



Project Proposal for Ph.D.

Project Details

Project Title

Post-consumer textile-to-textile circular supply chain design

Project Summary

(Minimum 500 and maximum 2000 characters)

Textile and clothing is the second most polluting industry after petrochemicals. The unbridled popularity of fast fashion, across the world, is creating enormous environmental problem including climate change. Therefore, adoption and implementation of circularity in textile and clothing supply chain is of paramount importance. Textile wastes can broadly be classified under two heads, namely pre-consumer waste and post-consumer waste. Establishing a circular supply chain for the latter is challenging as the feedstock is heterogeneous due to the presence of multiple fibres, colours and finishes. The prevalence of manual sorting of post-consumer textiles further adds to the problem. At present, post-consumer textile recycling is happening in India in a fragmented manner with very little collaboration among the stakeholders (collectors, sorters, recyclers and textile manufacturers). Therefore, there is ample scope to design and develop Post-consumer textile-to-textile circular supply chain.

This research aims to analyse various aspects, including issues, barriers, practices and performance indicators of post-consumer circular textile supply chain. The research would like to address the following issues.

- Identification of technological challenges in post-consumer circular textile supply chain
- Multi-tier analysis of barriers in post-consumer circular textile supply chain
- Developing a collaborative framework of post-consumer circular textile supply chain

Qualitative and quantitative methods will be used to achieve the aforesaid issues. Questionnaire survey, Delphi, MCDM, PCA, SEM etc. are some of the methodologies which will be used in this research.

Ph.D. Supervisors

Role	Faculty	Academic Unit in IITD/Institute/University	Email ID (Official)
Supervisor 1	Prof. Abhijit Majumdar	Department of Textile and Fibre Engineering, IIT Delhi	majumdar@textile.iitd.ac.in
Supervisor 2	Prof. Surya Prakash Singh	Department of Management Studies, IIT Delhi	sprsingh@dms.iitd.ac.in

Project requirements (Student qualifications, experience required, etc)
1. M.Tech in Industrial Engineering, Production Engineering or Textile Engineering

Source of fellowship/funding
(CSIR/UGC/DBT/ICMR/ICAR/NEET-PG/DST-INSPIRE/IRD/FITT Project details, if any)
Institute fellowship/ Project fellowship

Role of Faculty Members involved:
Prof. Abhijit Majumdar is involved in the areas of sustainable textile supply chain management, risk evaluation and its mitigation. He has expertise in fuzzy multi-criteria decision making and other qualitative decision making techniques. He will be contributing in the identification of circularity challenges of textile and clothing industry and also in development of strategies to cope with those challenges. Prof. Surya Prakash Singh is involved in the areas of facility layout, dynamic supplier selection, sustainable supply chain network design, Industry 4.0 and Big Data analytics. He has expertise in the design of sustainable and integrated supply chain using OR models. He will be contributing in the development of OR based model for the circular textile and clothing supply chain.