## Life Cycle Assessments of Textile Products: A Study Related to Evaluating the Environmental Impact of Production, Use, and Disposal

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#### Abstract

The textile industry has been identified as one of the most environmentally polluting industries in the entire world. The textile industry, especially the "fast fashion" trend, has a number of adverse impacts on the environment as well as a large number of individuals involved in the production of inexpensive clothing. With this in mind, the purpose of this paper aimed to present a Life cycle evaluation of textile goods, which would analyze the environmental effect of textile product manufacture, usage, and disposal. In light of these considerations, this review paper's central argument is on the disclosure of data on the assessment of life cycle assessment (LCA) of textile goods via production, use, and disposal in relation to environmental impacts. This statement of the research problem is based on the existing gap in the review of the literature concerning the framework of the role of implementation of environmental economics. The primary goal of this paper is grounded on an examination of the production, consumption, and disposal phases of the textile industry's Life Cycle Assessment (LCA) in the context of environmental economics. The methodology of the paper is based on the review of selected related literature concerning the debate and feature of the life cycle assessment of textile products by their production, use, and disposal. In these consequences, the present review paper presents a base for developing an understanding of the phenomena of the role of the life cycle assessment. Additionally, the review of this paper is based on the thematic and systematic analysis of the justification of the objectives according to the nature of the study. The current paper utilized the life cycle assessment (LCA) technique because the overall environmental impact of a textile product or process could be most effectively evaluated by life cycle assessment (LCA), which is a technique for assessing environmental impacts related to every phase of a product's life, including raw material extraction, processing, manufacturing, distribution, and use. The research showed that the major problems that make the textile and clothing life cycles unsustainable are the excessive use of water and energy, the application of harmful chemicals, the production of large quantities of solid and gaseous wastes, the employment of non-biodegradable packaging materials, and the use of large quantities of fuel for transportation to geographically dispersed textile units. In addition, the paper concluded that LCA should be performed routinely, especially for new goods and procedures, to monitor their impact on the environment and to suggest the necessary measures that should be taken to reduce the pollution burden and make textile products and processes sustainable. In light of these considerations, this paper provides policy-based recommendations for improving the quality of future research into the effects of globalization on the sustainability of the textile industry's production, consumption, and disposal processes.

Keywords: Textile Products; Life Cycle Assessment; Environment Sustainability; Pollution.

#### 1. Introduction

Life cycle assessment can be defined as evaluating the environmental impact of the production, use, and disposal of textile products in every phase of the cycle. Globally, the Sustainable Development Goals (SDGs) of 2030 provide a framework for understanding the process, drivers, and repercussions of life cycle assessments conducted on textile production from a sustainability perspective. From these perspectives, it is well known that the entire debate on the life cycle assessment (LCA) should be analyzed from the perspective of comprehensive environmental development (Roy, 2014). The effects of nano-silver products on the textile industry provide a foundation for understanding the phenomena of the life cycle assessment (LCA) of environmental contamination in the process of textile goods production, use, and disposal. Additionally, the findings of Abu et al., 2021 suggested that environmental impact gives a right-based approach concerning ensuring better environmental conditions regarding better health for humans as a consequence of globalization. To guarantee the lowest possible environmental effect of textile goods in the context of globalization in textile manufacturing, the life cycle assessment for textile production is based on the application of the eco-efficiency and eco-function-based approach. There is cordial nexus between life cycle assessment and the best available technology (BAT) in the textile

production process (Niemenan et al., 2007). In the context of the product service system and the textile industry, it is realized that the entire debate of the life cycle assessment of textile production is based on the basic analysis of the environmental cost of textile production, use, and disposal in the framework of the sustainable approach of process of textile production (Piontek & Muller, 2018). In the periphery of India, textile production gives a base for the creation of livelihood and employment for millions of Indians. Life cycle assessment (LCA) is based on evaluating the environmental assessment of textile production in the consequences of globalization. In these perspectives, it is important to mention that there is a significant impact of the textile production, use, and disposal process based on the environmental cost in the process of the role of the textile industry in the economy. Therefore, a textile-based economy gives a base for developing an understanding of the process, determinants, and consequences of the life cycle assessment (Roos et al., 2005).

