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The Circular Textile Transition: A Bibliometric and Systematic Review of Financial Barriers and Market-Consumer Drivers

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ABSTRACT

This systematic review and bibliometric analysis explore the factors that help and prevent the adoption of circular economy practices in the global textile industries, with particular attention to financial constraints and market-driven consumer dynamics. By examining 132 peer-reviewed publications, the study uncovers a complex web of interconnected barriers, including financial, technological, organizational, and regulatory challenges, which support the prevailing linear model. Instead, strong supports such as policy requirements, technological advancements, market pressures, and changing consumer values are pushing for change. One key lesson is that there is a dynamic relationship between these forces; an enabler in one area can mitigate a barrier in another. The bibliometric mapping shows a rapidly changing field, pointing out well-studied areas like environmental management while highlighting significant gaps in fundamental topics like textile recycling. The study wraps things up by pointing out that speeding up the transition calls for focused actions right at those critical points particularly where financial incentives and market demand intersect. This review lays out a framework that works for industries and for policymakers too. Its positive CE as more than just an environmental necessity. CE turns into a vital strategy for building resilience and gaining competitive advantage.

Introduction

The worldwide textile and clothing industry is critical to economic growth and cultural diversity, yet the linear "take-make-dispose" model under which it has operated for decades is now recognized as one of the major contributors to environmental harm (Ali, Shear, Ashraf, et al., 2026). The numbers are staggering. The textile and clothing industry now accounts for 10% of the global emissions and is water intensive where nearly 225 billion cubic meters are consumed yearly (Niinimäki et al., 2020). Additionally, it contaminates water significantly since dyeing and finishing processes often launch hazardous chemicals that have not been treated from manufacturing canters (Nath et al., 2025). The emergence of ultra-fast fashion has reduced the life span of clothing significantly, creating a waste crisis in which a truckload of textile waste is carbonized or put in landfills every minute across the world, which is a waste of precious materials (Pranta et al., 2025). This environmental degradation is increasingly translating into economic consequences as well.

The circular economy (CE) offers a regenerative and restorative model, presenting a revolutionary vision for the industry. Move toward models based on access instead. Like leasing clothes or renting them out. Those setups put real pressure on brands. They must create better designs, more sustainable ones. Since the brands handle what happens at the product end of life (Manninen et al., 2018). To foster a cultural transformation towards the non-disposability movement, the paradigm also encourages the use of practices that extend the life of clothing by repairing as well as remaking. This is because to seal the material loop and turn post-consumer waste into useful feedstock to be used in new production, it is essential that new generation recycling technologies should be invented and implemented on a large scale (Pal & Gander, 2018). In a time when resources are limited, the embrace of these principles is both becoming a primary competitive advantage approach and resilience building initiative, and not a niche application (Frank & Watchravesringkan, 2016).

Implementing a circular fashion system is still in its initial stages and complex, even though there are a compelling argument and a growing debate. The pilot projects and the extensive implementation in global value chains still vary in terms of implementation (DiVito et al., 2025). This disconnect is caused by a complicated, self-reinforcing system of multifaceted barriers instead of one, which provides the linear model with a robust lock-in effect. Financial constraints such as high initial investment in modern technologies and lack of confidence in returns on investment are a big deterrent to many small and medium-size businesses especially (Sharma et al., 2025). The limitation of technological and infrastructure hinders closing the material loop at scale, particularly in terms of sorting and processing of complex mixtures of materials (Shamsuzzaman et al., 2025). Linear cultures and managerial resistance, knowledge deficit can marginalize circularity and minimize innovation in organizations (F. Yu et al., 2015). Outwardly, unequal regulatory frameworks without strong and efficient extended producer responsibility regulations, and stifled market demand are not created by deep-rooted fast fashion-associated consumer patterns and ingrained perception of used goods (Ali, Nasir; Shear, Falik; Abidin, 2025; Ali, Shear, & Khan, 2026). Yet, there have been powerful counter forces of change. Strict policy measures are producing new compliance requirements, like the Europeans approach toward Sustainability and CE (Sandin & Peters, 2018). Economic incentives that are enhancing the business case include pressure by global value chains and new resale revenue streams (Farrukh & Sajjad, 2024). Even though the market pull is being created due to a change in consumer awareness, the viability is getting better thanks to the development of digital and recycling technologies (Niinimäki et al., 2020). Thus, the active communication of these opposing forces is the greatest issue. The factors and obstacles to the transition are closely interconnected; one factor in one field can alleviate a challenge in a different one. To realize these multifaceted relationships and identify the most essential points of leverage to be addressed, it is hard to get beyond lists in isolation (Geissdoerfer et al., 2017).

Despite the growing body of literature on circular economy adoption in the textile industry, existing studies remain largely fragmented, examining financial, technological, organizational, or regulatory factors in isolation rather than as an interconnected system. Furthermore, the intersection of financial constraints and market-driven consumer dynamics, the two forces most directly shaping industry investment decisions and demand-side adoption has not been synthesized through a combined systematic and bibliometric lens. This study addresses this gap by integrating thematic synthesis with bibliometric mapping to reveal how financial barriers and market/consumer drivers interact across the global textile value chain, offering a more holistic understanding than prior single-dimension reviews.

Literature Review

The Textile Industry's Philosophical Foundation of the CE

Before proceeding with the drivers which can be used in adopting the CE customs and barriers which prevent its adoption, it is important to define what the CE paradigm is and what its significance is to the textile industry. A CE is an industrial system that is not only positive but also regenerative in strategy and design to go beyond the traditional model of usage of limited resources of take-make-dispose (Solis et al., 2025). By reducing waste and increasing the lifecycle of goods and equipment, it aims to avoid economic situations through the utilization of finite resources. CE principles are operationalized to be necessary and challenging in the scope of the global textile business, where aspects of resource consumption, waste production, and the complexity of global supply chains are the defining features (Shamsuzzaman et al., 2025). Circular economy practices show up in all sorts of ways throughout a product lifecycle, not just with basic recycling designing clothes that are kinder to the environment, built to last longer or be reused multiple times; exploring new business models, such as rental or resale options; implementing take-back schemes where customers return old products; and developing technology that turns consumer waste back into raw materials without significant loss of value (Saccani et al., 2023). People are starting to see this change more as a key strategic push, it drives innovation and keeps things competitive. Plus, it builds real strength against shortage in resources and all those shifting regulations. Not just some environmental thing anymore (Kazancoglu et al., 2020).

This large-scale system shift nonetheless faces several roadblocks, which are examined in detail in the sections that follow. The industry needs it because of its heavy environmental impact that has built up over time. Things like using ways too many resources, plus all the pollution and the huge amount of waste it creates (McQueen et al., 2022). However, it is not just a technical or operational problem. This is a systemic change. It involves a multifaceted array of determinants. Those determinants are both enabled and impeded at the same time (DiVito et al., 2025; Farrukh & Sajjad, 2024). Academic literature points out that circularity is not some simple straight path. It's more like this ongoing force full of dynamic interactions that can get controversial sometimes these interdependent obstacles and drivers clashing in ways that push things along they create pressure offer incentives and set limits too all that's happens at every single stage in the life cycle of global textile products. From sourcing the materials to the end of the product life (Akash et al., 2025). Looking at the literature out there it shows these key factors fall into four big themes. First one is the financial and economic factor then technological and infrastructural next comes managerial and organizational and the last is regulatory market and social the main thing is that this helps policy makers, scholars and employees in industries that produce strategies on various levels. These strategies can push things faster. They also cut down the risks in moving to a textile system that is more environmentally friendly and circular (Engzell & Kambanou, 2024; Geissdoerfer et al., 2017).

