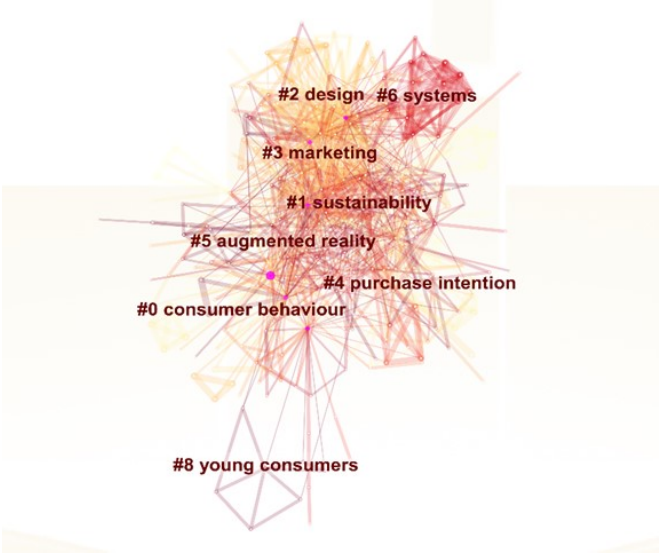

Figure 3. Keyword cluster

This research uses Cite Space to cluster keywords, and each cluster corresponds to a different basic theme and research direction. There are three different statistical methods: LLR(Log-Likelihood Ratio) /TF (Term Frequency) /MI (Mutual Information). Since the LLR algorithm focuses more on the statistical correlation between keywords, this study chose the LLR algorithm to cluster keywords. The obtained cluster categories are automatically selected from the top-ranking keywords and summary keywords

of each cluster. The size of the cluster is analysed by silhouette and size, and the cluster label can be defined by the log-likelihood ratio (LLR). The research on "user-based sustainable textiles" can be summarized into 8 research areas, as shown in Table 3.

Table 3. Top-Ranked Clusters and Terms within Clusters

Cluster-ID	Size	Silhouette	Mean (year)	Cluster label （LLR）
0	68	0.814	2018	Consumer Behaviour（Textile; Online Shopping; Social Media; Clothing）
1	63	0.598	2018	Sustainability(Fast Textile; Textile Industry; Sustainable Textile; Circular Economy)
2	51	0.771	2016	Design(Textiles; Product Design; Sustainable Development; Textile Design)
3	48	0.79	2016	Marketing(Sales; Commerce; Consumption Behavior; Electronic Commerce)
4	36	0.821	2017	Purchase Intention(India; Generation Y; Country Of Origin; Brand Attitude)
5	28	0.781	2019	Augmented Reality(Luxury Brands; Privacy; Textile Marketing; Retail)
6	23	0.924	2018	Systems(Consumers; Cost Effectiveness; Management; Social Science)
7	13	1	2020	Autonomous Vehicles(Application Placements; Safety Requirements; Failure Detection And Isolations; Application Placement)
8	7	0.973	2023	Young Consumers(Textile Renting; Textile Subscription Retailing; Customer Behavioural Engagement; Quality Consciousness)

Cluster 0: Consumer Behaviour. The cluster includes textiles, online shopping, social media, and clothing. Different forms of consumption have different values behind them. Consumer values, textile awareness and behavioural intentions reflected by online textile apparel and physical retail terminals are related but different. Online sales platforms encode market logic and capabilities into their designs, and consumer experience plays an important role in mediating the impact of self-congruity on customer loyalty [51].

Cluster 1: Sustainability. The cluster includes fast textiles; the textile industry; sustainable textiles; and the circular economy. The sustainability of the textile industry requires the joint efforts of all practitioners, including consumers. Sustainability is also known as an important factor influencing consumer behaviour. A sustainable textile industry means more optimized corporate inventory, higher-quality apparel products, and less environmental pollution. Innovative technologies promote

cost reduction, and purchasing needs and marketing strategies should be developed around sustainable intentions [52,53].

