

# Circular Economy Adoption and Environmental Consideration: A Study on the Actors of Recycling in Bangladesh Apparel Industry and Plastic Industry

## 1. Introduction

There has been a dearth of research related to the circular economy and its consequences in the context of rising economies (Khajuria et al., 2022), as the literature is centered around advanced economies (Jabbour et al., 2019). This study intends to bridge this gap while making progress on CE research based on the evidence of emerging economies like Bangladesh. The apparel industry of Bangladesh is also actively being addressed by the circularity and sustainability related interventions of stakeholders as the country is in the second position after China in terms of global apparel trade, and holds 7.4 percent market share in the global apparel industry (Shajahan et al., 2023). In this industry, the transition toward circularity is often associated with environmental benefits, achieved by decoupling economic growth from environmental loss and replacing excessive resource extraction (Bukhari et al., 2018). Despite the 3R model of recycling, reduce, and reuse being the primary enabler of a circular economy, only the recycling component is widely practiced in Bangladesh (Ahmed et al., 2022).

Recent research on how global textile value chains contribute to climate change emphasizes the effects of using materials like plastic chemical drums, packaging materials, and polythene sheets from garments and clothing (Palacios-Mateo et al., 2021; World Bank, 2021). Since the 1960s, Bangladesh has grown exponentially to become a significant global hub for plastic production (IDLC, 2015). PET plastic is currently the most common type of plastic waste used in this sector (Hossain & Shams, 2020), although it also includes waste from the clothing industry as well (Sezgin & Yalcin-Enis, 2022). Reusing and recycling post-production plastics from the clothing industry is a significant way to lower greenhouse gas emissions worldwide. However, in the context of Bangladesh's waste value chains for the plastic recycling industry, researchers have not yet addressed this post-production plastic waste. This study aims to address the issue by understanding the adoption of recycling based circular economy on apparel industry and plastic industry; and by exploring what are the environmental considerations the actors of these two interconnected industries have for such adoption.

## 2. Literature Review

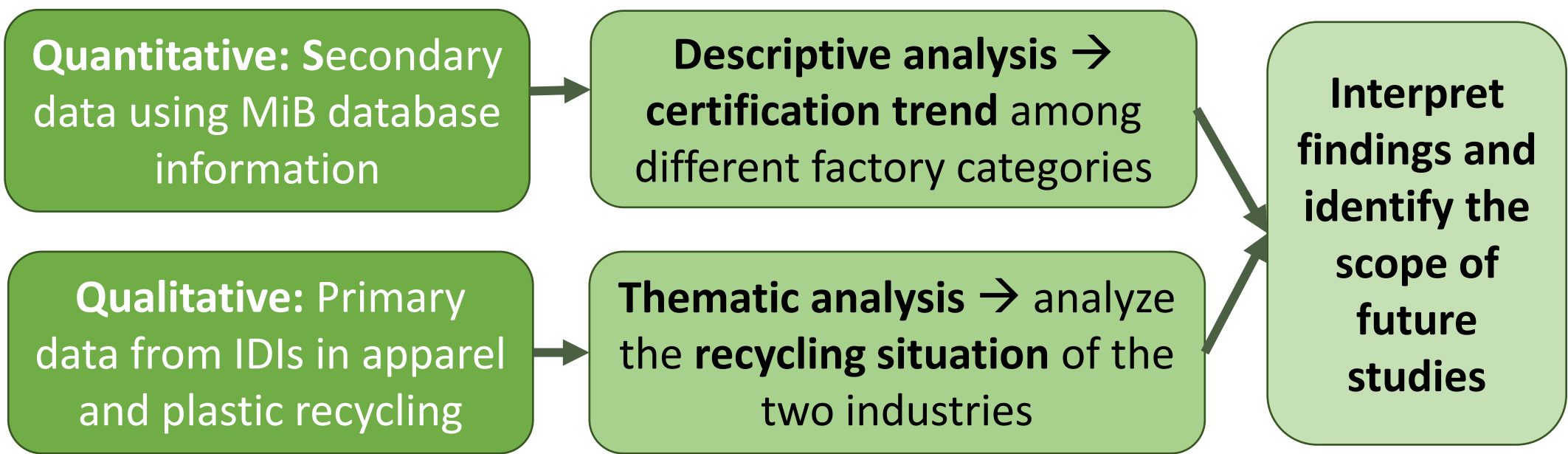
### Apparel industry certifications

- Previous literature showed that certifications are a useful promotional tool for Bangladeshi apparel firms to sustain their firm resources and competitive advantages (Das & Das, 2024) as they provide a framework for ensuring social protection rights, while promoting sustainability and ethical practices.
- Bangladesh apparel industry has made exemplary reputation on achieving LEED certifications (233 LEED-certified green garment factories in Bangladesh till January 2025, as reported by [The Daily Star](#)).
- However, there has been limited knowledge, research and promotion on the certifications that apparel factories are receiving related to circular economy and recycling.