Barriers

Financial and Economic Barriers

Money is one of the principals and most cited Barrier to the circular transition. The upfront costs of new technologies, procedures, and supply chain restructuring seem to be the major inhibitor to business because they are often prohibitively expensive (Saha et al., 2021), in comparison with well-established linear operations, circular business models are apparently more financially risky since most returns to scale are still unpredictable, and payback times are extremely long (Khurshid et al., 2024; Nath et al., 2025). Among the key problems which lie behind these challenges, is the existing disparity in the expenditure between freshly made and reuseable materials. Recycled alternatives can be more costly to collect, sort and process, but virgin resources continue to be less costly because of subsidies and economies of scale that are in place (Engzell & Kambanou, 2024b). This discourages the use of circular material flows by manufacturers. Moreover, small, and medium sized businesses (SMEs) that dominate the textile sector of most countries have a significant obstacle of inaccessibility of green finance, loans and government subsidies specifically designed to serve circular projects (Faisal-E-Alam et al., 2024). The sum of large start-up expenses, financial risk, and asymmetrical access to capital are particularly negative factors that reduce the rate of circular adoption.

Barriers Related to infrastructure and Technology

The financial difficulties are complemented by major technological and infrastructural limitations retarding circular development (Ali, Shear, & Hussain, 2026). One of the greatest problems is the inadequacy of technologies in recycling, particularly the aspects of handling complexities of mixed-fabrics (e.g., polyester-cotton) that dominate the modern textile market. Most of the garments are physically down-cycled to more low-value products or, overall, discarded in landfills due to the absence of accessible and cost-effective chemical recycling methods (Ponnambalam et al., 2023; Wei et al., 2024). A lack of a proper framework in reverse logistics is also contributing to this technological gap A major obstacle that remains in force is the creation of efficient mechanisms of collection, sorting, and re-turning pre-consumers' textile waste into the production cycle. The scope and organization required to ensure a consistent and clean delivery of materials to be used in the recycling activities tend to be unavailable in the existing infrastructure that is often scattered (Saccani et al., 2023). The lack of standardized organization procedures and excessive labor costs required to identify the products manually makes the circular supply chain inefficient in terms of financial and operational aspects (Mamun et al., 2023). Also, the integration of Industry 4.0 technology is not at an advanced level. On the technologies that are encompassed in the blockchain to traceability, Artificial intelligence (AI) to perform automated sorting, and also referred to as IoT, to manage waste. The expenses associated with implementation, coupled with a shortage of technical expertise and skills, as well as interoperability issues within intricate global supply chains, hinder the adoption of these digital tools. Despite their potential to significantly enhance circularity (Hmamed et al., 2024). These challenges function as considerable barriers that prevent industry from moving beyond theoretical discussions into the realm of technologically driven circular solutions.

Organizational and Managerial Barriers

Internal organizational dynamics exert a significant influence against the adoption of circular practices, surpassing the limitations posed by external factors such as technology and finance. The general ignorance and technical incompetence of the management staff and the working staff regarding the concepts of CE and the actual implementation avenues is an ongoing and inherent issue (Nath et al., 2025; Saha et al., 2021). It is because of this knowledge gap that circularity is often viewed as a secondary, non-essential,

indeed an optional, green activity instead of a core strategic pillar of long-term innovation and resilience. This perception is usually caused by a fundamental resistance to change and a cultural tendency to have a traditional linear business model. Since the circular transition has less predictable and more often longer-term returns, managers that are accustomed to the predictable short-term cycle of profit in a linear system may be reluctant to take the major overhaul of operations that is necessary (Kazancoglu et al., 2022). This dissent is also philosophical in nature; this manifests itself also in lack of strategic vision and concern by top management about circularity. Projects that involve circles lack momentum and are often abandoned to more traditional duties if there is no explicit backing on it by the leadership or determined resources and personnel are not resolute (Faisal-E-Alam et al., 2024). This leads to a lack of qualified experts, who possess the unique knowledge and skills of supply chain management and sustainability knowledge and skills, to plan and operate circular systems even in a situation where there is a willingness to do so (Hartley et al., 2022). The internal capacity to endure slow progress is referred to as cultural resistance. It has been shown to significantly impact organizational because the transition to circularity demands a substantial transformation in organizational capabilities and mindset in addition to financial resources and technology.

Social, Market and Regulatory Barriers

The transition to a circular economy is made more difficult by a complex web of external factors related to the market, regulatory framework, and consumer behavior. A major market failure contributing to this issue is the price disparity between virgin and recycled materials. Virgin natural resources tend to be cheaper due to government subsidies for fossil fuels and economies of scale. As a result, manufacturers find it financially challenging to use circular inputs, as the costs of collecting, separating, and processing post-consumer materials are prohibitively high (Engzell & Kambanou, 2024). Additionally, the lack of effective regulatory oversight and clear policy guidelines exacerbates this situation. Textile producer responsibility (EPR) legislation is either absent, ineffective, or not adequately enforced in most regions. Due to this, the businesses investing in circularity can be disadvantaged in competition with those that still engage in the less sustainable yet cheaper linear approaches (Sharma et al., 2025; Zoumpalova et al., 2023). Without explicit government signals, like tax breaks on using recycled material or stringent regulations against landfilling, the economic argument of circularity remains weak. Lack of awareness and acceptance of the product by the consumers is a significant social impediment on the demand side. Even with growing concern over the environment, the culture of fast fashion, a need to acquire novelties, and the inability to stop thinking about the lower quality or hygiene value of second-hand products continue to drive linear consumption patterns (Charnley et al., 2022). When innovative business models lack access to the market volume to become profitable and scale because of the absence of a high demand of circular goods and services, e.g., clothing rentals, maintenance, or recycled fabric-based products, a vicious circle that limits circular growth is formed.

Integrating the Relationships and Hierarchy of Barriers

The thematic analysis above demonstrates that the obstacles to a circular textile economy are not isolated, but rather a complex interconnected system, where issues in one sphere often complicate the situation in another sphere. The most noticeable observation among the literature is that though there are certain barriers to the resultant effects, others are their causal agents. This causal framework helps managers and policymakers identify what order to focus on first when making interventions and ensuring that they remain certain about treatment of the symptoms of more serious issues (Rayhan et al., 2025; Sharma et al., 2025). As an example, the lack of powerful regulatory structures, or a regulatory obstacle, has often been cited as one of the reasons. The economic disparity between virgin and recycled materials can continue to exist because of the laissez-faire environment resulting from the absence of regulations like Extended Producer Responsibility (EPR). This economic unpredictability complicates managers' willingness to invest in circular technologies and business models. This ripple effect demonstrates how failure in regulation can hinder organizational and economic innovation by impacting the entire system (Kazancoglu et al., 2022). On the other hand, low consumer demand can function as both a cause and a consequence of social barriers. Its main drivers include a lack of knowledge and cultural preferences, while factors like unaffordable prices, the unavailability of circular products, and economic and technological obstacles also contribute to the issue. This creates a vicious cycle: businesses are reluctant to invest in circular products when demand is low, and consumer demand cannot increase without available options (Charnley et al., 2022). Breaking this cycle requires coordinated efforts across multiple areas, such as consumer education initiatives and financial incentives for producers (Charnley et al., 2022).