Cluster 2: Design. The cluster includes Textiles; Product Design; Sustainable Development; and Textile Design. The textile field and the textile field are closely related, and the problems they face and the corresponding measures are highly consistent. The role of new technologies in sustainable development is obvious, and the role of people cannot be ignored. Technology helps designers get rid of some repetitive labour so that designers can focus more on thinking cultural innovation and sustainable design. Conspicuous consumption of products brought about by material abundance is not conducive to sustainable development. Use emotional design methods to establish a benign purchase relationship, not just emotional dependence [54,55].

Cluster 3: Marketing. Clustering includes Sales; Commerce; Consumption Behaviour; and Electronic Commerce. Textile brand marketers and advertisers need to focus on new technologies and diverse marketing strategies when increasing product exposure, customer engagement, and customer behaviour and purchase intent. The core is to establish a sustainable framework between market research and 4c - consumer, cost, convenience and communication. In the current sales environment, textile industry sellers can combine the dimensions of electronic service scenarios to build e-shopping value and loyalty. Dimensions can include assortment, pricing and promotions, fulfilment, web, and store design [56].

Cluster 4: Purchase Intention. The cluster includes India; Generation Y; Country of Origin; and Brand Attitude. The people involved in the purchase intention cover different ages and races. There are consistency and differences in consumption intentions among different groups of people. Subjective norms and perceived behavioural control are positively associated with purchase intentions for textile products. Reflected in the purchase of textile products, there are obvious differences in the intermediary effect among consumers with different needs, including but not limited to conspicuous value, experience value, and utilitarian value [57].

Analysis of Highly Cited Articles

To obtain influential reference materials related to consumer research in the textile industry, this study made statistics on a batch of frequency documents concerning peer review and the highest frequency of citations as the standard. The results are arranged in descending order from high to low citation frequency, as depicted in Table 4. These articles encompass a multifaceted synthesis of consumer-textile interactions, effectively encapsulating the concepts, theoretical frameworks, methodological paradigms, and empirical research outcomes germane to sustainable textiles. The findings of these articles serve to expound upon consumer engagement, preferences, and decision-making processes within the textile context, while concurrently fostering a coherent and progressive comprehension of

the intricate interplay between consumers and the textile industry. This collective understanding significantly contributes to illuminating pathways for innovation, strategic decision-making, and sustainable practices within this dynamic domain [58].

Table 4. Highly cited articles

Rank	Count	Author	Year	Cited References
1	12	Godey	2016	Social Media Marketing Efforts Of Luxury Brands: Influence On Brand Equity And Consumer Behavior
2	12	Verhoef	2015	From Multi-Channel Retailing To Omni-Channel Retailing: Introduction To The Special Issue On Multi-Channel Retailing
3	11	Giovannini	2015	Luxury Textile Consumption And Generation Y Consumers: Self, Brand Consciousness, And Consumption Motivations
4	11	Grewal	2017	The Future Of Retailing
5	10	Lundblad	2016	The Values And Motivations Behind Sustainable Textile Consumption
6	9	Henninger	2016	What Is Sustainable Textile?
7	9	Gabrielli	2013	Consumption Practices Of Fast Textile Products
8	9	Ko E	2019	What Is A Luxury Brand?
9	8	Kautish	2018	Consumer Values, Textile Consciousness And Behavioural Intentions In The Online Textile Retail Sector
10	7	Iran	2017	Collaborative Textile Consumption And Its Environmental Effects

The most cited literature is Godey's "Social Media Marketing Efforts of Luxury Brands: Influence on Brand Equity and Consumer Behaviour". This article studies the influence of social media marketing activities on brands and consumers. The research variables include brand preference, Price premium and loyalty. A structural equation model was developed to measure an overall concept comprising five dimensions (entertainment, interaction, textile, customization and word of mouth). The second article is "From Multi-Channel Retailing to Omni-Channel Retailing: Introduction to The Special Issue on Multi-Channel Retailing" by Verhoef. This article explores the changes that online digital channels such as online sales channels and social media have brought to the retail industry and proposes to look at today's retail industry from an omnichannel perspective. The third article is "Luxury Textile Consumption and Generation Y Consumers: Self, Brand Consciousness, And Consumption Motivations" by Giovannini. This article examines the luxury textile consumption of Gen Y consumers. The influence of self-personality on brand and the influence of brand awareness on consumer behaviour is analysed. A structural equation model was developed to represent the relationship among related variables to explore the variables that influence the brand awareness of Generation Y consumers. The fourth article is "The Future of Retailing" by Grewal. This article examines key areas retailers can adopt to engage customers: technology and tools to facilitate decision-making, visual presentation and merchandising