In the context of sustainable goals in India and the rest of the world, it is realized that there is a significant impact of the life cycle assessment (LCA), on the production of textile materials in the economy of India in the consequences of globalization in the context of new liberal economic policies. In these contexts, it is so important to mention that there is a significant contribution of the life cycle assessment in the development of textile production in the process of development practices in the service sector economy (Herrera & Corona, 2020). From the perspective of the use of chemicals in the production of textile products, it is also important to discuss that implementation of the life cycle assessment (LCA) gives a base for developing an understanding of minimizing the risk factors in the environmental impact of the textile production in the context of new liberal economic policies of globalization. Additionally, debate of the life cycle assessment (LCA) is based on the enhancement of comprehensive environmental dialogue in the process of cost and benefit analysis of textile production (Roos, 2017). In the context of India, evaluating and implementing the life cycle assessment (LCA) give a base for developing an understanding of the phenomena of the process, determinants, and consequences of the environmental output in the context of textile production, use and disposal according to the norms and principles of the life cycle assessment (LCA). The entire debate on the life cycle assessment should be based on environmental management in the context of cost and benefit analysis of textile production, use, and disposal in the framework of environmental assessment (Shen & Patel, 2008).

In the context of India, it is well known that there is the significant importance of the life cycle assessment of textile production in the context of environmental assessment in the context of globalization because there is a significant role of the textile industry in the Indian economy, but the fact is that environmental issues and problems are the major challenges before textile industry. From these perspectives, it is realized that it is needed to give a positive role in the function of the life cycle assessment in the context of globalization of the process of production (Periyasamy, et al., 2017). In the case of the production, use, and disposal of silk textiles in India, it is realized that there is a gap between policymaking and implementation in the context of life cycle assessment in the context of sustainable development goals (SDGs) 2030 in the context of globalization in the periphery of globalization and new liberal economic policies on the grassroots level for better enhancement of the environmental balance-based growth and development. The entire debate on the life cycle assessment gives a base for environmental management in the scenario of development (Austudilo et al., 2015). In the context of smart and sustainable life cycle assessment, it is realized that the Indian textile industry is following the norms, guidelines, and rules of the sustainable development goals (SDGs) 2030 in the context of globalization. the entire debate concerning the investigation of the environmental cost and benefit analysis in the periphery of the production, use, and disposal of textile production in the context of environmental impact. The environmental costs and benefits are based on the environmental management of emerging challenges (Jain et al., 2022). In the context of the production of silk textiles in India, it is well known that production of the silk is based on the environmental production and supply of raw material from sericulture in southern India-Karnataka. The process, determinants, and consequences of sericulture are directly associated with the production of environmental-based materials in the consequences of new liberal economic policies in the consequence of globalization. From these perspectives, it is realized that it should be based on the analysis of the environmental cost of textile production in the textile industry (Vollrath, 2013).

Based on the above concise introduction part, there are the following summary points concerning the phenomena of evaluating the life cycle assessment of textile products in the periphery of the consequences of environmental economics:

i. The above introduction part gives a base for developing an understanding of the phenomena of the process, determinants, and consequences of the evaluation of the environmental assessment of textile products in India and

the rest of the world. In these perspectives, a sustainable approach is an important factor in the context of the globalization of consequences of environmental economics.

- ii. In the context of cost and benefit analysis of environmental economics, it is realized that there is a significant role of environmental economics in the enhancement of the evaluation of the life cycle assessment (LCA) by production, use, and disposal of the textile products according to the norms of life cycle assessment. There is a need to give space to debate the environmental aspect of the production and consumption of textile products in the market-based economy on the grassroots level in the consequences of globalization.
- iii. Therefore, it is needed to give a value-based approach to life cycle assessment according to the norms of sustainable development goals (SDGs) 2030. However, there is also a need to identify the basic principles of environmental economics according to the norms and principles of the environmental aspect of life cycle assessment (LCA). From these perspectives, it is also realized that there is a significant need for the life cycle assessment in the textile industry of India because it is well known that evaluating the life cycle assessment (LCA) should be based on the sustainable approach.