Drivers

The significant environmental impact of the textile industry, along with its substantial resource consumption, has made the shift from a traditional "take, make, dispose" approach to a circular economy (CE) a challenging systemic change (Shamsuzzaman et al., 2025; Yerushalmi & Saha, 2025). This change is not occurring quietly; rather, it is fueled by a powerful and interconnected set of

factors that exert pressure and encourage transformation at every level of the value chain (DiVito et al., 2025; Farrukh & Sajjad, 2024). These factors act as internal motivators that promote strategic innovation, while also presenting external pressures that necessitate adaptation (Faisal-E-Alam et al., 2024; Nath et al., 2025).

These motivating factors can be generally categorized into five interconnected areas, based on a review of existing literature: social and cultural influences, market and economic influences, technological and innovation influences, organizational and internal influences, and regulatory and policy influences (Gil-Lamata & Latorre-Martínez, 2022; Moktadir et al., 2020). To effectively speed up and encourage the change to a more environmentally friendly and circular textile system, policymakers, industry stakeholders, and academics must have an in-depth knowledge of this complex driver's surroundings (Chourasiya & Malviya, 2025; Saha et al., 2021). Each of these categories will be discussed in detail in the sections that follow, along with the processes by which they affect the adoption and development of circular economy practices.

Regulatory and policy drivers

A key external factor driving the textile and apparel industry's shift towards sustainability and circular economies (CE) is government involvement through policies and regulations (Ali, Shear, & Hussain, 2026). By creating a structured environment that encourages innovation while ensuring compliance, these frameworks effectively lower the obstacles to transitioning from linear models. Policies serve two main functions: they establish important environmental performance standards and provide the financial support necessary to enable circular practices (Fischer & Pascucci, 2017; Yerushalmi & Saha, 2025). The implementation of stringent environmental regulations and Extended Producer Responsibility (EPR) programs is a key factor in promoting sustainability. These policies mandate that manufacturers take responsibility for the entire lifecycle of their products, including their disposal once they are no longer usable. This approach effectively brings environmental costs into the equation, costs that were previously shifted elsewhere. A notable example is the European Union's comprehensive strategy for eco-friendly textiles, which promotes circular practices by setting legally binding targets that impact both global supply chains serving the EU market and its member states (Coscieme et al., 2022). These guidelines clearly outline compliance requirements for businesses operating in these areas. They often impose strict regulations on hazardous substances, prohibit the irresponsible disposal of textiles, and establish specific mandates for waste reduction (Roberts et al., 2023). A prime illustration of how top-down policies can foster systemic change is found in the Netherlands. A significant catalyst for this change has been the national "circular textile mission," which seeks to achieve complete circularity by 2050. This ambitious policy has spurred the creation of cooperative networks and innovation systems aimed at developing solutions for mechanical recycling, chemical recycling, and second-hand markets, inspiring action within the industry (Reike et al., 2023). In this way, national industrial policies that provide detailed action plans for the textile industry, such as Malaysia's Fourth Industrial Master Plan, actively include circularity by setting up formal systems for collecting and repurposing textile waste (Farhana et al., 2022). A crucial aspect of policy-driven transformation is the introduction of positive economic incentives that extend beyond traditional command-and-control regulations. Recognizing the considerable upfront costs and financial risks associated with transitioning to circular models, governments often employ various financing strategies to promote investment. These strategies include targeted funding for research and development (R&D) in recycling technologies and sustainable materials, tax incentives for businesses practicing circular principles, and direct subsidies for green technology initiatives (Chourasiya & Malviya, 2025; Firdaus et al., 2025). Research from China demonstrates that successfully implementing such strategies involves tax reductions and financial subsidies, which have been crucial in fostering industrial collaboration within eco-industrial projects. This approach enables one company's waste to be transformed into a resource for another (M. Yu & Zhao, 2015). The presence of these incentives is quite revealing. Studies indicate that the lack of government funding often serves as a significant obstacle in countries like Bangladesh and Pakistan, emphasizing its vital role as a motivator when it is available (Kumar & Dua, 2022; Nath et al., 2025).

Market and Economic Drivers

The textile industry is being significantly driven toward circularity due to powerful market forces and pressing economic factors, along with regulatory pressures. These conditions are making circularity a more appealing option for generating value and gaining a competitive edge, as they are linked to shifts in financial viability assessments and evolving strategies among supply chain participants (Leal Filho et al., 2025; Saberi et al., 2019). The pressure from global value chains has emerged as a significant market force. Major fashion brands and multinational companies are increasingly imposing strict environmental standards on their suppliers to meet consumer demands and uphold their sustainability commitments. This trend is particularly evident in major manufacturing centers such as Vietnam and Bangladesh, where supplier interviews indicate that the primary motivation for adopting circular practices stems from the requirements set by buyers. Embracing these practices is crucial not just for maintaining contracts and building trust, but also for ensuring a stable place within the global supply network; it is not solely about protecting

the environment (Nath et al., 2025; Saha et al., 2021). Simultaneously, there is a significant market demand driven by a meaningful change in consumer preferences. Corporate strategies are being directly influenced by the increasing demand for sustainable and circular products from a growing group of environmentally aware consumers who have considerable economic impact. Research conducted across various markets, including Australia, India, Moldova, and the European Union, indicates that consumer awareness, preferences, and their readiness to pay for certain attributes are key factors in this trend (Iordachi et al., 2024; Klemm & Kaufman, 2024; Shamsi et al., 2023). Consumers are increasingly prioritizing circular products' characteristics like durableness, recyclability, and recycled content over more conventional considerations like brand appeal, according to studies using techniques like choice-based conjoint analysis. However, price is still a crucial consideration (Klemm & Kaufman, 2024). As key internal drivers, the circular economy model provides clear and attractive financial advantages. These include the creation of new revenue chain from waste valorization through recycling and resale, the reduction of expenses related to waste disposal and the procurement of virgin materials, and significant improvements in resource efficiency (Farrukh & Sajjad, 2024; Saha et al., 2021). Many of the technical barriers that have traditionally impacted circularity are successfully addressed by these drivers, which offer the required tools and abilities to close materials cycles, optimize resource flows, and generate new value from waste (Luoma et al., 2022; Silva & Morais, 2022).

The deployment of digital and Industry 4.0 technologies into the chain of textile production is a key technological driver. Circular practices are being revolutionized using big data analytics, block chain, the Internet of Things (IoT), and Artificial Intelligence (Luoma et al., 2023). For example, high-precision, automated classification of post-consumer textiles by composition and color is made possible by AI and computer vision, which is necessary for high-quality recycling (Luoma et al., 2023). The secure record provided by blockchain technology allows for material tracing and sustainability claim verification, increasing transparency and improving consumer confidence in circular products (Zaidi & Chandra, 2025). Additionally, digital platforms enable new accessibility-based business models like renting and leasing, which rely on digital inventory management and customer interactions, while big data analytics optimizes reverse coordination and collection systems, increasing the effectiveness of material recovery (Chourasiya & Malviya, 2025). At the same time, developments in recycling technology and materials science are providing the fundamental technical capability to maintain materials in use. The shift from recycled materials to actual textile-to-textile recycling has been driven by advancements in mechanical and chemical recycling. For instance, blended textiles like polyester-cotton can be broken down into their component monomers by advanced chemical recycling processes, which then allow them to be repolymerized into new, superior fibers (Charnley et al., 2024; Reike et al., 2023). To address the issue of material complexity that has long affected the sector, these technological solutions are crucial. By designing products with their recycling in mind, parallel innovation in material design such as creating clothing made of only one material or parts that are easily separated makes the end-of-life phase more effective and profitable (Coscieme et al., 2022). These technological forces operate together instead of independently. Innovative materials generate flows that are easier for digital systems to track and categorize, while digital technologies enhance the cost-effectiveness and efficiency of new recycling methods. When these elements are integrated, they form a powerful innovation ecosystem that is transforming the textile industry's circular transition from a mere aspiration into a tangible reality.

