

Circular Economy in Textiles- Assessing Economic Viability and Social Impact for Policy Development

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ABSTRACT

The textile sector has adopted the circular economy approach that enables sustainable innovation through novel processes of design production and materials recovery. The research examines textile production under the circular economy framework to evaluate its blend of economic stability with social advantages through financial management and resource utilization. This study evaluates the textile sector's social impact on employment opportunities, workforce training, and enhancements to living conditions. The research approach relies on a literature review to uncover policy deficiencies and mandatory steps toward circular economy practice promotion from a developing country context. Circular models create financial sustainability combined with social progress according to the research findings. The final part of the research presents recommendations for policy updates that will enable the textile industry to become more sustainable and resilient.

Keywords- Circular economy, textile industry, sustainability, waste reduction, resource optimization, closed-loop recycling, circular business models, employment creation, policy frameworks, recycled materials, environmental impact, skill development

INTRODUCTION

The circular economy has created a new path for the textile sector to foster innovation to boost a sustainable business spectrum. A circular economy enables textile organizations to redefine their design, production, distribution, and recycling processes in a green business pattern. The textile industry has been transforming from conventional manufacturing processes to modernized mechanisms in which a circular economy secures desirable attention (Furferi, 2021). At the same time, consumers can participate in the circular economy by donating and recycling consumed reusable products. Textile organizations can encourage their consumers to recycle, reuse, repair, and resell by promoting economic benefits and environmental concerns (Shamsuzzaman et al., 2023). The textile industry can assist consumers in practicing a circular economy by providing convenient recycling and disposal options (De Chiara et al., 2024).

Economy and social welfare are restricted due to the alarming prospects of global warming and climate change. The circular economy can play as an effective tool in mitigating environmental disasters. The processes of the circular economy start from product design. The design determines the possibility of recycling and reuse of circular textile products. A second-hand fashion market where used products can be sold to incorporate a circular economy (D'Adamo et al., 2022). Integrating mechanisms of circular economy reduces the consumption of water, energy resources, and textile wastes. It benefits the economic factors and allows communities to enjoy a higher standard of living (Carvalho et al., 2025; Shamsuzzaman et al., 2021). A smart product manufacturing process and usage can drive the textile sector toward a circular economy. Innovation can enable textile manufacturers to find more recyclable and reusable fabrics and other materials to extend the life cycle of final products (Ramírez-Escamilla et al., 2024; Habib et al., 2021; Memon et al., 2019). The multidimensional benefits of a circular economy in the textile industry need to be addressed and discussed comprehensively.

This study is inspired to explore the benefits and aspects of a circular economy in the textile industry. The study identifies the economic advantages of a circular economy in the manufacturing and commercialization of circular textile products. At the same time, the social impacts of the circular economy are also investigated by discussing and measuring social development. The study provides valuable insight into the textile sector to encourage circular economy for the betterment of organizational, economic, and social progression.

RESEARCH OBJECTIVES

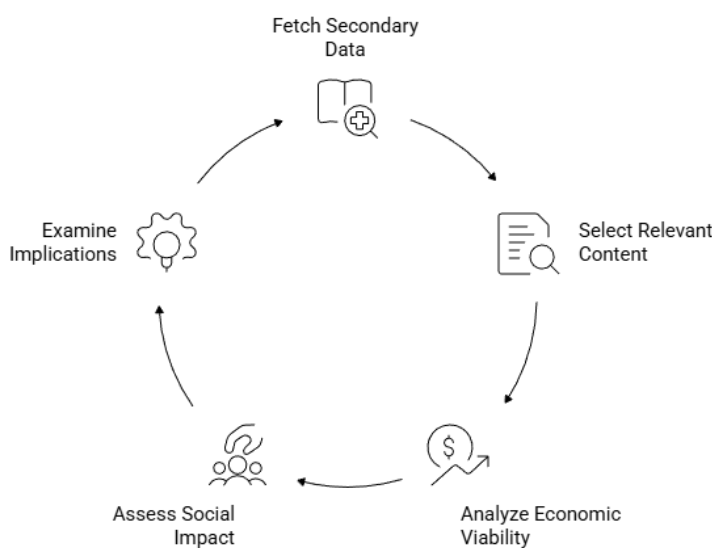
The main scope of the research is to investigate the economic feasibility of adopting the principles of the circular economy in the textile industry in depth and also determine the wider applications of such practices on the social welfare within the industry. This study attempts to find any gap present in the current policy and suggests practical steps that can be taken to promote practices of the circular economy. Similarly, the paper aims at discussing the major opportunities and challenges of the usage of a circular economy model with the final aim at the more sustainable economic and social growth in the textile industry.

METHODOLOGY

The study follows a literature review-based research design to achieve its objectives to investigate the economic viability and social impact of circular economy in the textile industry and find the policy gaps. Secondary data is used to assess and analyze the prospects of circular economy in the textile sector through comprehensive review of studies, reports, case studies, literature, and datasets.

DATA COLLECTION

Figure 01: Circular Economy Analysis Cycle



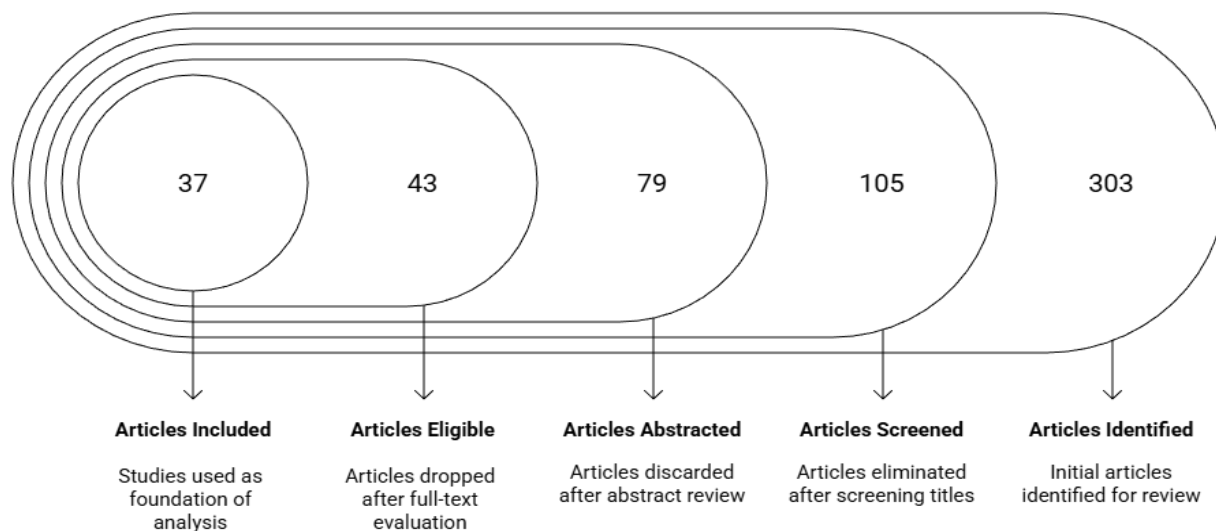
The secondary data has been fetched from multiple sources, including academic literature, case studies, industry reports, articles, news, interviews, and media publications. The contents are selected by considering two sections: i) economic viability and ii) social impact to understand the aspects of circular economy. The economic viability of a circular economy is identified by key points such as cost efficiency, resource optimization, and financial advantage. Social impact is measured by key points such as employment creation, skill development, and a higher standard of living in the textile sector. These factors are focused on finding secondary data from reliable sources to examine the economic and social implications of a circular economy in the textile industry.