#### 2. Review of Literature

Based on the above concise introduction part, a section of the review of literature is based on the critical analysis of the phenomena of process, determinants, and consequences of the life cycle assessment of textile products including its production, use, and disposal in the context of its environmental impact. In these perspectives, it is realized that the entire debate of this paper is based on the critical analysis of the selected review of literature under the approach of the retrospective to the prospective manner of the study design because the nature of the topic is based on the environmental economics about the evaluating of the life cycle assessment (LCA) in the consequences of globalization. In these perspectives, a section of the review of literature is categorized into the following sections:

- i. Critical analysis of the evaluation of life cycle assessment of textile products, and their environmental impact including production, use, and disposal across the globe.
- ii. Critical analysis of the evaluation of life cycle assessment of textile products, and their environmental impact including production, use, and disposal in India
- iii. Critical analysis of the emerging prospects and challenges concerning the life cycle assessment about evaluating the environmental impact of production, use, and disposal of textile products.
- i. Critical analysis of the evaluating of life cycle assessment of textile products, and their environmental impact including production, use, and disposal across the globe.

In the context of Britain, it is well known that there is significant importance of the life cycle assessment of textile products in the textile industry in Britain. The process of production, use, and disposal of textile products are based on the implementation of the sustainable development goals (SDGs) 2030. In the case of Britain, it is also found that British textile industries are adopting the approach of eco-friendly tools in the implementation of the life cycle assessment under the approach of life cycle assessment of textile products by its production, use, and disposal under the approach of the environmental assessment in the consequences of globalization. The entire debate on the life cycle assessment gives a rights-based approach for analyzing the tools of a sustainable approach to the consequences of globalization in the twenty-first century (Hervy et al., 2015). In the context of the United States of America, it is well known that the United States of America is promoting the approach of sustainable development goals (SDGs) in the implementation of the life cycle assessment (LCA) of textile products in the context of environmental economics. On the other hand, the entire debate of the nexus of eco-friendly approach and sustainable goals, it can be analyzed that the textile industry of the USA and its citizens are aware of the environmental impact of textile products, use and its disposal in the consequences of globalization (Blackburn, 2009).

## ii. Critical analysis of the evaluation of the life cycle assessment of textile products, and their environmental impact including production, use, and disposal in India.

In the context of India, it is well known that India is a developing country and has lots of issues, and challenges concerning the phenomena of the environmental impacts by its process, determinants, and consequences. The Indian textile industries are following the rules, regulations, and norms of the environmental assessment of the production of textile products, use,

and disposal under the approach of environmental economics (Nakhate et al., 2020). According to the norms and guidelines of sustainable development goals (SDGs) 2030, India has lots of potential power concerning the phenomena of the challenges of the environmental impact of textile products by its production, use, and disposal in the consequences of globalization. The matter of the environmental assessment of textile products is shifting from the traditional approach of the market-based economy to eco-free.

Friendly-based market in the consequences of globalization. The whole discussion on environmental management concerning the environmental impact of textile products (Muthu, 2015). In the case of India, it is also important to discuss the entire debate of the environmental assessment moving around the life cycle assessment of textile products by their production, use, and disposal. The process of analysis of the environmental assessment concerning the implementation of eco-friendly tools in the production, use, and disposal of textile products but in the case of India it is also found that Indian consumers are not aware about the phenomena of the environmental challenges and consumption of eco-friendly products (Steinberger et al., 2009).

## iii. Critical analysis of the emerging prospects and challenges concerning the life cycle assessment about evaluating the environmental impact of production, use, and disposal of textile products.