Organizational and internal drivers

Beyond technology, internal organizational factors play an equally critical role (Faisal-E-Alam et al., 2024; Moktadir et al., 2020). Research studies frequently highlight that leadership and commitment from top management are the key internal factors driving success. According to these findings, this commitment is the most critical element in successfully implementing circular practices (Nath et al., 2025). This commitment is put into action by strategically distributing financial, human, and technological resources to circular initiatives. Senior management plays a crucial role in advancing sustainability goals by integrating circularity into the core business strategy and fostering an organizational culture that emphasizes creativity and calculated risk-taking (Moktadir et al., 2020). Support from the top down is also necessary to empower entrepreneurship, which unlocks innovation from within the company by encouraging staff members to create and support circular projects (Engzell & Kambanou, 2024). The force behind an ethical corporate culture and a true environmental consciousness is closely related to leadership. Many organizations are driven by a fundamental commitment to operating ethically and minimizing their environmental impact, which goes beyond simple market opportunism or compliance with rules and regulations. Even when the immediate financial benefits are not clear, this internal drive is a strong motivator for pursuing circularity (Farrukh & Sajjad, 2024; Nath et al., 2025). Customer loyalty and talent management are becoming increasingly linked to this driver. Strong sustainability principles improve brand image, reduce risk to reputation, and are a crucial tool for attracting and maintaining talent, especially from younger generations that value work with a purpose (Fahera et al., 2024). Additionally, the foremost important organizational drivers are strategic recognition of the importance of ecosystem building and collaboration. The idea that no single business can achieve circularity on its own is a fundamental component of the

CE. As a result, a major internal change involves transforming from a personal, competitive mindset to a collaborative one. Success depends on the motivation to establish strategic alliances through shared supply chain networks, industrial symbiosis, pre-competitive R&D collaborations, and multi-stakeholder initiatives (Colombo et al., 2025; DiVito et al., 2025). It would be impossible for individual actors to achieve economies of scale in collection and recycling without these partnerships, which also enable knowledge sharing and risk mitigation (Yu et al., 2015b). This driver shows a strong understanding that establishing new, collaborative value networks is essential for transitioning to a circular economy.

Social and Cultural Drivers

The transition to a circular textile economy is based on broader societal shifts in attitudes, understanding, and behavior; it goes beyond merely being a technological or legal concern. By shaping consumer demand and the social acceptance of operations, these social and cultural elements foster the development and success of circular economy business models (Fahera et al., 2024; Palm et al., 2021).

Rising public consciousness about environmental issues serves as a significant driving force. Consumers are becoming more aware of how the textile and garment industry contributes to pollution, resource depletion, and climate change, thanks in part to heightened media attention, research studies, and documentaries (Millward-Hopkins, 2024; Shamsuzzaman et al., 2025). As a result of this increased awareness, there is a social pressure on brands to show that they are committed to sustainability, going beyond greenwashing and implementing circular strategies. Furthermore, there are educational programs that support practical skills and sustainable consumption. A future generation of conscious citizens and consumers can be produced, for instance, through the integration of sustainability and repair skills into educational programs from an early age (Behal et al., 2025).

Circular consumption has been actively marginalized by the rise in popularity of used apparel, online resale marketplaces like ThredUp (a website where a picture of casuals apparel and garments is uploaded to sell out old ones) and Vestiaire (a site where high branded apparels and garments pictures are upload and people buy 2nd hand garments and apparel) collective, and "slow fashion" movements (Behal et al., 2025). Previously linked to minimalism or low socioeconomic status, used apparel is now seen as fashionable, distinctive, and a wise purchase. There are huge market opportunities for resale and rental business models due to this cultural driver, which is especially strong among Millennials as well as Generation Z (Abdelmeguid et al., 2024; Fahera et al., 2024). Nonetheless, studies also show that social stigma and hygiene issues continue to be challenges for certain consumer groups, suggesting that this cultural change is continuing and not yet widely accepted (Behal et al., 2025). Moreover, a significant cultural influence is the evolution of consumer identity and values. Sustainability is becoming a vital part of personal identity and a key factor in brand loyalty for an expanding segment of the market. Consumers are increasingly making purchasing decisions that align with their environmental and ethical beliefs (Klemm & Kaufman, 2024; Shamsi et al., 2023). This aligns with the concept of "conspicuous conservation," where sustainable consumption becomes a status symbol. To connect with these value-oriented consumers and boost brand loyalty, companies are compelled to authentically incorporate circularity into their value propositions (Iordachi et al., 2024).

Data and Methodology

A mixed-methods design combining qualitative thematic synthesis with quantitative bibliometric analysis is used. Providing both a conceptual understanding of the field and a detailed view of its intellectual structure, in line with standard systematic review and science-mapping guidelines (Ali & Shear, 2025). Literature was retrieved exclusively from the Scopus database which chosen for its coverage of high-impact, peer-reviewed journals across environmental science, business, and social sciences. A Boolean search string (barrier* OR driver* OR challenge* OR enabler*) AND ("CE" OR "circular economy") AND (textile industry* OR fashion*) AND (*recycle* OR *reverse logistics*) applied to titles, abstracts, and keywords returned 493 unfiltered documents. This set was then refined to the three most relevant subject areas: Environmental Science (376), Business Management and Accounting (165), and Social Sciences (141). The Business, Management and Accounting category ensured that literature addressing the financial and market/consumer-related dimensions of circular economy adoption central to this study's dual finance and marketing perspective was captured within the final dataset.

A two-stage screening process followed. Inclusion criteria: journal articles, conference papers, and review articles in English that explicitly address CE barriers/drivers within the textile, apparel, or fashion industry. Exclusion criteria: book chapters, editorials, non-peer-reviewed work, studies unrelated to textiles, and publications with only passing references to CE. After manual review of titles, abstracts, and keywords, 132 documents formed the final corpus. A dual analytical framework was applied: a bibliometric performance analysis (via the Bibliometrix R package) covering annual scientific production, leading journals and authors, citation

impact, and geographic collaboration networks; and a science-mapping analysis covering keyword co-occurrence, thematic mapping (motor, basic, niche, and emerging/declining themes), and tree-map analysis of topic prominence.