### Plastic recycling overview

- The plastic industry in Bangladesh is responsible for the generation of around 3,000 tons of plastic waste daily, with 646 tons in Dhaka alone (TBS Report, 2024).
- Approximately 87% of plastic waste in Bangladesh remains uncollected and entirely unmanaged (Yoshijima et al. 2021) while only 36% of plastic waste was recycled in 2019, a significant decline from the 51% recycling rate reported in 2006 (Star Business Report, 2023).
- There were around 3,000 recycling facilities in 2018, employing 5,400 workers, only 200 were registered, representing that a major 93% operated informally (Seck, 2024)

## 3. Methodology



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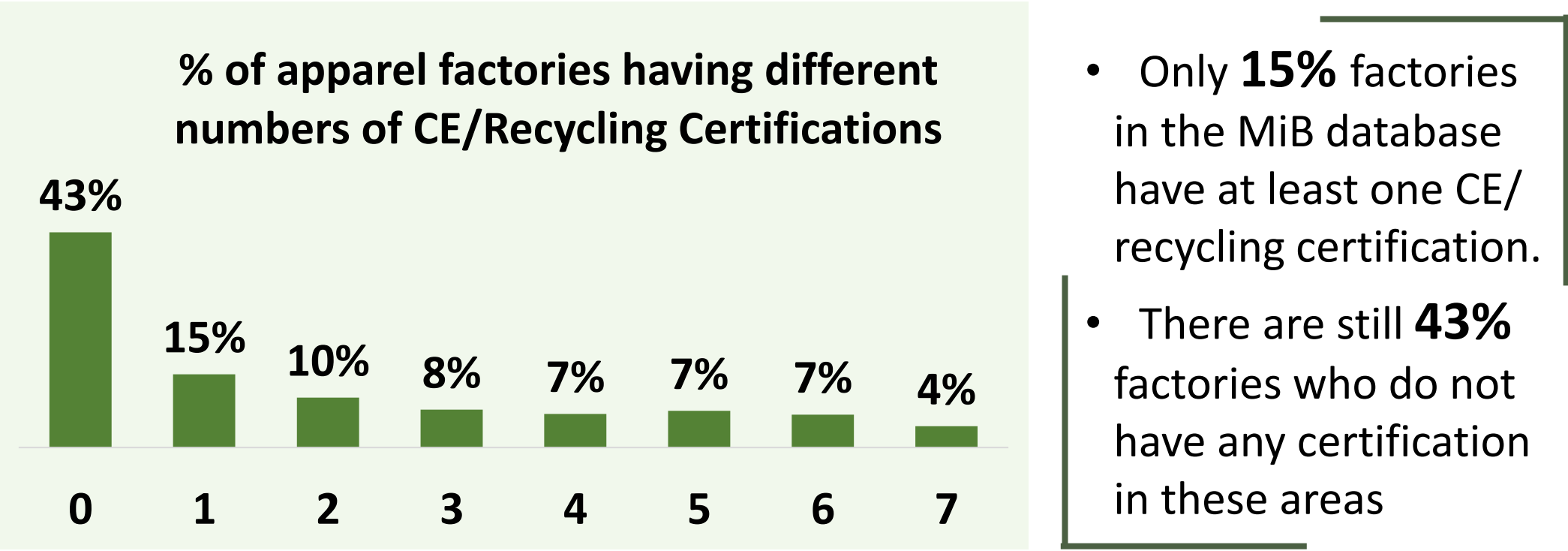
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## 4. Results

### CERTIFICATION TRENDS AMONG APPAREL INDUSTRIES



### COMMON CERTICATIONS RELATED TO CIRCULAR ECONOMY AND RECYCLING



| FACTORY SIZE*                                                                     | Micro | Small | Medium | Large |
|-----------------------------------------------------------------------------------|-------|-------|--------|-------|
| % of factories having at least one CE/ recycling certification                    | 2%    | 11%   | 59%    | 95%   |
| *as per Industrial Policy 2022                                                    |       |       |        |       |
| As factories grow larger, they start to take measures to gain more certifications |       |       |        |       |

### CERTIFICATION TRENDS AMONG DIFFERENT MEMBER FACTORIES



### CERTIFICATION TRENDS AMONG DIFFERENT FACTORY TYPES



### RECYCLING SITUATION OF APPAREL & PLASTIC INDUSTRIES

- Major actors in apparel industry are:** waste collectors, waste handlers, buyers
- Major actors in plastic industry are:** manufacturers, informal recyclers, buyers, city corporations, development partners
- Buyer requirements** drive recycling more than environmental concerns.
- Supplier's business benefits** also influence circular economy adoption.
- Buyers **encourage disclosure of waste information** in sustainability reports.
- Apparel industry recycles only **industrial waste** while the plastic sector handles both **household & industrial waste**.
- Apparel factories **lack waste sorting facilities**, while plastic manufacturers **have to train informal recyclers** for systematic sorting.
- Low environmental awareness** across **formal and informal actors** in both sectors.

## 5. Conclusions

- Future studies should mainstream all types of waste recycling challenges and opportunities in apparel and plastic industries.
- More evidence is needed on how recycling machinery impacts circular economy transition.
- Situational analyses can explore the implication of certifications in promoting recycling and circularity.
- Tracer studies are essential to assess the plastic waste traceability.
- A public database of waste information is very much recommended.
- Collaborative studies should map actors in both sectors to identify roles, gaps, and interventions, and reduce knowledge gaps in the apparel and plastic industries.