DATA SELECTION PROCESS

Data selection was conducted in a systematic and organized manner and entailed four major steps, which included identification, screening, eligibility, and inclusion. At the identification stage, 303 research articles

were firstly identified using various reliable sources of secondary data, such as academic databases, industry reports, policy documents, and relevant case studies on the topic of circular economy practices applied to the textile industry. During the screening phase, 39 articles were eliminated based on duplication and further eliminated the rest articles after screening their titles, a total of 105 articles were eliminated and were not related to the main areas of interest of economic viability and social impact. Afterwards, 159 articles were subjected to the abstract review, and 79 articles have been discarded because of their irrelevance, methodological soundness, and lack of direct connection to the use of circular economy in textile industries. During the eligibility phase, 80 full-text articles were evaluated on content quality, relevance to policy and depth of analysis and 43 of these papers were dropped because they failed to adequately cover the objectives of the research. Lastly, the analysis used 37 studies as the foundation of analysis; they make the empirical and conceptual basis of the research. The chosen articles were powerful sources of information on economic viability, social impacts, and policy gaps concerning the process of implementing the textile industry in the circular economy.

Figure 02: Research Article Selection Process



DATA ANALYSIS

A thematic analysis is conducted to identify, analyze, and interpret the economic viability and social impact of circular economy in textiles. The analysis showcases the policy limitations and necessary actions to boost circular economy practices.

Thematic Analysis

This study conducts the thematic analysis through secondary data sources of academic articles, journals, case studies, interviews, news and media publications. A set of themes are formulated to identify patterns, and concepts to understand the effectiveness of circular economy in the textile sector.

The study analyzes the prospects of a circular economy in the textile industry through two major themes: i) economic viability and ii) social impact. The economic benefits of a circular economy are examined by cost efficiency, resource optimization, and financial advantages. Similarly, social impact is investigated by employment opportunities, skill development, and a higher living standard. The study concludes the proficiency of circular economy in the textile sector through the assessment of these themes and their factors. Graphical formats are used to visualize the outcomes of the analysis. A comprehensive understanding of the usage of circular economy in the textile industry to achieve economic and social benefits is elaborated in the study.

Visualization

The results of the study are illustrated through charts, graphs, tables, and infographics. These visualizations help to understand complex relationships between circular economy and economic and social benefits. At the same

time, the visual representation identifies the policy gaps and appropriate approaches for a successful circular economy model.

Scope of Polity Analysis

A detailed policy analysis is formulated to find existing gaps in policy development in the textile industry to foster circular economy. Effective recommendations are given to mitigate the gaps and achieve proper circular economy. The recommendations are suggested considering regulatory frameworks, encouragements for sustainable practices, and barriers to adaption.

RESULTS AND DISCUSSION

The result and discussion are divided into three major issues related to circular practices in fashion and textile industry including, (i) economic impact, and (ii) social impact.

Economic Viability

Cost Efficiency through Waste Reduction

The modern world textile industry is under pressure from several factors, including the increasing cost of raw materials and the negative impact of linear production systems on the environment. Circular economy has been identified as a feasible approach to these challenges with numerous advantages in costs and environmental stewardship. In its simplest form, circular economy is an economic system that focuses on eliminating waste and making the most use of resources through reuse (Islam et al., 2025). This change from the linear 'take-make-dispose' model to a circular model provides the textile industry with a way to decrease costs, increase resource productivity, and increase environmental performance (Din et al., 2025).

The shift towards a circular economy in the textile industry is likely to have a number of important outcomes, including the potential to greatly decrease the reliance on new, virgin materials. Cotton, wool and synthetic fibers used in production are obtained from natural resources and their production is a costly and energy consuming process that has adverse effects on the environment (Das et al., 2025; Arrigo & Gneccchi, 2025). Through the application of circular economy, firms are able to decrease their consumption of such materials through incorporation of recycled or regenerated fibers in the manufacturing process. According to Furferi, the application of regenerated wool in textile production has its economic and environmental advantages. This study also revealed that regenerated wool not only has the potential to cut procurement costs but also guarantees high quality of the final product, making it a very suitable substitute for virgin wool. This approach allows organizations to reduce costs while meeting the needs of consumers who want environmentally friendly products (Furferi, 2022).

The fast fashion industry has been under a lot of criticism due to the short time it takes to produce clothes and the large amounts of waste it generates. Nevertheless, circular models in this industry have been shown to be effective in practice. Waste reduction initiatives, such as the reuse and recycling of textile waste, offer dual benefits: lower production costs and reduced environmental impact (Shamsuzzaman, 2023). Shirvanimoghaddam found that companies that have adopted circular management have been able to cut their waste management costs by as much as 30% (Shirvanimoghaddam et al., 2020). These savings are derived from the reduction in the cost of waste disposal services and the cost of landfill disposal as well as the value obtained from reusing waste materials. For instance, the waste fabrics may be transformed into yarns or insulation materials that can be sold to generate more income and at the same time cut costs on production.

One of the key principles of the circular economy in the textile industry is the use of closed-loop recycling. These systems guarantee that the materials that are no longer useful are collected, treated, and used to create new products, which in turn means that the materials are not lost in the environment (Shamsuzzaman et al., 2025). Closed-loop recycling does not require the production of new material which is often a costly and resource consuming process stress that recycling fibers from post-consumer textile waste can be economically efficient

(Huang et al., 2024). Their work shows that the use of recycled fibers in textile manufacturing results in substantial savings in the cost of materials without a corresponding loss in effectiveness or quality.