In the context of analysis of emerging prospects and challenges concerning the evaluating the role of life cycle assessment in textile products in India and the rest of the world, it is well known that both developed and developing countries are focusing on the implementation of the life cycle assessment (LCA) concerning around the sustainable development goals (SDGs) 2030 (Subramanain et al., 2020). In the context of India, both developed and developing countries are promoting social awareness among its consumers about the consumption of textile products by environmental principles under the approach of sustainable development goals. In these perspectives, it is also realized that these consequences give an approach to better enhancement of the role of social awareness in the market-based economy in both developed and developing countries in the consequences of globalization. There is the significant importance of the life cycle assessment concerning environmental justification (Koszewaska, 2015). In the context of India, it is well known that India is an emerging country of the world economy, in these perspectives, it is also realized that there is a critical situation concerning about the environmental challenges because prospects, issues, and implementation of the life cycle assessment (LCA) give a right based approach to consumers to access the eco-friendly textile products according to the norms and principles of the sustainable development goals in the consequences of globalization in the twenty-first century (Resta et al., 2016).

On the basis of the above concise critical analysis of the review of literature by its process, determinants, and consequences of life cycle assessment (LCA) of textile products by evaluating the textile production, use, and disposal in the consequences of globalization. In these perspectives, there are the following summary points concerning this above debate:

- i. In the perspective of both developed and developing countries are facing the problem of environmental degradation and challenges in the production, use, and disposal of textile products in the market-based economy of India. In these consequences, it is realized that the entire debate of this review gives a base for undean understanding developing an understanding concerning around the phenomena of the life cycle assessment in the consequences of globalization in the market-based economy of India.
- ii. In the perspective of sustainable development goals 2030, it is well known that both developed and developing countries are facing the problems of environmental degradation, but it is realized that there are critical problems concerning around the debate of the eco-friendly production and consumption of textile products in market-based economy of India and rest of world. However, the entire debate of the evaluation of the life cycle assessment (LCA) is based on sustainable development goals.
- iii. There is a need to give space to an eco-friendly approach to the production of goods and services in the framework of sustainable development goals (SDGs) 2030 under the approach of environmental economics in the consequences of globalization. This concise review of literature gives a framework to developing an understanding about the evaluation the environmental products by tools of environmental economics in the periphery of a global-based economy in the consequences of globalization.

iv. Finally, it can be concluded that the entire debate on environmental assessment focuses on the nexus of the economy and environmental assessment in the textile industry in both developed and developing countries. This review paper moves toward justification of the environmental products by their use and disposal under the approach of sustainability. In these contexts, it can be summarized that there is a need to give space to right based approach to consumers in the framework of consumption of eco-friendly products.

#### 3. Methodology

On the basis of the above concise review of literature, it can be summarized that the present scenario of review of literature gives a better justification about the phenomena of the process, determinants, and consequences of the life cycle assessment (LCA) of textile products by its environmental impacts including its production, use, and disposal. There is an existing gap in the review of literature because the selected review of literature gives narrow base information about the process, determinants, and consequences of the life cycle assessment (LCA) of textile products in the consequences of globalization. A major statement of the research problem is based on the unfolding facts about the phenomenon of the life cycle assessment (LCA) of textile products of the globalization, which fills a gap in the review of literature that is essential to developing an understanding of the LCA of textile products and its environmental impacts. The major statement of the research problem sease about the role of environmental economics in the perspective of its environmental impact. However, it is also important to discuss that the entire critical analysis of the review of literature is focused on the nexus of evaluating of life cycle assessment (LCA) and globalization in the consequences of the model and theory of environmental economics. The entire focus of this review paper is based on giving a new sharpness and dimension to the study of the role of life cycle assessment (LCA) of textile products.

Based on the above statement of the research problem, there are the following research questions:

- I. How is life cycle assessment utilized in the textile industry?
- II. How to evaluate the environmental impact of the production, use, and disposal of textile products by using life cycle assessment?
- III. How can environmental pollution be reduced by using life cycle assessment?
- IV. What are changes required in the life cycle of textile products to make them sustainable?