Results and Analysis

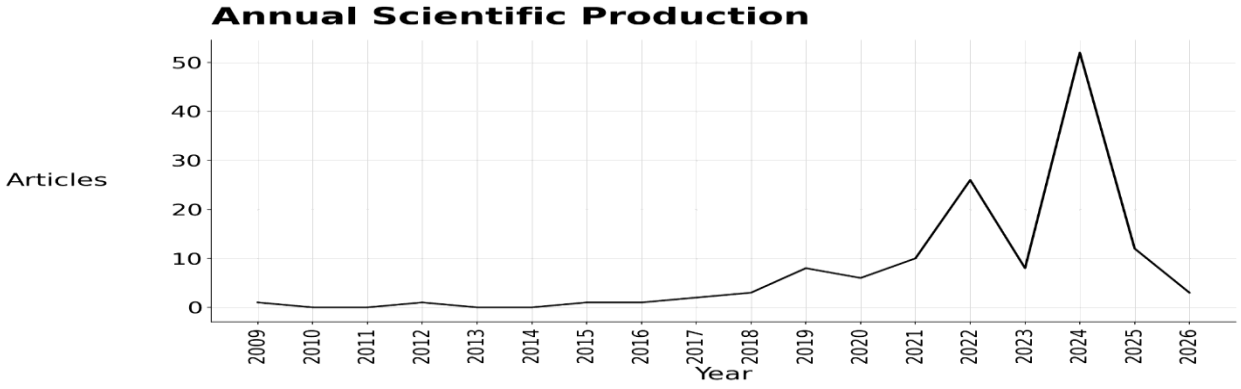
This section analyzes the transition to a circular economy (CE) in the global textile, apparel, and garments sector, based on 132 publications selected from an initial pool of 493 Scopus-indexed documents. Consistent with the study's finance and marketing focus, particular attention is given to financial constraints and market/consumer-driven dynamics, alongside the broader technological, organizational, and regulatory factors identified in the literature. The following analysis presents the key bibliometric findings, dataset characteristics, publication trends, leading sources and authors, citation patterns, geographic distribution, and thematic mapping charting the industry's shift toward a more circular and sustainable future.

Table 1: Main Information

Description	Results
Timespan	2009:2025
Sources	66
Documents	132
Annual Growth Rate	0%
Authors	933
Authors of single-authored docs	0
International Co-Authorship	34.09%
Co-Authors per Doc	10.4
Author's Keywords (DE)	1011
References	1071
Document Average Age	2.64
Average citations per doc	43.56

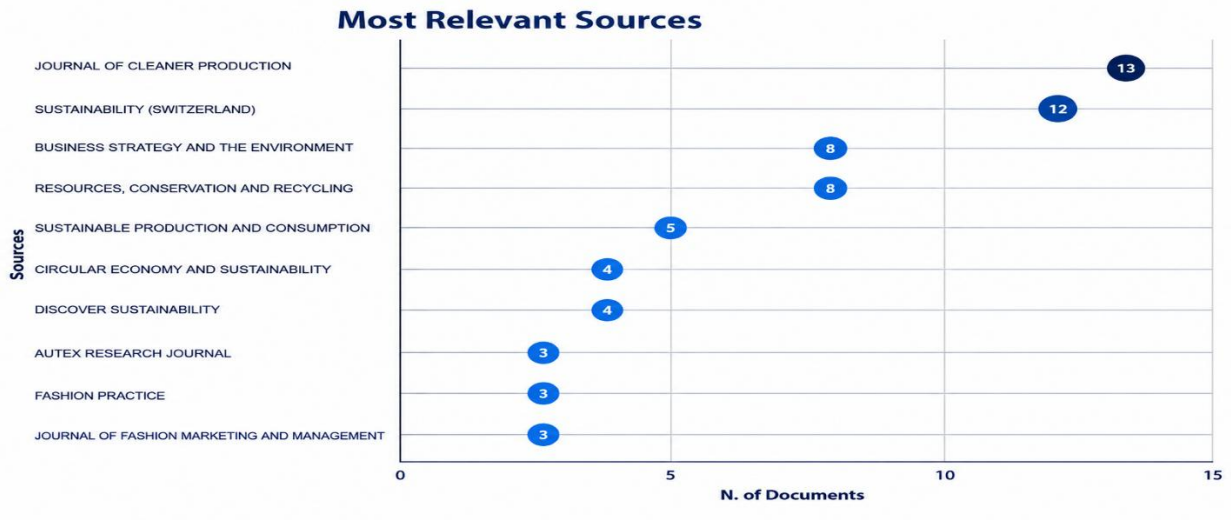
The bibliometric overview in Table 1 summarizes the dataset's key characteristics: 132 documents spanning 2009–2026 across 66 sources, contributed by 933 authors with an average of 10.4 co-authors per document and 34.09% international co-authorship, reflecting a highly collaborative field. The relatively low document average age (2.64 years) and high average citation rate (43.56 per document) indicate that this is a recent yet already influential and rapidly growing area of research.

Figure 1: Annual Scientific Production



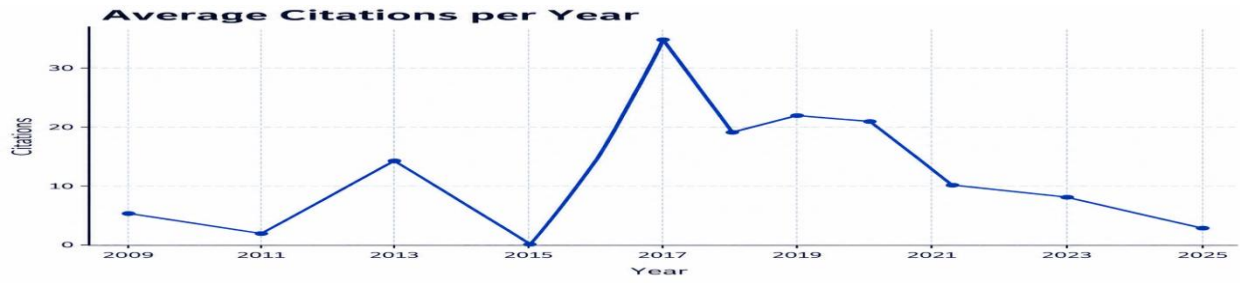
The annual scientific output, shown in Figure 1, shows the development and historical progress of research on circular economy practices in the fabric manufacturing sector. The x-axis's irregular chronology (2009, 2011, 2013, 2015, 2019, 2021, 2023, 2025) shows a clear split into two main stages. At first, the publication pattern in the field was irregular and in its first stages. Prior to 2019, research activity was inconsistent, reflecting a time when the topic stayed a highly specific field of academic inquiry with little sustained engagement, as shown by the significant multi-year gaps between published outputs. Around 2019, there is a significant turning point that signals a clear shift into an exponentially growing phase. The following compilation of data from 2019 onwards shows that the field has become a stable and quickly growing area of study. Several outside factors, such as the worldwide deployment of sustainability rules and laws, increased consumer awareness of environmental challenges, and the influential impact of significant industry reports, most notably the Ellen MacArthur Foundation 2017 publication, "A new Textiles Economy: remodeling Fashion's Future" are closely linked to this remarkable increase in publication output. The textile industry's continued and expected growth trajectory through 2025 highlights how circular economy research has developed into an essential and crucial part of industrial and sustainability studies.

Figure 2: Most Relevant Sources



The main forums for scholarly discussion in this field are a core group of academic journals, which help the intellectual exchange of studies on circular economic practices in the textile sector. The most common source, as shown in Figure 2, is the Journal of Cleaner Production, highlighting the field's solid foundation in environmentally friendly management practices and sustainable production. Sustainability (Switzerland) comes in second, showing the topic's interdisciplinary and widespread appeal. The business case for circularity is a major research stream, as shown by the important intersection of corporate schemes and environmentally friendly development highlighted by Business schemes and the Environment. The field's focus on resource efficiency, waste management, and sustainable consumption patterns is further strengthened by the addition of resources conservation, recycling, and ecofriendly production and consumption. The field is at the intersection of industrial ecology and sustainable business model innovation, as shown by the concentration of publications in high-impact, interdisciplinary journals. This shows the field's significance to both applied environmental science and strategic business management.