The benefits of closed-loop recycling are also boosted even more when coupled with new technologies and strategies. For example, innovations in the fiber sorting and chemical recycling have enabled the extraction of good quality fibers from the mixed textile waste, which was earlier deemed as non-recyclable. These technologies help firms to recover material from used garments and textiles and make waste a source of value. Moreover, the utilization of technological tools like blockchain and RFID has improved the tracking of products in the supply chain and thus improving the collection and sorting of textile waste for recycling (Sharma et al., 2025).

One more factor that characterizes cost efficiency in a circular economy is the possibility of improving product life and wear. By making products that are long lasting, easy to repair and recyclable, firms can reduce the rate of product replacement and the costs that come with it. For instance, modular fashion products enable the customer to change or modify individual parts of a product instead of buying an entirely new product. This approach helps to minimize waste, but it also creates customer loyalty and brand identity in a very competitive market (Jensen, 2025).

Besides the economic advantages of the circular model, it also has numerous environmental impacts that are becoming more important to consumers and investors. Textile waste that is not sent to landfills and incinerators means fewer greenhouse gas emissions which are beneficial to the climate change goals. In addition, recycling of materials in the production process minimizes the need for raw materials and water, energy and other inputs. These environmental gains improve a firm's sustainability profile, thus improving its brand image and market standing (Butturi et al., 2025; Hasan, 2025).

However, implementing circular economy in the textile industry is not without some challenges even though the benefits are well understood. The foremost challenge is the capital investment costs that are needed to support circularity and related technologies. It is therefore imperative for companies to spend their resources in purchasing new equipment, facilities and training programs for recycling, reusing and waste disposal. Furthermore, the global supply chain is fragmented and there is no uniform approach to recycling that can limit the adoption of circular economy principles. For instance, the process of physically sorting and segregating textile waste into its recyclable categories is still a time-consuming and expensive process especially for fabrics made of a combination of materials. These challenges have to be tackled with the help of cooperation between all the participants of the value chain, including manufacturers, retailers, government and consumers (Nath et al., 2025; Moreira et al., 2025).

Policies and laws of the government are key drivers in the shift from a linear to a circular economy (Firdaus et al., 2025). Several countries have adopted the Extended Producer Responsibility (EPR) policies under which manufacturers are made to bear the responsibility for managing their products at the end of their life. These schemes encourage firms to produce products that are easier to recycle and to collect and recycle products. Also, the financial measures like tax exemptions and subsidies for circular economy opportunities may also contribute to the reduction of the costs of circular initiatives. For instance, the European Union's Circular Economy Action Plan has strategies that aim at encouraging sustainable textile production and minimizing waste to encourage circularity among companies (Sharma et al., 2025).

Another factor that determines the potential of the circular economy in the textile industry is consumer behavior. Raising awareness of the advantages of sustainable fashion among consumers and promoting the use of circular business models, including rental, resale, and recycling, can create demand for circular products and services. Another way through which companies can involve consumers is through take back programs whereby customers return used clothing to stores for recycling or for sale. Such programs do not only minimize wastage but also offer valuable materials for circular production (Falcone & Fiorentino, 2025; Dziubaniuk & Aarikka-Stenroos, 2025).

In the future, the implementation of circular economy concepts into the textile industry can be seen as a major potential for development. New technologies like Artificial Intelligence, Machine Learning, and Big Data Analytics can enhance circularity by enhancing the identification of waste, recycling of materials and management of resources. For instance, the sorting systems that incorporate AI can sort textiles according to the fiber type, which will improve the efficiency of the recycling process. Also, the advancement in the new material like bio-based fibers and biodegradable textiles can also help in minimizing the effects of the industry on the environment (Karmali & Valilai, 2025).

The shift to circular economy in the textile sector offers the industry a clear opportunity to reduce costs by minimizing waste. This paper argues that circular economy concepts like closed-loop recycling, product longevity, and resource efficiency can help companies minimize their use of raw materials, decrease their production costs, and increase their sustainability. Despite the current barriers, circular economy opportunities can be enhanced by the cooperation of the industry players, policy makers, and consumers. Furferi, Shirvanimoghaddam, and Huang show that circular practices not only lead to cost savings but also to the long-term sustainability and sustainability of the textile industry (Furferi, 2022; Shirvanimoghaddam et al., 2020; Huang et al., 2024).

Resource Optimization

The circular economy concerns the efficient utilization of resources at various stages of production, consumption, and disposal. This principle is especially important in the textile industry, which is one of the most water and energy consuming industries. From cultivating raw materials such as cotton to dyeing and finishing of fabrics, the sector is known to utilize large amounts of natural resources, which are inimical to the environment. With the circular economy principles, the textile industry can reduce the negative effects of the industry while improving its performance (Din et al., 2025; Das et al., 2025; Nilmini Bhagya et al., 2025).

Another of the most important principles in circular economy is to use new design concepts for the efficient use of resources. Sustainable design is the development of products that are long lasting, can be easily repaired and recycled and thus remain in use for as long as possible. Huang also points out that sustainable design helps to increase the product life cycle, meaning that production cycles occur less often (Huang et al., 2024). Through producing long-lasting textiles that can endure use and abuse, corporations reduce the demand for new material production, which in turn reduces energy use during the entire life of the product. For example, modular clothing designs and repairable garments not only increase product life but also meet the consumers' demand for sustainable and affordable solutions (Khan & Islam, 2015).

Besides, the sustainable design strategies also promote the use of materials that are easier to disassemble for recycling or biodegrade. This approach will help to ensure that products that are no longer useful can be recycled and fed back into the production process or dismantled in a way that has a low environmental impact. For instance, the use of single material textiles rather than those that are blends makes it easier to recycle them and obtain high quality fibers. In addition, there are biodegradable textiles made from natural fibers like hemp or organic cotton that help minimize the industry's impact on the environment. These principles show that resource optimization starts right from the time of production process conception (Abdul Awal et al., 2021; Saha et al., 2022).

Another effective approach to the management of resources in the circular economy is the use of closed-loop systems in textile manufacturing. Closed loop systems are those which try to get back the used resources like water, chemicals and fibers to be used again thus not having to depend on new ones. Closed loop systems have been reported to have done very well in textile dyeing and finishing, which are two of the most water and chemical consuming processes. In their study, Samanta found that the companies that adopted these systems have reduced water usage by as much as 50% and chemical utilization in dyeing by 40% (Samanta et al., 2021).

