



Technological Change in Clothing and Textile Industries

South Africa's Manufacturing Subsectors: Findings From
TIPS Research

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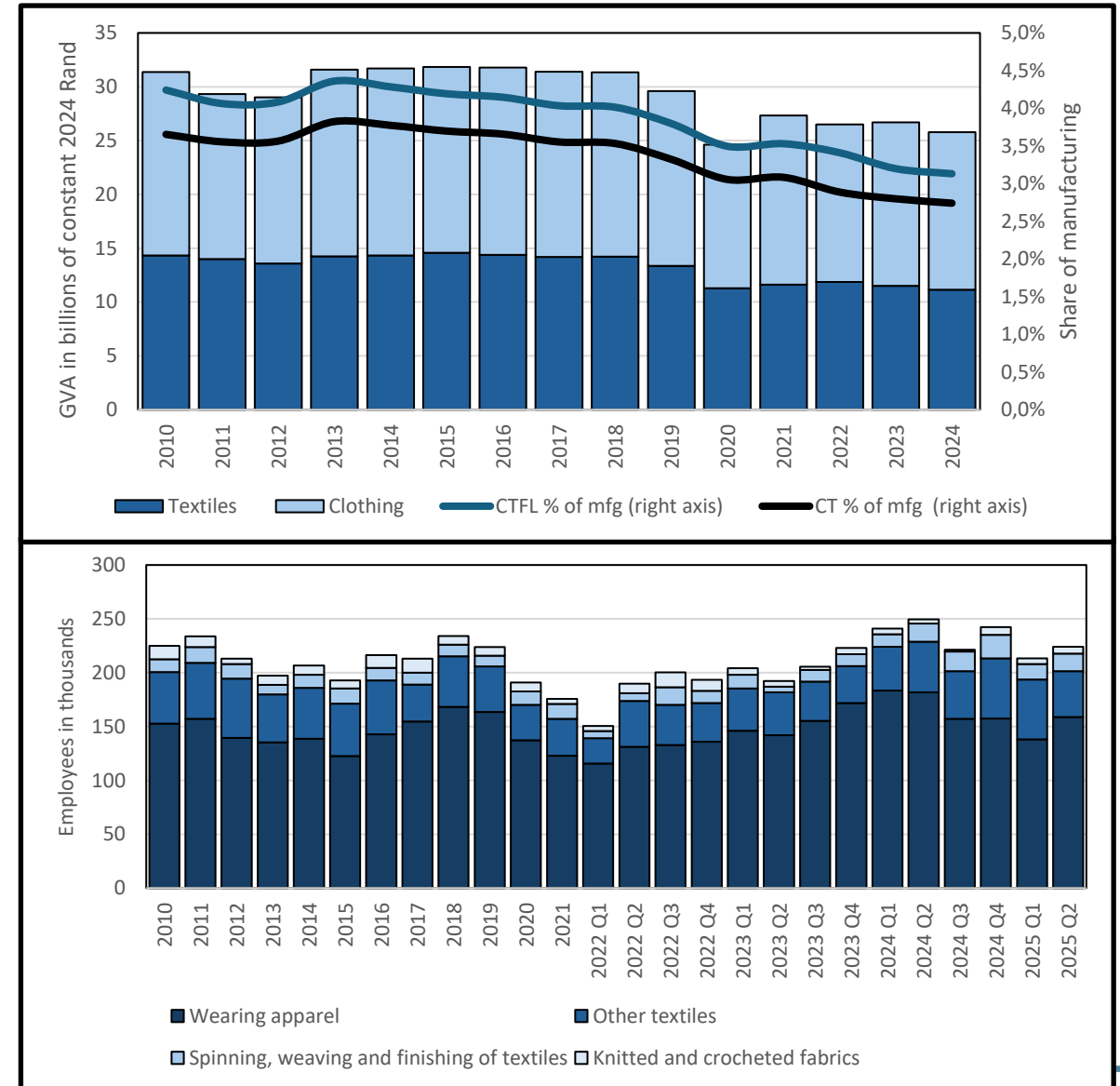
Lucas Mthembu

Outline

- Industry overview
- History of technological change
- Emerging technologies
- Drivers of technological change
- Technological change in the value chain
- Technological trends in South Africa
- Key takeaways

Industry overview

- Clothing and textile industries contribute 2.7% to manufacturing GVA.
 - CTFL contributes 3.1%.
- Clothing and textile industries employed 224 000 people in the second quarter of 2025.
 - CTFL employed 259 000 people.
- South Africa is a net importer of clothing and textiles.
 - Imports from Asia, mainly China.
 - Export destinations: mainly African countries, followed by the EU and the USA.
- The clothing and textiles value chain is buyer-driven and mainly led by retailers.
- The industries are supported through the Retail-Clothing, Textiles, Leather and Footwear Masterplan.