Figure 3: Average Articles Citations Per Year



A key indicator of the long-term significance and impact of research published within time periods is the average annual citation rate, which is shown in Figure 3. The data series' journey tells a powerful story about how the field's foundational knowledge has developed.

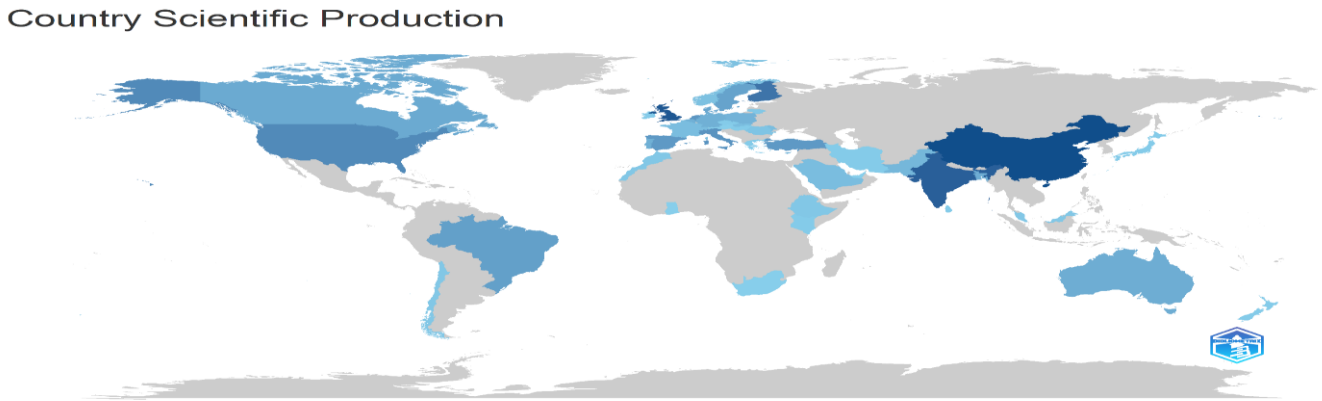
The x-axis of the chart, which shows data points for 2009, 2015, 2017, 2019, 2021, 2023, and 2025, suggests that the most influential research that is, work that is still cited annually was created during the field's rapid expansion rather than its early, early days. It is highly likely that this trajectory is going to peak in 2019 or soon after. This peak shows that, in comparison with articles from earlier or later years, those published around this time have a much higher level of enduring influence. These studies presented ground-breaking research results, theoretical models, or seminal frameworks that served as crucial points of reference for later studies. The curve's later trend will show whether the field's foundational canon was proven in the 2017–2019-time limit or whether more recent publications (2021, 2023) are gaining a comparable degree of rapid influence.

Table 2: Country-Specific-Publication

Rank	Country	No of Documents
1	China	42
2	United Kingdom	39
3	India	36
4	Finland	29
5	United States	22
6	Italy	19
7	Netherlands	18
8	Spain	17
9	Türkiye	17
10	Brazil	15

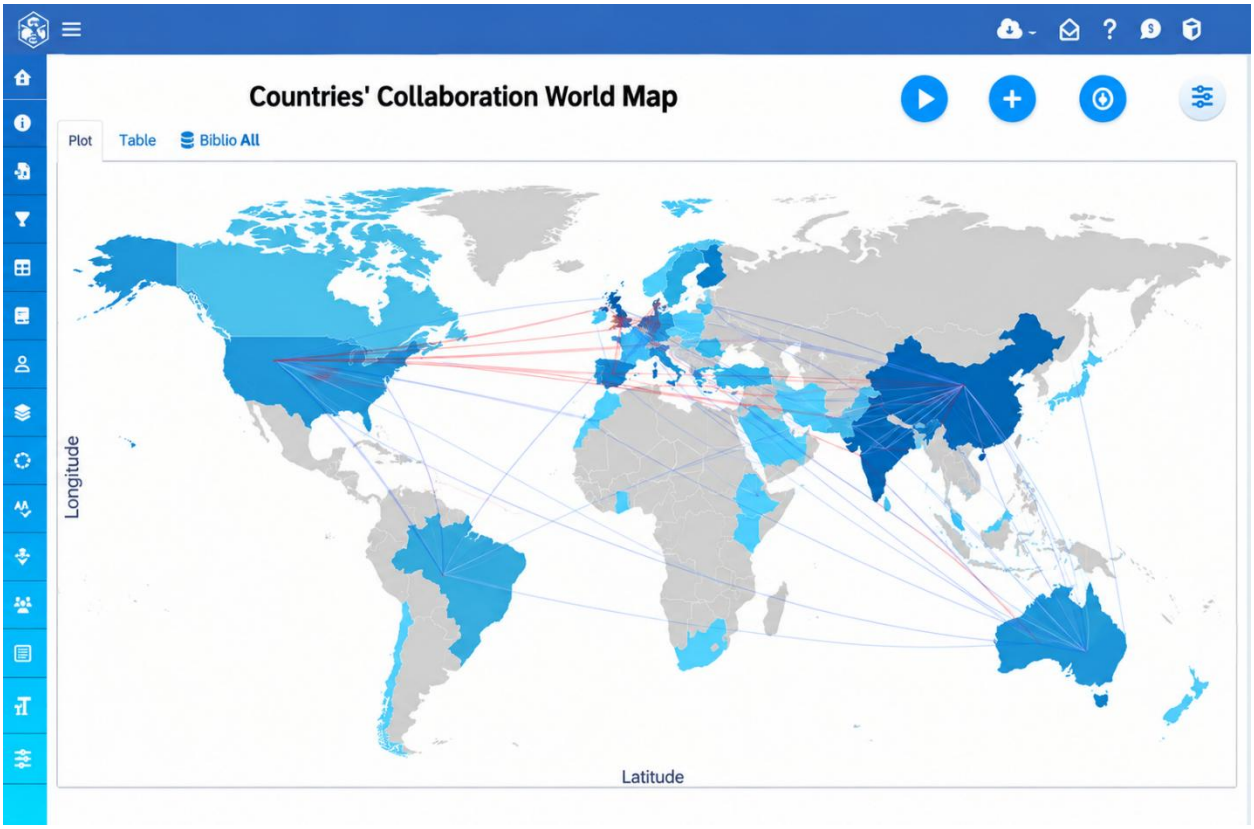
Table 01 shows the geographic distribution of research output, which offers essential information about the global hubs of knowledge generation for textile industry circular economy practices. A strong and distinct leadership trio is revealed by the analysis: India (36 publications), the United Kingdom (39 publications), and China (42 publications). This shows that countries with large textile manufacturing bases (China, India) and those with sophisticated sustainability policies and research ecosystems (UK) are at the forefront of the global push for circularity**.**

Figure 4: Country Specific Publication



With Finland (4th place, 29), Italy (6th place, 19), the Netherlands (7th place, 18), and Spain (8th place, 17) all appearing in the top ten, the importance of European countries is especially noticeable. This focus highlights how strict sustainability standards and EU-wide regulations serve as an effective push for scholarly research in this area. The two main forces behind the circular economy transition industry pressure to innovate and regulatory pressure to comply are highlighted by the fact that both significant manufacturing economies and policy-leading countries are at the top of the list. In addition to highlighting the most active nations, this global map of research activity points to a deficiency in high-impact studies from other major manufacturing regions, suggesting a topic for further study.