The water conservation realized through closed-loop systems is important because the textile industry is a major consumer of freshwater resources. The conventional dyeing processes are known to use large volumes of water and the effluent generated contains toxic chemicals. Closed-loop systems are efficient in that they collect, treat,

and recycle water within the production process, thus greatly decreasing the firm's intake of freshwater and its output of wastewater. This also reduces the pressure on the local water sources and also reduces the cost of water and its treatment (Rouf et al., 2015).

In the same way, the use of closed-loop systems that reduce the use of dyeing chemicals is beneficial to sustainability and financial management. Textile dyeing process uses synthetic dyes and chemical auxiliaries which are hazardous and persistently damaging to the environment. These chemicals are hazardous to water and are also hazardous to the health of workers and the community. Closed-loop systems reclaim and reuse dyes and auxiliaries that are not used, thus improving the efficiency of their utilization. This minimizes the use of chemicals, increases production throughput, and decreases cost for manufacturers.

Closed-loop systems have advantages that are not only environmental, but also operational. Thus, minimizing the amount of waste and improving the efficiency of material and energy flows, companies increase their performance and profitability. For example, through the incorporation of water recovery systems, the firms are able to produce at a steady pace even in water scarce areas. This resilience not only enhances the supply chain robustness but also helps companies to stand out as sustainable manufacturers (Din et al., 2025).

In addition, the integration of digital technologies in the textile production closed-loop systems has been boosted. IoT sensors, machine learning algorithms, and data analytics help in tracking and managing resources in real-time. For instance, IoT sensors in dyeing machines can measure the use of water and chemicals and suggest improvements. Production data is used by the machine learning algorithms to determine the time that a machine will require maintenance hence minimizing on the machine downtime and wastage of resources. These technologies support circular economy principles because they help to get the most out of resources (Sahu & Rath, 2025).

Therefore, the circular economy is a potential way of changing the current approach to resource management in the textile industry. Sustainable design strategies, as discussed by Huang include design for extended use and lower energy use, and closed loop systems for the recovery of water (Huang et al., 2024) and dyes as described by Samanta (Samanta et al., 2021). Combined, these strategies do not only improve sustainability performance but also increase operational performance of the textile industry in a way that will make the sector sustainable and profitable in the future. This is due to the fact that as companies progress and seek to implement circular economy models, they are helping to shape a better future for the industry in terms of resource use.

Financial Advantages of New Business Models

Circular business models are a complete revolution in the textile industry as they propose sustainability while being economically feasible. These models also address consumer trends of repair, resale, and rental through the use of innovative strategies that include the three models. These practices not only help in minimizing the negative effects on the environment, but also open new sources of income, proving that sustainability and profitability are not mutually exclusive.

A good example of the financial benefits of circular business models is the fast development of second-hand clothing applications. These platforms have benefited from the growing consumer interest in second-hand and vintage goods that stem from the need to save the environment and get quality products at a cheaper price. According to Van Loon, organizations that have ventured into the resale business have had higher profit margins as opposed to normal production since such ventures require low costs of production (Van Loon et al., 2018). Therefore, used clothes can be sold by businesses to prolong the life of garments, minimize wastage and at the same earn from a profitable market. Some of the most famous cases are ThredUp and Poshmark, as well as brand-driven campaigns like Patagonia's "Worn Wear" which sells used products to the end consumer. These ventures also offer financial returns while enhancing brand equity by associating with the values of the green consumers.

Besides resale, repair services have become one of the critical components of circular business models. It is through repair and maintenance services that companies ensure that the customers do not dispose of their

garments as quickly as possible. This weakens the need for new products and enhances customer loyalty since the consumer believes the brand is dedicated to sustainable value. For instance, brands such as Levi's and Nudie Jeans have come up with in-store services where customers can repair their torn clothing at a fee or for free. These programs create good will, increase traffic and provide opportunities for cross-selling thus improving the bottom line.

Another type of circular business models is rental services that have been popularised especially in the fashion industry. Rental platforms give consumers a chance to wear high quality, designer clothing at a relatively low cost, which will attract price sensitive and socially responsible consumers. This model is particularly suitable for special occasion garments, which are worn only occasionally, and the items are often purchased for such purposes. For instance, Rent the Runway has proved the concept by achieving consistent revenue increase and a dedicated customer base. Through the use of garments in several rental cycles, the value that is obtained from each piece of clothing is optimized both in terms of cost and conservation of resources (Shamsuzzaman et al., 2025).

Besides these consumer-focused models, advances in fiber recycling technologies have given rise to new possibilities for higher value recycled textile materials that are in growing demand in international markets. Technological improvements in the recycling processes have enabled the extraction of fibers from both post-consumer and industrial textile waste and manufacture high quality fabrics. According to Pandit, companies that engage in the procurement of recycled materials not only help in preserving the environment but also give the company a competitive advantage over its competitors (Pandit et al., 2020). Recycled textiles are priced at a higher level based on the sustainability factor hence the manufacturers can focus on selling the products to the green consumers willing to spend more on eco-friendly products.

In addition, the firms that use recycled textiles in their products gain more customer loyalty and market competition advantage. The connection with the sustainable development concept and innovation helps to enhance the brand image and make these companies more attractive for the target consumers who are concerned with the post-modern and ethical consumption. For instance, Stella McCartney, a luxury fashion brand has embraced the use of recycled materials in their collections and in the process has continued to cement their position in the market.

This paper has identified that the environmental and economic advantages of circular business models are appealing to textile manufacturers. Through waste minimization, efficient resource management and meeting the consumer's demand for environmentally friendly products, these models support both short term profitability and future sustainability. Furthermore, circular practices are also associated with operational cost savings for instance on raw materials and waste disposal costs.

Government policies and regulation also promote the circular business models. Some regions have developed EPR schemes, which require firms to consider product design for disposal and to address the issue of waste management. It is, therefore, important for business organizations to adopt circular business models that can help them meet these requirements and avert legal consequences. Moreover, financial motivators in the form of circular grants and subsidies for circular business practices also exist to help companies adopt circular models.