decisions, consumption and engagement, big data collection and usage, and analytics and profitability. The fifth article is "The Values and Motivations Behind Sustainable Textile Consumption" by Lundblad. Following a means-ends theoretical approach, this article explores the values and motivations that underpin actual sustainable textile consumption, connects purchased products with purchasing criteria and personal values, and provides insight into sustainable textile consumers' purchasing criteria and behavioural choices.

Analysis of Country Cooperation

Table 5 lists the research status of "user-based textiles" in different countries. The United States has the highest number of publications with 243 articles, followed by the United Kingdom with 171 articles.

Table 5. Top 10 Countries by article production

Rank	Count	Centripetal	Year	Country
1	243	0.27	2014	United States
2	171	0.45	2014	United Kingdom
3	103	0.12	2014	China
4	87	0.00	2014	South Korea
5	76	0.08	2014	India
6	44	0.11	2014	Australia
7	42	0.07	2014	Italy
8	34	0.08	2014	France
9	31	0.07	2015	Spain
10	31	0.07	2015	Germany

Figure 4 shows the interrelationships between different countries. The nodes in Figure 4 represent countries, and their sizes represent the number of articles from different countries. The distance between nodes and the thickness of connections represents the degree of cooperation between countries.

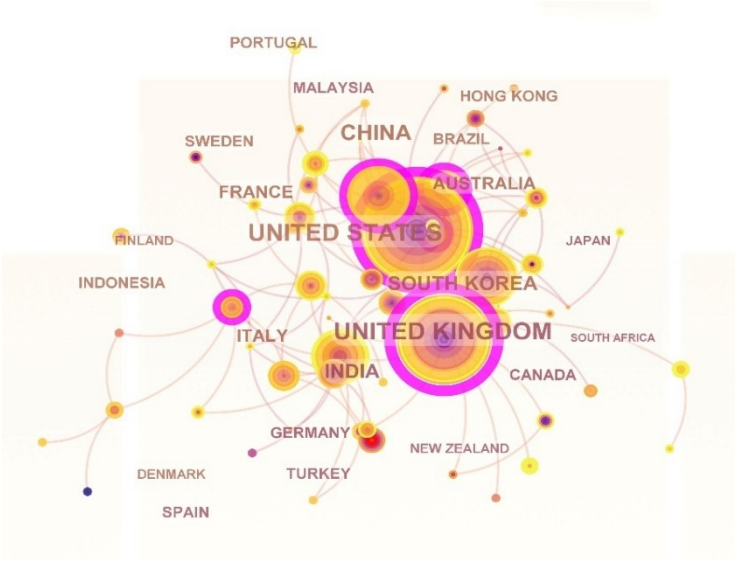

Figure 4. Country cooperation map

Based on this, this research further analysed the cooperative relationship between countries and regions with high publications. Centred in the United States, it connects Pakistan, Italy, Brazil, Japan, South Korea, Thailand, the United Kingdom, Spain, India, Canada, China, Finland, Turkey, France, Malaysia, and a total of 27 countries and regions. With the UK as the centre, connects Italy, Denmark, Mexico, Germany, Japan, Brazil, Iran, Spain, Canada, China, United States, Finland, Australia, Ireland, Turkey, New Zealand, France, South Africa and a total of 33 countries and regions. Although the total number of publications in the UK is less than that of the US, the scope of contact with various countries and regions is wider than that of the US.

As shown in Figure 4, China is connected to a total of 18 countries and regions. South Korea, which ranks fourth, is linked to 6 countries and regions. Although South Korea has few external contacts, it has published a high volume of papers, indicating that many scholars and institutions in South Korea are conducting independent research.