Figure 5: Countries' Collaboration Network



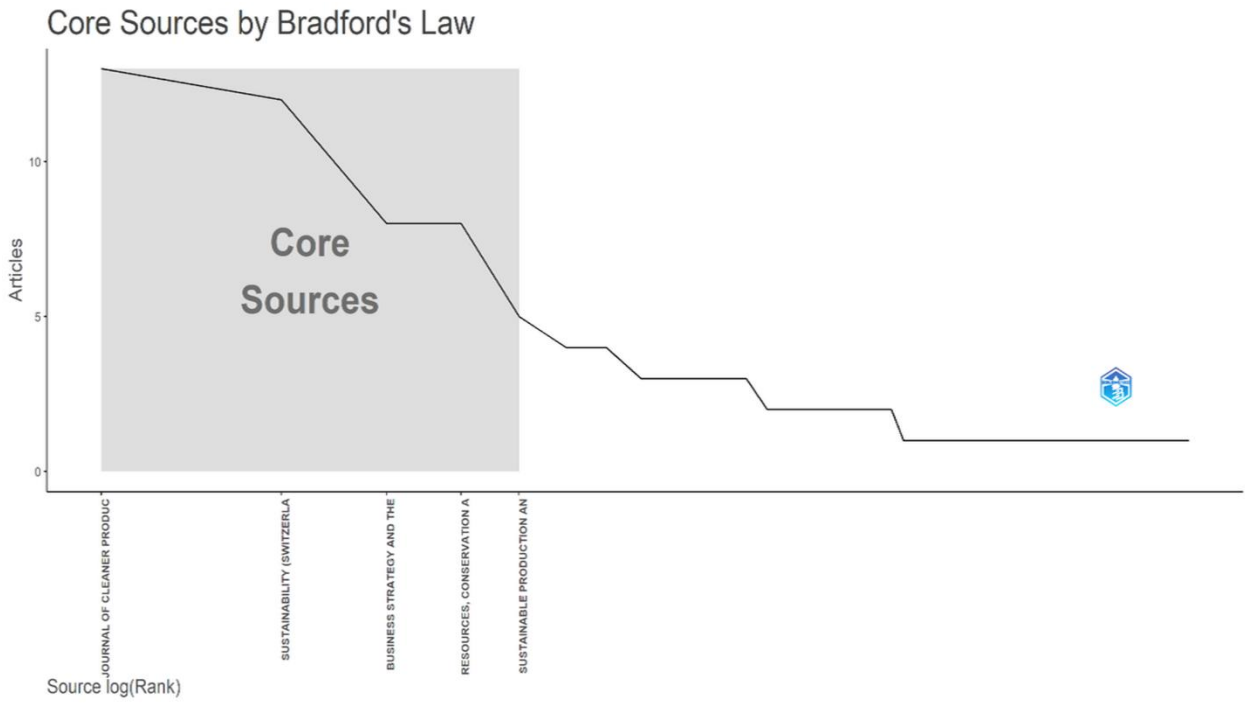
The European Cluster: Finland, Germany, Italy, Spain, the Netherlands, and the United Kingdom represent an intricate system of cooperation. There are also important levels of intra-European research cooperation that are supported by shared EU funding programmes and the policy goals of circular economy. The Asian Hub: China and India are intricately linked and constitute a significant axis of collaboration. As they look for sustainable production solutions, this is a significant knowledge exchange between the two biggest textile manufacturing countries in the world. The North American Hub: With close working relationships extending to the Asian hub (China and India) and the European cluster (particularly the UK and Finland), the US acts as a key link.

Figure 6: Word cloud of keyword



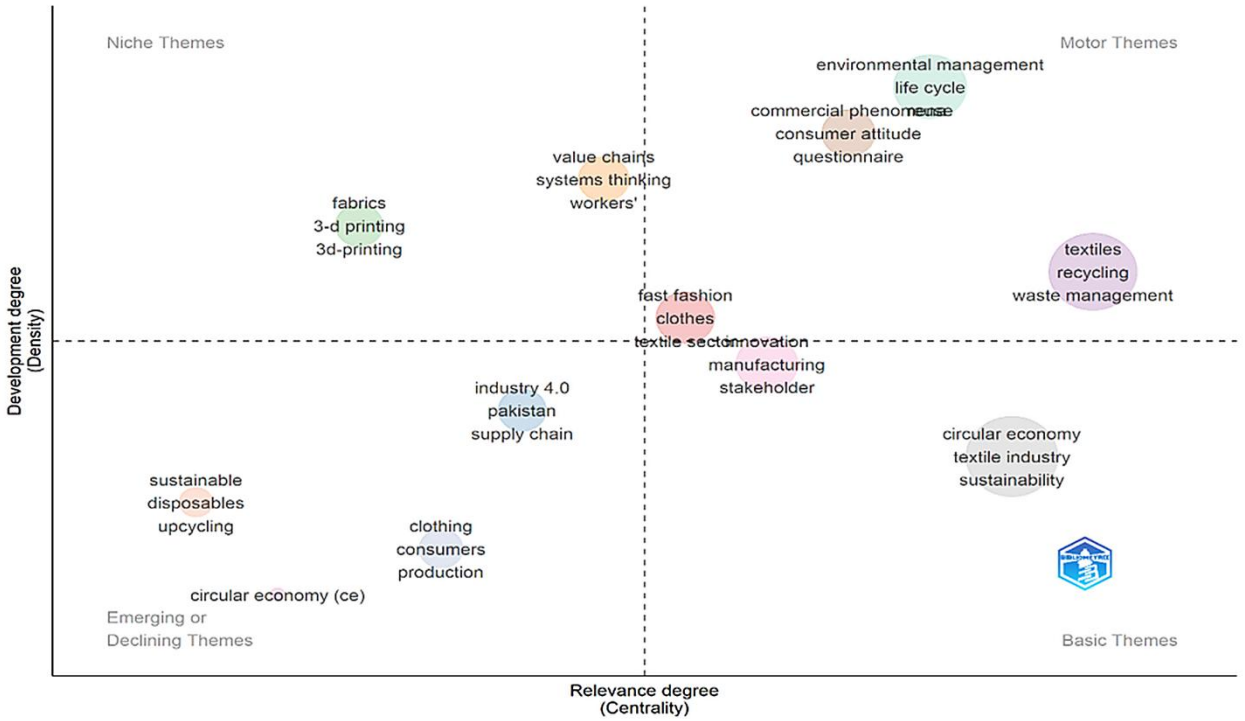
The word cloud highlights attention to the common themes in the research papers on the textile industry's use of the new model which is ecofriendly known as circular economy. The fact that circular economy "CE" is the most popular keyword shows that this idea is the focus of the field of study. Terms like "textile industry," "sustainability," "sustainable development," "recycling," and "textiles" are closely related to it. These keywords imply that to lessen waste and the impact on the environment, researchers are especially interested in incorporating circular practices into the production and consumption of textiles**.** Other terms that appear frequently, like "waste management," "supply chain management," and "fashion industry," suggest that the research also focuses on managerial and operational aspects, which emphasize how the CE can be implemented to supply chains and all industrial processes. The use of terms like "environmental impact," "decision making," and "innovation" further proves that the literature discusses how businesses and policymakers can adopt creative practices and make calculated choices to conduct circular goals, in addition to emphasizing ecofriendly environment sustainability. The word cloud shows that the primary area of research is the intersection of sustainability, the fabric industry, and the circular economy CE. The supporting keywords draw attention to tactics (waste management, recycling), application areas (fashion industry, supply chains), and more general aims (environmental impact reduction, sustainable development). This shows that changing the textile industry's linear model to a more restorative and sustainable circular framework is at the heart of the scholarly conversation.