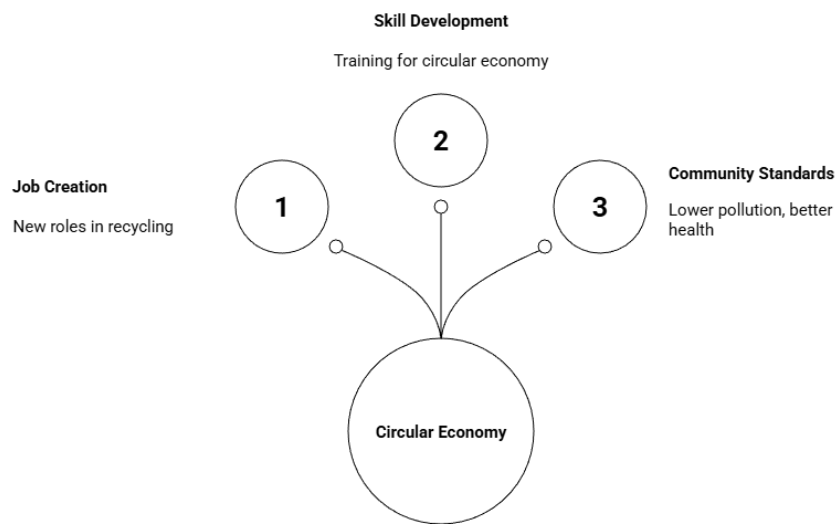
Therefore, circular business models present textile manufacturers with a viable route to profitability and the increasing concerns of sustainability. The examples of second-hand clothing applications, repair services, rental services, and recycled textiles show that these approaches are feasible and profitable. According to Van Loon, and Pandit, those companies that have chosen to invest in circular innovations are able to minimize the negative impacts they have on the environment as well as position themselves well in a market that is becoming more and more focused on the principles of sustainability ((Van Loon et al., 2018; Pandit et al., 2020). With the use of these models, organizations can therefore balance economic development and environmental conservation and therefore sustainability is not a cost but a benefit.

Social Impact

Employment Creation

The concept of circular economy in the textile industry has lots of impacts on job creation (Moreira et al., 2025). With the shift towards sustainable living, there are new jobs in recycling, repairing, and the development of new materials. This change is most apparent in emerging markets as the need for localized recycling and repair services has grown. Samanta shows that there is a possibility of job creation in South Asian textile manufacturing centers where circular economy has enhanced employment opportunities in small scale recycling plants (Samanta et al., 2021).

Figure 03: Social Impacts on Textile Industry



In addition, the emergence of second-hand markets and rent services has created new economic opportunities that have benefited small business people. These markets not only avail affordable clothing to the consumers but also foster local business through new ventures (Shirvanimoghaddam et al., 2020).

Skill Development and Training

To this end, the circular economy needs workers with knowledge and experience in recycling and design, among other things. In order to address this challenge, many governments and NGOs have developed training programs that would help workers acquire the right skills for a circular textile economy. Samanta has pointed out that such training can be best designed by involving all the key players from the industry and academic institutions (Samanta et al., 2021).

These programs have been effective in promoting the development of a workforce that is competent enough to manage advanced recycling systems and sustainable manufacturing systems. Also, they guarantee that workers are up to par with the current changes in the industry thus increasing the chances of being employed and promoted in the future.

Improved Community Living Standards

The positive externalities of circular economy are lower pollution and waste disposal, which have a direct impact on the health of the community. Through reducing the wastage of textiles and preventing the emission of dangerous substances, circular methods help to reduce negative impacts on the environment and people's health. According to Pandit, the residents of the surrounding areas of textile recycling facilities have expressed enhanced environmental conditions, hence enhanced health status (Pandit et al., 2020).

Furthermore, the economic benefits of circular economy are usually reflected in increased wages and better standards of living for workers and their families. This upliftment not only improves the quality of an individual's life, but the life of the entire society.

POLICY IMPLICATIONS

Identified Policy Gaps

As much as the circular economy has the potential to bring environmental and economic change in the textile industry, there are several policy barriers that prevent its implementation. These include lack of regulatory frameworks, lack of financial support, and low public awareness of circular approaches, which are major challenges to circular economy in the sector. These challenges are crucial in order to facilitate the transition to sustainability (Firdaus et al., 2025).

The main problem is that there are no clear guidelines on how textile recycling and sustainable production should be done. Lack of clear and widely-accepted principles makes it challenging for firms to design and maintain efficient and coherent circular systems. Farrukh and Sajjad explain that due to the absence of harmonization of regulation across jurisdictions, companies, especially those that are involved in supply chains, face risks (Farrukh & Sajjad, 2024). For instance, differences in the classification of waste and recycling of textiles are problematic for companies that deal with post-consumer textile waste. This lack of clear regulation hampers the development of recycling technologies and thus the implementation of circular economy principles. Defining common policies for example, the definition of what is recyclable or how the products should be designed could help companies to adapt their business strategies according to circular economy model.

Another key challenge is that there are few and weak financial incentives that can help companies adopt circular business models. Sustainability measures usually involve capital intensive investments in technology, infrastructure and employee training which are beyond the reach of many small firms. According to Samanta, there is no tax exemption, subsidy, or grant for circular economy activities, which hinders companies from focusing on circular economy (Samanta et al., 2021). For instance, SMEs, which form the majority of the textile industry, may not have the capital to invest in closed-loop recycling systems or to design environmentally friendly products. To this end, policymakers should consider offering specific funding opportunities and tax incentives to help all types of businesses implement circular strategies.

Table 1: Major Implications on economic, environmental, and social impacts.

Major Areas	Sub Sections	Implications
Economic Impact	Cost Efficiency through Waste	Reduces dependance on virgin materials like cotton and wool, cutting procurement costs and improving sustainability.
	Resource Optimization	Sustainable designs and long-lasting products decrease production cycles, energy, and material consumption.
	New Business Models	Models like resale, repair, and rental produce new income streams while addressing consumer demand for sustainability.
Environmental Impact	Waste Reduction	Decreased waste generation and landfill usage by recycling and using regenerated fibers.
	Energy and Water Conservation	Reduced consumption of energy and water through sustainable production and material reuse.

	Lower Pollution	Minimizes environmental degradation from chemical dyes and synthetic waste.
Social Impact	Employment Creation	Jobs in recycling, repairing, resale, and rental services, particularly in emerging economies.
	Skill Development and Training	Training programs for circular skills like eco-design, textile sorting, and repair foster workforce adaptability.
	Improved Community Living Standards	Cleaner environments and reduced health hazards from textile waste and pollution enhance local quality of life.