The above analysis can more objectively reflect the degree of cooperation and academic research between countries and regions. However, it should be noted that because this research limited the language to English when conducting literature screening, some countries with different languages may have their language systems for literature retrieval databases, which were not included in the scope of this review, so this part of the data is missing. In some regions where English is the main language for academic communication, such as Hong Kong, China, although ranks 25th in the total number of publications, it has wide extensive cooperation with other countries and regions. On the one hand, this shows that the academic exchange atmosphere in Hong Kong is very strong. On the other hand, it can also provide suggestions for other countries and regions. They should actively

publish articles in English or international academic journals to expand their influence in the field of international research.

In addition, to fully enhance international influence, countries and regions should also strengthen cooperation with each other and increase the intensity of cooperation.

CONCLUSIONS

This study summarizes the current research status and points out possible directions for further research by analyzing the current status and cutting-edge trends of user-based textiles in the past decade. This study has used scientometric methods to review scientifically selected quantitative literature. Combining consumers with sustainable textiles, it comprehensively analyzes the research and development path of sustainable textile products for consumers, making up for the lack of a comprehensive and in-depth analysis of this research field in previous studies. Combining research hot spots provides directions for further research, enriches the knowledge system in the textile field, and provides an important reference for industry stakeholders to more effectively explore.

The study yields the following contributions for prospective research: (1) Synthesis of the top 50 high-frequency keyword nodes within the realm of sustainable design and user orientation within the clothing domain. (2) Summary of the eight principal research dimensions delineated over the past decade. (3) Identification of conceivable research frontiers for the forthcoming scholarly inquiry. (4) Compilation of the ten most frequently cited documents in this thematic ambit, which collectively serve as the epistemic foundation and indispensable point of reference for future investigators. (5) Examination of the cooperative dynamics across nations worldwide, providing a contextual framework for comparative investigations and cultivating novel avenues of collaboration. It can be seen from these research results that consumer research in textiles is intersectional, reflecting the multifaceted nature of this field. Although the current research is mainly independent, the cooperation network between different countries and regions is still quite deep and extensive.

This study puts forward the following suggestions and prospects for future research.

First of all, interdisciplinary research has become the norm, with many studies involving economics, consumer studies, psychology, computer science, aesthetics, design and other disciplines. This study believes that researchers not only need to strengthen their understanding of multidisciplinary frontiers but also need to strengthen academic interaction with researchers from different countries and regions. Only by strengthening cross-field and cross-regional exchanges and cooperation can we provide more opportunities and possibilities for academia and the textile industry.

Secondly, through the literature review, it can be seen that the application of big data and artificial intelligence in the textile field is showing a rapid expansion trend, which is also in line with the current

economic development. The deadline for data collection in this study is early 2023, so the hot spots analyzed have high reference values. Practitioners in the textile industry must fully seize the opportunity of big data and artificial intelligence, actively guide consumer behaviour, and explore sustainable development.

Thirdly, most of the research aiming to help the textile industry achieve sustainable development from the perspective of consumers focuses on studying measures to guide consumers' sustainable consumption behaviour and lacks attention to consumers' sustainable consumption cognition, and the depth of consumer cognition Layers, which are closely related to their behaviour. Therefore, future research should combine psychology with the cognitive psychology and cognitive levels of textile consumers.

Last but not least, close attention to consumers and timely information feedback should be applied to all aspects of the textile supply chain. Research shows that this part of the data lacks transparency and traceability, which is not conducive to researchers or practitioners promoting effective research on the sustainable development of textiles. In the future, it is necessary to further explore this issue with the help of modern technological means such as big data and information visualization.

Author Contributions

Conceptualization – Cui C; methodology – Cui C; formal analysis – Cui C; investigation – Cui C; resources – Cui C; writing-original draft preparation – Cui C; writing-review and editing – Shaari N and Cui C; visualization – Cui C; supervision – Shaari N. All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

Funding

This research received no external funding.

Acknowledgements

The researchers acknowledge that this research was supported by University Putra Malaysia. Thanks to the supervisory committee for providing guidance and help for this study.

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