History of technological change in the clothing and textile industries

- Technological change in the 1800s was driven by modernisation.
 - Shift from manual to hand-based production processes to machine spinning and weaving.
- In the 1940s, in South Africa, textile mills advanced by moving to steam power.
 - In the 1970s, the industries started using sophisticated machinery and automated processes.
 - Despite significant recent technological change by some South African firms, others confront limitations in adapting to new technologies and advanced processes.
 - Some parts of the value chain use less efficient and outdated technologies.
 - Some companies are hesitant to adopt advanced technologies, such as harvesting machinery, because textile production processes, including cotton picking, are delicate.

Emerging technologies and processes

- Automation
 - Automation of production processes, such as sewing bots.
 - Improves precision, lead times and replaces skilled workers.
 - Different jobs are created for workers in other parts of the value chain.
- Computer-Aided Design
 - Simulates designs before production.
 - Streamlines design and production processes, and reduces waste as designers experiment with simulators.
- Quick Response Manufacturing
 - Sourcing strategy implemented to manufacture clothing in small batches.
 - Aligns with localisation, with manufacturers being more responsive to market trends.
 - Shift from sourcing large quantities, mainly from global manufacturers.
 - Resulted in increased vertical integration and high inventory turnover improved profitability.
 - The value chain is still fragmented.

Drivers of technological change

- Shift in sourcing strategies
 - Retailers previously preferred mainly sourcing clothing in large quantities from Asia.
 - This led to the deindustrialisation of South Africa's CTFL industries.
 - It was cost-effective to hold large inventories, despite significant lead times.
 - The shift to QRM has led to increased local manufacturing, small batch production and reduced lead times.
 - Retailers continue to have dual sourcing strategies.
- Environmental concerns
 - Production of synthetic textiles emits GHG and plastic waste.
 - Sustainable production to reduce water consumption during textile dyeing.
- Consumer preferences
 - Sustainable clothing: low environmental impact, organic textiles, and ethically sourced.
 - Customised clothing by high-end consumers.
 - Biomechanics, such as sportswear.

Technological change in the value chain

Fibres

- Cotton is harvested through mechanical harvesters.
 - Robotic harvesters are being innovated.
- Synthetic fibres are being produced through nanotechnologies.

Yarn Spinning

- Yarn is produced through automated processes in blow rooms, carding processes and ring spinning processes.
 - IoT devices embedded in compaction machinery assist with the removal of impurities on textiles.

Design

- Artificial Intelligence is used to create designs.
- Computer-Aided Design: two and three-dimensional digital simulations.

Clothing production

- CAD is followed by Computer-Aided Manufacturing.
 - Directs automated machinery to produce clothing.
 - Cutting and assembling.

Communication between manufacturers and retailers

- QRM is being adopted to shorten production, delivery, and order times.
 - Coincides with local production, with some local products becoming more competitive against imports in South Africa.
 - QRM links the demand side: consumer purchases and market trends to supply side planning, production and supply chains.
 - Real-time inventory management systems are automated and use data analytics to evaluate inventory, consumer purchases and supply chains.

Distribution

- Warehouses are automated.
 - Robotics and conveyor systems are used to sort, store, and retrieve products.

Retail and export

- E-commerce

Technological trends in South Africa

Prestige Clothing

- Subsidiary of The Foschini Group.
- Was bought by TFG in 2012 to reduce dependence on importers and produce clothing in-house.
- Traditionally, it would take three months from concept design to presenting a sample to a retailer.
 - Due to local manufacturing, orders can be completed in weeks.
 - QRM processes by TFG have resulted in a decrease in large discounts to offload old stock.
- The Epping factory focuses on high-end clothing
 - Equipped with automated machinery: auto-cutting machines and auto-sticking machines.
 - The process from pattern design to cutting is automated.
- An electronic planning system was implemented to digitalise the entire production process.
 - Includes digital boards, a process management system that tracks and monitors inventory, and CAD for pattern-making and grading.

Key takeaways

- The clothing and textiles value chain comprises firms with advanced technologies, while others use outdated technologies.
- The drivers of technological change include a shift in sourcing strategies, environmental concerns and consumer preferences.
- Automation of production processes does mean decreased manufacturing jobs, but at the same time, it means jobs are moved into other aspects of the value chain.

Thank You!

Email: Lucas@tips.org.za

