TRADE & INDUSTRIAL POLICY STRATEGIES

INDUSTRY STUDY

Technological Change in the Clothing and Textile Industries

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TIPS industry studies aim to provide a comprehensive overview of key trends in leading industries in South Africa. For each industry covered, working papers will be published on basic economic trends, including value added, employment, investment and market structure; trade by major product and country; impact on the environment as well as threats and opportunities arising from the climate crisis; and the implications of emerging technologies. The studies aim to provide background for policymakers and researchers, and to strengthen our understanding of current challenges and opportunities in each industry as a basis for a more strategic response.

This industry study discusses the clothing and textile value chain, emerging technologies, and technological change and processes at each stage of the value chain. Government support for the clothing and textile industries is also discussed.

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1. INTRODUCTION

Technological innovation in manufacturing was driven by the modernisation of textile production processes from the 1800s. The changes back then moved from manual and hand-based production processes to machine spinning and weaving innovations. These kinds of innovation substantially increased productivity and output (Blakely, 2023). This era in textile manufacturing was characterised by rapid technological change, with countries and firms contending to stay ahead of competitors. Since then, technological advancement in the clothing and textile industries has been an ongoing feature and remains an important part of improving productivity, efficiency and reducing costs in these highly competitive industries.

Early technological advancements in South Africa's clothing and textile industries can be traced back to the 1920s, when the clothing industry experienced significant growth due to rapid urbanisation, as well as receiving a boost from the growth in the mining sector and overall economic development. Around 20 years later, the textile industry had mills advancing further technologically by moving to steam power in the production process due to supply disruptions sparked by World War II (McDowell, 2000). Further modernisation of these industries took place in the 1970s when demand increased even further and technological advancements, including sophisticated machinery and early automated processes, were embraced for their ability to increase output and improve production processes. Today, further and more significant technological advancements are being made, with firms in South Africa adopting some of these new technologies. However, there are parts of the clothing and textile value chain that have experienced challenges in adopting new technologies and advancing processes. Some less efficient operations have not modernised and rely on dated technologies. It is further concerning that the informal sector of the clothing and textile industries uses very basic technology, cutting costs on working conditions and remuneration to be competitive.

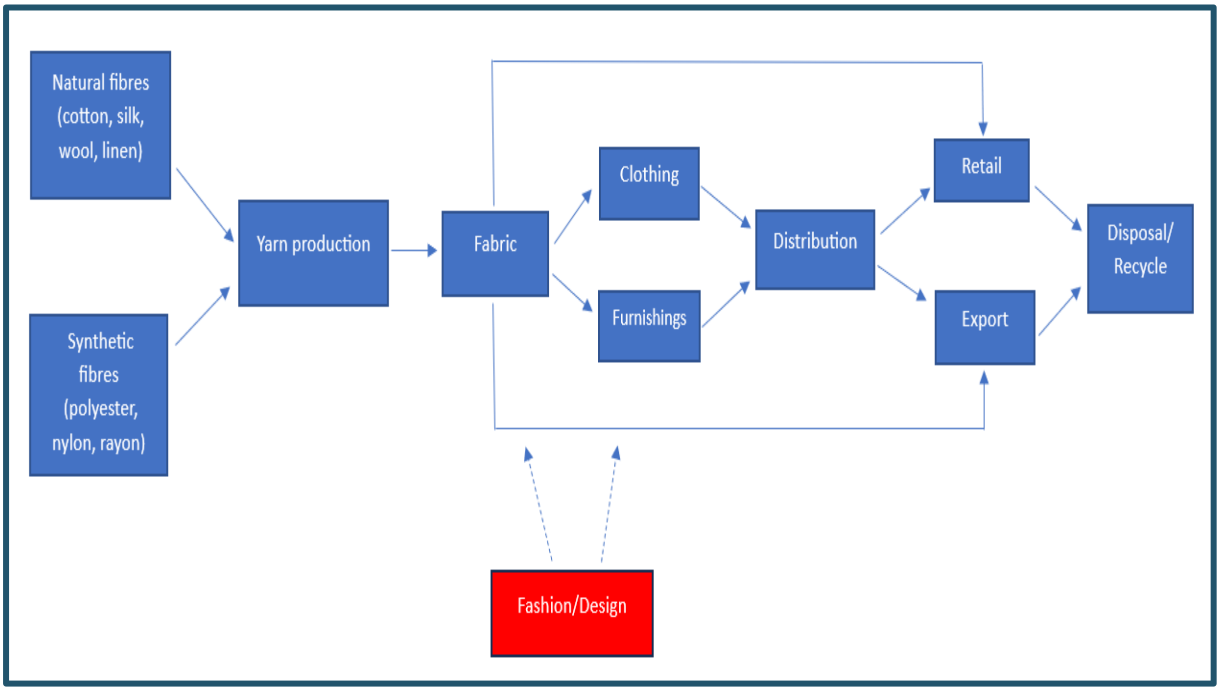
Advanced technologies such as Artificial Intelligence (AI), automation, robotics, and the Internet of Things (IoT) have been widely adopted in the clothing and textile value chain. Innovation has improved manufacturing processes along the supply chain of the clothing and textile industries, allowing for processes to be managed in real-time and, therefore, enhancing flexibility, efficiency, productivity and being able to respond to the latest requirements from retailers and consumers. Global adoption of new technologies continues to rise and shapes the competitiveness of key players. This makes it important to assess technological change and processes in the South African clothing and textile industries.