Above research questions are based on the micro-based analysis of the existing statement of the research problem in the consequences of new liberal economic policies in the periphery of the evaluation of the life cycle assessment (LCA) of textile products by its environmental impact including its production, use, and disposal.

Based on the above research questions, there are the following objectives:

- I. To analyze the life cycle of textile products and processes.
- II. To understand the impact of different phases (production, use, and disposal) of textile products on the environment using life cycle assessment.
- III. To find out the changes that are required in the life cycle of textile products to make them sustainable.
- IV. To give recommended policies about better enhancement of the study of the evaluating of life cycle assessment (LCA) of textile products by its environmental impact.

Above concise objectives are based on the research questions, as well as give answers to the prescribed research questions concerning around the study of the evaluation of the life cycle assessment (LCA) of textile products by its environmental impacts. This review paper is based on giving a new approach to the study in the era of globalization because it is well-known that environmental challenges are the major problems concerning the direct penetration of globalization on the grassroots level.

On the basis of the above objectives, the analytical discussion of this review paper is categorized into the following sections:

- i. Analyze the life cycle assessment (LCA) of textile products and its process in the consequences of globalization.
- ii. Evaluating the environmental impacts of production, use, and disposal of textile products by environmental impacts under the approach of life cycle assessment (LCA).

iii. Required changes in the life cycle of textile products to make them sustainable.

The above sections of the discussion part are based on the justification of the concise description of the objectives in the framework of life cycle assessment (LCA) of textile products by its environmental impacts.

Each section of the discussion part covers a total of 5 articles according to the nature of the study and objectives. Each section is correlated and associated with each other as well as leading to the entire discussion and debate concerning the debate of life cycle assessment (LCA) of textile products. The entire debate of the discussion part explains the darkness of the selected review of literature as well as filling the gap in the existing review of the literature.



**Figure 1: Analytical Framework** 

The above analytical framework of the study gives a better justification of the prescribed objectives according to the nature of the study as well as evaluating the life cycle assessment of textile products in the framework of the evaluating of its environmental impact by its production, use, and disposal in the consequences of globalization.

#### 4. Discussion

i. Analyze the life cycle assessment (LCA) of textile products and its process in the consequences of globalization.

In the consequences of globalization, it is also important to discuss that there is the significant importance of the life cycle assessment (LCA) of textile products by its environmental impact including its production, use, and disposal in both developed and developing countries (Steinberger et al., 2009). In the context of the role of life cycle assessment (LCA) of textile products in the consequences of khadi textile production in rural India, findings of the study give a positive role of Khadi textile production in the economy of India in the perspective of decentralization-based economy of India in the perspective of environmental economics (Bhalla et al., 2018). In the context of the use of cotton fabrics, the findings of the study give a broad sense about the phenomena about the role of the life cycle assessment (LCA) of textile products in both developing and developed countries in the consequences of globalization. Additionally, the findings of the study suggest giving a specific approach and dimension to evaluating the life cycle assessment (LCA) of textile products (Yuan et al., 2013). There is a significant role of the life cycle assessment in the consequences of the environmental impact of textile products of the vorte and disposal in India and the rest of the world. Apart from those findings, the study gives a right-based approach to the better justification of access to eco-friendly textile products (Klopffer & Grahl, 2014). From the perspective of the role and evaluation of the life cycle assessment (LCA) of textile products, it is realized that both developed and developing countries are giving a specific role in the phenomena of the measurement of the environmental impact of textile production, use and disposal (Payne, 2015).

# ii. Evaluating the environmental impacts of production, use, and disposal of textile products by environmental impacts under the approach of life cycle assessment (LCA).