Public enlightenment and consumer involvement are other important factors that determine the effectiveness of circular systems, but these factors are poorly developed in many areas. Few public awareness campaigns have been carried out thus leading to low consumer participation in recycling and reusing products. According to Samanta, consumers are not well informed on the consequences of textile waste and the advantages of circular systems, which results in low engagement with take-back programs and second-hand products (Samanta et al., 2021). Also, there are no convenient and easily understandable recycling facilities available to the consumers which also deters them from participating in circular economies. For example, most take-back programs are either not well marketed or are situated in hard to access places. To this end, there is a need for extensive social marketing campaigns that promote sustainable fashion and explain to consumers how they can support circular economies.

However, the textile industry has problems concerning the implementation of the current policies and the absence of measures that ensure responsibility. However, the problem remains that even where regulations that support circularity are in place, they are often not well enforced or monitored. For instance, the extended producer responsibility (EPR) systems that require producers to take responsibility for the disposal of their products at the end of their useful life are not always properly managed. Some firms are not in a position to fulfil their responsibilities under EPR frameworks due to absence of consequences or rewards. The following recommendations can be made to tackle this problem; enhancing the enforcement measures and enhancing the supply chain accountability can assist in achieving this goal by promoting circular economy.

Trade policies also hinder the integration of circular economy in the textile industry as international trade policies. Most countries have put tariffs and restrictions on the import and export of recycled materials, meaning that circular production requires high-quality input materials that are hard to come by. Such trade barriers hinder the formation of international recycling networks and hamper the growth of circular economies. This problem can be addressed by policymakers through the signing of trade agreements that foster the movement of recycled materials and the collaboration on sustainable production.

Therefore, this paper identifies the following policy barriers to the implementation of circular practices in the textile industry: absence of standardized regulation, inadequate financial incentives, low public awareness, weak enforcement, and protectionist trade policies. These challenges call for the intervention of governments, industries and other civil societies to foster the development of circular systems. Through strong policies, financial aid, awareness campaigns, and global collaboration, policy makers can enhance the shift towards sustainable and resilient textile industry.

Proposed Recommendations

Closing the policy gaps that prevent the application of circularity in the textile industry calls for policy changes, financial incentives, and cooperation between industries, as well as consumer involvement. Circular economy cannot be developed without the collective effort of the government, industries, and the public to form an integrated system. Figure 3 identifying the factors for Closing Policy Gaps in Circular Textile Economy

The governments must ensure that legal and binding frameworks are put in place to ensure that sustainability is embraced at all stages of the textile value chain. The following frameworks should be put in place to support the management of eco-design, waste management, and recycling in the industry: For instance, rules could compel producers to use a specific level of recycled content in their products or to take on EPR schemes. This would help in the development of products by companies with a view of their disposal hence encouraging waste recovery rather than landfilling. Clear and consistent policies would also enable companies to gain the assurance they need to invest in circular activities, encourage creativity, and sustainability.

Another important factor that has to be taken into consideration is the financial motivation that plays a significant role in the promotion of circular practices. Grants for circular initiatives for instance funding for recycling equipment or closed loop supply chain can alleviate the economic pressure that companies experience when adopting circular economy models. Likewise, the lowering of tariffs on recycled materials could encourage the uptake of green inputs thereby making sustainable production cheaper. Carvalho showcased a view that financial assistance that is targeted can assist SMEs to overcome their resource limitations and engage in circular economy (Carvalho et al., 2025). These incentives would therefore guarantee that sustainability is not only environmentally sustainable but also economically feasible for all firms in the textile industry.

It is, therefore, crucial that all the relevant industry players work in tandem in order to develop a circular economy system. Manufacturers, retailers, policy makers and non-governmental organizations need to harmonize their goals and exchange experience. Cross-industry projects can lead to new approaches, for example, recycling schemes or common facilities for textile waste disposal. They can also help in the establishment of supply chain transparency mechanisms through which it is possible to trace the materials and guarantee compliance with sustainable practices. This kind of cooperation helps to build the culture of responsibility and speeds up the change of the industry towards the circular economy.

The same way that public awareness campaigns are helpful in encouraging consumers to engage in circular practices, they are also helpful in encouraging consumers to participate in circular activities. Raising awareness of the consumer on the positive impacts of recycling, repairing, and reusing textiles can lead to behavioral change in the adoption of circular economy principles. For example, campaigns could focus on the environmental effects of textile waste and give people advice on how to wear clothes longer. According to Samanta, that is, the demand-side management is crucial to promote public awareness, and encourage the adoption of sustainable products, as well as to encourage consumers to participate in take-back and resale programs (Samanta et al., 2021). Improved and easily identifiable recycling facilities would also encourage consumers to participate in circular economies.

Thus, the problem of closing the gaps in policy and practice can be solved only through the complex approach that implies changes in legislation and regulation, financial and human resources, partnership, and awareness campaigns. It is therefore important for governments to lay down the right policies and incentives to kick start the process while other players in the textile value chain and consumers have to ensure that the right thing is done to develop a sustainable and strong textile industry. By focusing on these challenges simultaneously, the shift towards a circular economy can be made more concrete, which will be a positive for the environment as well as the world economy.

Implication

The circular economy in the textile industry drives policymakers to consider economic functionality and social aspects while developing major policies. The impacts of the circular economy on economic and social structure shape the policy frameworks. The tools of the circular economy have enabled the textile sector to achieve cost efficiency through waste reduction. Textile corporations can reuse textile products and wastes through the prospects of the circular economy. As a result, organizations can cut production costs and reduce waste-related costs. Again, a primary goal of an organizational process to maximize the use of materials and resources through efficient usage can be obtained through a circular economy. Resources like water and energy are highly used in the textile sector. A circular economy enables textile organizations to make use of water and energy resources in their production processes. It creates a pathway for organizations to follow sustainable business goals to

protect environmental concerns. A circular economy opens multidimensional opportunities for the textile sector while using resources.

Innovation is a new chapter of the circular economy. Reusing products and materials leads to developing new business models. Organizations can benefit from a competitive advantage in the market by offering innovative products through a circular economy. Repair, resale, and rental of resources and products can boost the sustainable development of the textile sector. The circular economy has the capability of constructing the optimum use of materials, resources, capital, and strategies to acquire the utmost efficiency, aligning sustainable business models. These benefits influence the policy developers to emphasize the circular economy in the textile sector worldwide.