Figure 7: Core Source by Bradford Law



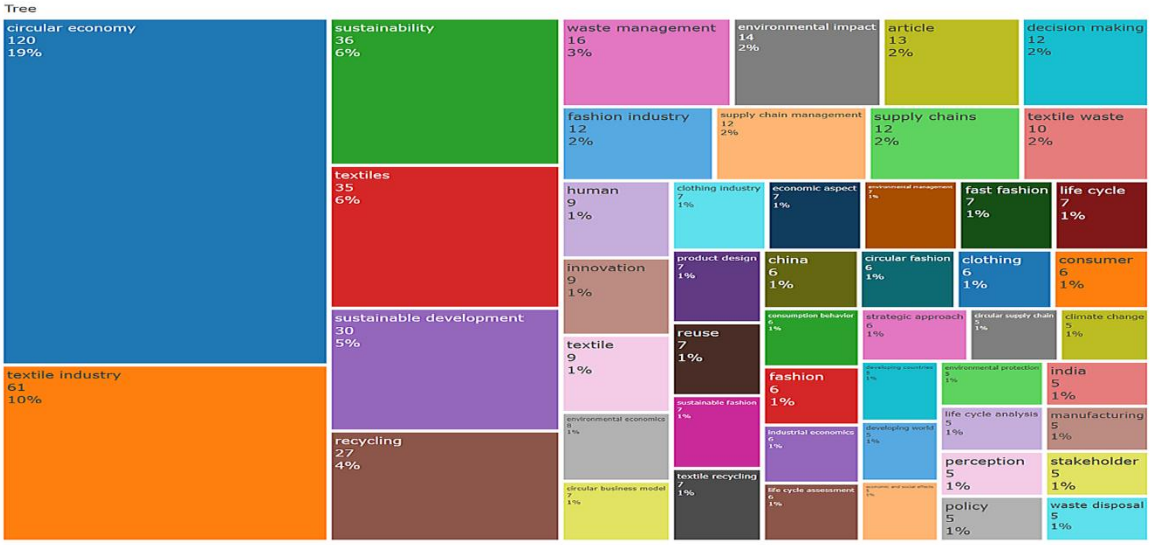
The main journals that publish most studies on the Circular Economy in the textile apparels and garments sector are found by Bradford's Law analysis. The most important sources are shown by the gray area, which includes sustainable production and consumption, business schemes and the Environment, Sustainability (Switzerland), resources, conservation and recycling, and the journal of cleaner production. These journals have the greatest concentration of articles, which suggests that they play the most significant role in furthering studies on textile sustainability and circular practices. The sharp drop outside the core zone illustrates how research is more widely distributed in some top journals and concentrated in a small number of top journals, reflecting a broader distribution of articles across less common sources.

Figure 8: Thematic Map



The intellectual structure of the field can be seen by a strategic diagram in figure 9, that divides the literature into four quadrants. Core, well established research drivers, such as environmental management, life cycle assessment, consumer attitude, and questionnaire-based studies, are known as motor themes (high development/ relevance). Thes serve as the foundation for the current fashion sustainability conversation. Fundamentally significant but underdeveloped ideas like textile recycling, waste management and sustainability are examples of basic themes (high relevance/ low development) these are the important topics that need further investigation. Niche Themes (High development/ low relevance): 3D printing and textile are instances that show minor but methodologically complex themes. Although they are very advanced in specialized subfields, they are not at the center of popular narratives about sustainability. Low development or Declining themes: New or fading ideas such as Industry 4.0, Pakistan, and the Circular Economy CE. Although they are not cohesive now, they might show future lines of investigation.

Figure 9: Three Map Analysis



To measure the relative importance of important themes in the body of research papers on sustainability in the textile apparel and garments industries, a tree map analysis was conducted. An objective indicator of thematic focus and concentration within the academic discourse is provided by this visualization, which is shown in figure 10 and represents each topic as a node whose size is directly proportional to its frequency of occurrence.

The analysis demonstrates a clearer hierarchy of thematic significance: 19 percent of the thematic data is attributed to the circular economy, highlighting a significant movement towards regenerative systems in the sphere. This stands for a notable change in thinking toward regenerative systems in the field. Its classification as an emerging theme on the strategic diagram stands in contrast to its high frequency, showing that although the term is widely used, its methodological application may still be evolving. The theme of the Textile Industry (10%) highlights the focus of the sector on global supply-chain relationships and sector-specific production systems. Textiles (6.6) and sustainability (6.6) are moderately important terms; their frequency reflects a foundational position but also suggests that they might be sometimes used generically, without fully providing empirical support.

The frequency of them shows their status as fundamental ideas, but it also raises the possibility that they are occasionally applied as general terms without more thorough empirical research. Recycling (4%) demonstrates a concentrated but small investigation into resource collection and end-of-life methods. Waste management, environmental impact, fast fashion, supply chains, innovation, and policy were among the smaller, ancillary themes that were also found. These crucial operational and strategic levers are underrepresented in the current literature, as shown by their lower frequency. This highlights important research gaps, especially in studies that concentrate on technological innovation, governance, and the unique dynamics of supply chains in developing nations.

Conclusion

This systematic review has provided a detailed look at the factors that motivate and barriers the adoption of circular economy “CE’’ principles in the global textile sectors, with particular attention to the financial constraints and market/consumer-driven dynamics shaping this transition. By combining insights from 132 important publications, this research gives a well-rounded understanding of the complex shift from a traditional to new model known as circular model. The analysis shows the path to circularity involves a constant interaction of competing factors. Significant barriers exist, including economic limitations, technological issues, organizational pushbacks, and inconsistent regulations. These barriers create a strong lock-in effect for the linear system. Notably, financial constraints, such as high upfront investment costs and limited access to green finance emerged as some of the most persistent obstacles, particularly for small and medium-sized enterprises.

The study underscores several significant factors that are challenging the current situation. Strict regulations, economic incentives, advanced technologies, strategic leadership, and evolving consumer awareness are all driving substantial changes. Market pressures and shifting consumer values stand out as powerful demand-side drivers, reinforcing the study's dual finance and marketing perspective on the circular transition. Bibliometric mapping indicates a rapidly expanding field since 2019, with well-established research on environmental assessment and consumer behavior; however, fundamental concepts like textile recycling require greater focus. The study concludes that while change is inevitable, the pace of transformation depends on how interconnected issues are addressed. Key leverage points identify where these forces can help overcome obstacles, such as situations where supportive policies promote technological investment and were market and consumer demand influence organizational and financial decision-making. These findings highlight the need for comprehensive strategies that integrate regulatory frameworks, industry collaborations, and continuous research. The study underscores that adopting circular economy principles is not only an environmental imperative but also a financially sound and market-relevant strategy for the textile industry to remain competitive and resilient in the global marketplace.

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