In the context of Turkey, it is found that the textile industry is following the norms, rules, and guidelines about the life cycle assessment (LCA) of textile products regarding minimizing the risks of environmental problems (Baydar et al., 2015). There is a need to give space to eco-friendly production, use, and disposal of textile products in both developed and developing countries (Walser et al., 2011). Based on the review of the life cycle assessment, the findings of the study give recommended based policies about the production, use, and disposal of cotton textile products as norms of the sustainable development agenda because it is well known that SDGs gives a rights-based approach to consumers regarding access the eco-friendly products (Chen et al., 2021). In the consequences of evaluation and assessment of the environmental impact of textile production, use, and disposal, findings of the study give a better justification for the phenomena of the role of life cycle assessment (LCA) in the consequences of globalization (Van, 2004). In the consequences of globalization, the findings of the study give a broad sense of the empirical-based study about giving a new dimension to environmental issues in the production process (Ramesh et al., 2022). In these consequences, it is needed to evaluate the role of environmental phenomena in the process of production, use, and disposal of textile products under the approach of norms of environmental principles in the consequences of globalization (Zamini et al., 2017).

#### iii. Required changes in the life cycle of textile products to make them sustainable.

In the context of the sustainable approach, it is realized that prospects and issues of sustainability are an important part of the role of the life cycle assessment (LCA) of textile products in both developed and developing countries, it is also important to discuss the role of sustainability (Erdil, 2019). The cycle of the life cycle assessment is an important part of the development of required changes in the life cycle of textile products according to the norms of sustainable changes. From these perspectives, it is also important to mention that there is a need to give a specific dimension to the approach of the sustainability in production, use, and disposal of textile products (Cepolina, 2012). It is also important to mention that both developed and developing countries are following the norms and guidelines about the sustainable approach regarding the establishment of a new dimension in the framework of the role of life cycle assessment (LCA) under the approach of sustainable development goals (SDGs) 2030 in the consequences of globalization, also there is a need to require changes in the life of cycle of textile products (Diekel, et al., 2021). Both developed and developing countries are giving space to the requirement of a sustainable approach in the framework of the development practices concerning the management of emerging environmental challenges in the consequences of new liberal economic policies of globalization (Lujan et al., 2020). Therefore, it can be concluded that there is a need to promote a sustainable approach in the process of production of textile products and their use and disposal in the framework of the sustainable approach in the process of production of textile products and their use and disposal in the framework of the sustainable approach in the process of production (Lujan et al., 2020). Therefore, it can be concluded that there is a need to promote a sustainable approach in the process of production of textile products and their use and disposal in the framework of the sustain

#### 5. Conclusion

Based on the above concise discussion part, it can be concluded that above prescribed discussion part gives a broad sense of the phenomena about the process, determinants, and consequences of the role and function of the life cycle assessment (LCA) of textile products by its production, use, and disposal in the framework of its environmental impacts. The entire debate concerning the existing conceptual framework of the review of literature and discussion part, it is realized that both review of literature and discussion part give a better understanding of the process, determinants, and consequences of the role of sustainable development approach in textile production. There is a need to promote social awareness among consumers in a market-based economy about the eco-friendly approach to the process of production of textile products by its use and disposal without environmental degradation and harm. There is a need to give a specific dimension to the role of the sustainable approach in the framework of the consequences of globalization in the twenty-first century. It is also important to mention that there is a need to promote a green economy in the textile industry of India because it may be a tool and key to the management of the crisis of environmental challenges concerning the phenomena of the globalization of the textile industry. It can be discussed that there is a need to also manage the emerging challenges of a market-based economy in the framework of environmental economics concerning the sustainable development goals for 2030.

#### 6. Recommended policies

On the basis of the above-concluding remarks, there are the following recommended policies concerning the above debate:

- i. There is a need to promote a sustainable approach in the framework of the phenomena of the promoting evaluating of life cycle assessment in the framework of the sustainable development goals (SDGs) 2030 in the consequences of globalization.
- ii. Secondly, there is also a need to promote eco-friendly production, use, and disposal of textile products in the framework of environmental economics in the consequences of management of emerging challenges in the framework of the cycle of environmental assessment.

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