Table 2: Aspects of the Circular Economy in the Textile Industry

Aspects	Description
Impact on Policy	Policymakers focus on economic functionality and social aspects. Policy frameworks are shaped by the effects of circular economy on economic and social structures.
Economic Benefits	Reduces costs through waste minimization. Promotes reuse of textile products and materials. Lowers production and waste-related expenses.
Resource Utilization	Ensures efficient use of water and energy. Reduces resource wastage in production processes.
Sustainability Goals	Supports sustainable business practices. Enhances environmental protection efforts. Maximizes material and resource efficiency.
Market Expansion	Expands market reach through recycling and rebranding. Increases production opportunities.
Employment Generation	Creates new jobs in recycling, repairing, and product development. Increases workforce demand.
Skill Development	Encourages training programs for workers. Enhances workforce capabilities in recycling and rebranding.
Social Impact	Improves living standards by creating job opportunities. Strengthens economic growth in communities.

From a societal point of view, a circular economy has a constructive and efficacious effect on people. Organizations following strategies of circular economy create more employment through recycling, repair and the development of new products. A circular economy extends the area of the market and production, needing

more workforce. Consequently, textile corporations provide more training by arranging skill development facilities for the workforce while recycling, repairing, and rebranding new and innovative products. As a whole, a circular economy enhances the standard of living of a community through its benefits. Policy development should have integrated its conventional guidelines with contemporary policies to promote a circular economy in the business models of the textile sector. The current policy barriers must be mitigated to accomplish the economic and social benefits of a circular economy to achieve the goals of sustainability.

CONCLUSION

The circular economy is evaluated as a functional model for the textile sector to obtain economic and social advantages. Textile organizations have encountered favorable outcomes due to the sustainable usage of resources and business operations through recycling and reusing mechanisms. A circular economy allows organizations to have financial benefits through waste reduction, innovation, competitive advantage, resource optimization, and market expansion. At the same time, textile organizations can encourage social benefits by increasing employment and enhancing the skills of the workforce. Through these benefits, the living conditions of societies worldwide can be upgraded and uplifted through models of circular economy in the textile sector. However, policy must align with circular economy to implement the methods of circular economy in the textile industry. There are massive policy gaps in the textile sector to enable the textile industry to integrate a circular economy into its business structures. Legal frameworks, financial incentives, and collaboration among organizations, policymakers, and consumers must be supportive of the circular economy while developing policies.

REFERENCES

1. Arrigo, E., & Gneccchi, F. (2025). A Taxonomy of Sustainable and Circular Apparel Business Models. In *Circular Business Models in the Apparel Industry* (pp. 33-45). Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-80193-8_3
2. Awal, Z. A., Shamsuzzaman, M., & Das, D. (2021). Impact of laser intensities at various DPI and pixel time on the properties of denim garments. *Journal of Advanced Research in Materials Science*, 77(1), 1-13. <https://doi.org/10.37934/arms.77.1.113>
3. Butturi, M. A., Neri, A., Mercalli, F., & Gamberini, R. (2025). Sustainability-oriented innovation in the textile manufacturing industry: Pre-consumer waste recovery and circular patterns. *Environments*, 12(3), 82. <https://doi.org/10.3390/environments12030082>
4. Carvalho, C., Silva, C. J., & Abreu, M. J. (2025). Circular Economy: Literature Review on the Implementation of the Digital Product Passport (DPP) in the Textile Industry. *Sustainability* (2071-1050), 17(5). <https://doi.org/10.3390/su17051802>
5. D'Adamo, I., Lupi, G., Morone, P., & Settembre-Blundo, D. (2022). Towards the circular economy in the fashion industry: the second-hand market as a best practice of sustainable responsibility for businesses and consumers. *Environmental Science and Pollution Research*, 29(31), 46620-46633. <https://doi.org/10.1007/s11356-022-19255-2>
6. Das, A. K., Hossain, M. F., Khan, B. U., Rahman, M. M., Asad, M. A. Z., & Akter, M. (2025). Circular economy: A sustainable model for waste reduction and wealth creation in the textile supply chain. *SPE Polymers*, 6(1), e10171. <https://doi.org/10.1002/pls2.10171>
7. De Chiara, A., Gallo, M., & Simonacci, V. (2024). Re-examining consumer engagement in the circular economy. *Journal of Consumer Marketing*, 41(7), 706-723. <https://doi.org/10.1108/JCM-03-2023-5918>
8. Din, T. U., Zaman, N., Uddin, M. N., Khan, W., Qayum, N., Qayum, S., & Arshad, M. (2025). The Circular Economy Concept in the Textile Industry. In *Enzymes in Textile Processing: A Climate Changes Mitigation Approach: Textile Industry, Enzymes, and SDGs* (pp. 331-361). Singapore: Springer Nature Singapore. https://doi.org/10.1007/978-981-97-8058-7_13
9. Dziubaniuk, O., & Aarikka-Stenroos, L. (2025). Ethical value co-creation in circular economy ecosystems: a case study of the textile industry. *Journal of Business & Industrial Marketing*. <https://doi.org/10.1108/JBIM-04-2024-0288>

10. Falcone, P. M., & Fiorentino, R. (2025). Nudging towards sustainability: Exploring the role of behavioral interventions in circular bio-economy development for the fashion industry. *Corporate Social Responsibility and Environmental Management*, 32(1), 661-678. <https://doi.org/10.1002/csr.2983>
11. Farrukh, A., & Sajjad, A. (2024). Drivers for and barriers to circular economy transition in the textile industry: A developing economy perspective. *Sustainable Development*, 32(6), 7309-7329. <https://doi.org/10.1002/sd.3088>
12. Firdaus, F., Setyono, P., Gravitiani, E., & Liquiddanu, E. (2025). Key Drivers and Barriers to Circular Economy Practices in the Global Textile and Fashion Industries: Sustainable Strategies for the Indonesian Batik Industry. *International Journal of Sustainable Development & Planning*, 20(1). <https://doi.org/10.18280/ijstdp.200130>
13. Furferi, R. (2021). Special issue on innovative textiles in the era of circular economy. *Applied Sciences*, 11(9), 4161. <https://doi.org/10.3390/app11094161>
14. Furferi, R., Volpe, Y., & Mantellassi, F. (2022). Circular economy guidelines for the textile industry. *Sustainability*, 14(17), 11111. <https://doi.org/10.3390/su141711111>
15. Habib, M. A., Bao, Y., Nabi, N., Dulal, M., Asha, A. A., & Islam, M. (2021). Impact of Strategic Orientations on the Implementation of Green Supply Chain Management Practices and Sustainable Firm Performance. *Sustainability*, 13(1), 340. <https://doi.org/10.3390/su13010340>
16. Hasan, M. (2025). My style is sustainability! Unveiling the predictors of sustainable clothing consumption. *Management of Environmental Quality*. <https://doi.org/10.1108/MEQ-08-2024-0364>
17. Huang, X., Tan, Y., Huang, J., Zhu, G., Yin, R., Tao, X., & Tian, X. (2024). Industrialization of open- and closed-loop waste textile recycling towards sustainability: A review. *Journal of Cleaner Production*, 436, 140676. <https://doi.org/10.1016/j.jclepro.2024.140676>
18. Islam, M., Shamsuzzaman, M., Hasan, H.M., & Atik, M.A.R. (2025). Environmental Sustainability of Fashion Product Made from Post-Consumer Waste: Impact Across the Life Cycle. *Sustainability*, 17(5), p.1917. <https://doi.org/10.3390/su17051917>.
19. Jensen, H.H. (2025). Connected Products and Components–The Senses of the Circular Economy. In: *Circular Economy Opportunities and Pathways for Manufacturers* (pp. 345-370). Springer. https://doi.org/10.1007/978-3-031-75279-7_13
20. Karmali, I.M., & Valilai, O.F. (2025). Exploring the Role of Artificial Intelligence for Pattern Recognition of Textile Sorting and Recycling for Circular Economy. *Procedia Computer Science*, 253, pp.346-356. <https://doi.org/10.1016/j.procs.2025.01.097>
21. Khan, M.M.R., & Islam, M.M. (2015). Materials and manufacturing environmental sustainability evaluation of apparel product: knitted T-shirt case study. *Text Cloth Sustain*, 1, 8. <https://doi.org/10.1186/s40689-015-0008-8>
22. Memon, A. H., Peerzada, M. H., Muhammad, K., Memon, S. A., Mangi, S. A., & Mujtaba, G. (2019). Recent eco-friendly developments in personal protective clothing materials for reducing plastic pollution: a review. *Engineering, Technology & Applied Science Research*, 9(2), 4012-4018. <https://doi.org/10.48084/etasr.2674>
23. Moreira, S., Felgueiras, H. P., & Marques, A. D. (2025). Circular economy practices in fashion design education: the first phase of a case study. *Sustainability*, 17(3), 951. <https://doi.org/10.3390/su17030951>
24. Nath, S. D., Mustayin, S. S., & Eweje, G. (2025). Circular economy in a developing Country's textile and apparel industry: managerial perspectives on challenges and motivators. *Business Strategy and the Environment*, 34(3), 3600-3617. <https://doi.org/10.1002/bse.4169>
25. Nilmini Bhagya, K. P., Medagedara Karunaratne, P. V., Ranathunga, G. M., & Ranaweera, A. (2025). Fashion niche market strategies: a systematic literature review. *Journal of Fashion Marketing and Management: An International Journal*, 29(1), 137-163. <https://doi.org/10.1108/JFMM-06-2024-0228>
26. Pandit, P., Singha, K., Shrivastava, S., & Ahmed, S. (2020). Overview on recycling from waste in fashion and textiles: A sustainable and circular economic approach. *Recycling from waste in fashion and textiles: a sustainable and circular economic approach*, 1-18. <https://doi.org/10.1002/9781119620532.ch1>
27. Ramírez-Escamilla, H. G., Martínez-Rodríguez, M. C., Padilla-Rivera, A., Domínguez-Solís, D., & Campos-Villegas, L. E. (2024). Advancing toward sustainability: a systematic review of circular economy strategies in the textile industry. *Recycling*, 9(5), 95. <https://doi.org/10.3390/recycling9050095>

28. Rouf, A., Rasel, S., & Khalil, E. (2015). Investigation of different washing effects on physical and mechanical properties of cotton knitted garments. *Journal of Textile Science and Technology*, 1(3), 101-109. <https://doi.org/10.4236/jtst.2015.13011>
29. Saha, K., Dey, P. K., & Papagiannaki, E. (2022). Implementing circular economy in the textile and clothing industry. In *Supply chain sustainability in small and medium sized enterprises* (pp. 239-276). Routledge. <https://doi.org/10.1002/bse.2670>
30. Sahu, D.K., & Rath, G. (2025). Innovative Approaches to Recover Waste in the Textile Sector. In: *Nanotechnology-Assisted Recycling of Textile Waste* (pp.129-169). <https://doi.org/10.1002/9781394175017.ch5>
31. Samanta, K. K., Pandit, P., Samanta, P., & Basak, S. (2019). Water consumption in textile processing and sustainable approaches for its conservation. In *Water in textiles and fashion* (pp. 41-59). Woodhead Publishing. <https://doi.org/10.1016/B978-0-08-102633-5.00003-8>
32. Shamsuzzaman, M., Hossain, I., Saha, T., Roy, A., Das, D., Ahmed, M. T., & Podder, S. K. (2023). Waste management in textile industry. In *Advanced technology in textiles: fibre to apparel* (pp. 279-299). Singapore: Springer Nature Singapore. https://doi.org/10.1007/978-981-99-2142-3_10
33. Shamsuzzaman, M., Islam, M., Mamun, M. A. A., Rayyaan, R., Sowrov, K., Islam, S., & Sayem, A. S. M. (2025). Fashion and textile waste management in the circular economy: a systematic review. *Cleaner Waste Systems*, 100268. <https://doi.org/10.1016/j.clwas.2025.100268>
34. Shamsuzzaman, M., Kashem, M. A., Sayem, A. S. M., Khan, A. M., Shamsuddin, S. M., & Islam, M. M. (2021). Quantifying environmental sustainability of denim garments washing factories through effluent analysis: A case study in Bangladesh. *Journal of Cleaner Production*, 290, 125740. <https://doi.org/10.1016/j.jclepro.2020.125740>.
35. Sharma, S., Jahanzaib, M., Lee, J., & Park, D. (2025). Global Legislation, Schemes and Standards to Control Environmental Concern for Textile-Generated Waste. *Nanotechnology-Assisted Recycling of Textile Waste: Sustainable Tools for Textiles*, 435-459. <https://doi.org/10.1002/9781394175017.ch15>
36. Shirvanimoghaddam, K., Motamed, B., Ramakrishna, S., & Naebe, M. (2020). Death by waste: Fashion and textile circular economy case. *Science of the total environment*, 718, 137317. <https://doi.org/10.1016/j.scitotenv.2020.137317>
37. Van Loon, P., Delagarde, C., & Van Wassenhove, L. N. (2018). The role of second-hand markets in circular business: a simple model for leasing versus selling consumer products. *International Journal of Production Research*, 56(1-2), 960-973. <https://doi.org/10.1080/00207543.2017.1398429>