This study is a part of the clothing and textile industry study series, which explores technological changes and processes in the clothing and textile industries. This industry study discusses the clothing and textile value chain, emerging technologies, and technological change and processes at each stage of the value chain. Government support for the clothing and textile industries is also discussed. The report includes an Annexure that consolidates institutional support for technological advancement in the clothing and textile industries, which would support firms with skills for technological upgrading.

2. THE CLOTHING AND TEXTILE VALUE CHAIN

The clothing and textile value chain begins with the farming for natural fibres, including cotton and flax plants, and sheep and silkworms to produce natural fibres like cotton, linen, wool and silk. In addition, for synthetic fibres, polymers are sourced from petroleum and crude oil producers for polyester and nylon, and wood pulp and cellulose fibres for the manufacture of rayon. Natural and synthetic fibres are spun into yarn, sometimes blended. The yarn is, in turn, woven, sewn, or knitted into fabric. Fashion and design elements are incorporated during and after the fabric production stage as textile designers develop patterns and styles for the fabric as well as for clothing and furnishings. The fabric forms the basis for the manufacture of clothing and furnishings, which are then distributed to retail stores or exported. The manufactured products then reach their intended consumers for domestic or industrial use to be disposed of or recycled at the end of the product's useful life (see Figure 1).

Figure 1: The clothing and textile value chain



Source: Molala 2024, adapted from Mawelela and Makgetla, 2021.

3. EMERGING TECHNOLOGIES IN THE CLOTHING AND TEXTILE INDUSTRIES

Table 1 presents some emerging technologies and processes in the clothing and textile industries. Machinery used in production processes has been automated to reduce lead times and human errors. Digitalisation has facilitated emerging technologies and improved communication in areas such as design, cuts and fashion requirements along supply chains, with programming allowing machinery to perform tasks with oversight from a human operator. While emerging technologies replace labourers, they create opportunities elsewhere in the clothing and textile value chain. These technologies and processes are important for businesses as they become more competitive, particularly through Quick Response Manufacturing, which has shifted sourcing strategies from offshore to local. The technologies therefore address weaknesses and take advantage of opportunities, such as changing consumer demands, which shape their competitiveness.

Table 1: Emerging technologies and processes in the clothing and textile industries

TECHNOLOGY/PROCESS	DESCRIPTION	IMPACT
Automation	Automation includes using machines to automate production processes. A sewing robot, for instance, assembles textiles to produce clothing.	Automated machinery conducts repetitive tasks, improving production efficiency while leaving errors to programming. It reduces lead times and replaces skilled tasks such as sewing, and reduces labour costs.

TECHNOLOGY/PROCESS	DESCRIPTION	IMPACT
Computer-Aided Design (CAD)	Computer software facilitates design processes by creating simulations of real projects. Designers use two-dimensional drawings or three-dimensional models to create products. CAD allows for digital simulation before physical production, allowing for reviewing and modifying before using materials to manufacture (Awati and Chai, 2025).	CAD streamlines the design and production of clothing and textiles through lay planning, spreading, patternmaking, and sewing (Jhanji, 2018). It allows designers to customise and experiment without using fabric.
3D printing (additive manufacturing)	3D printing is a process of adding materials layer by layer to manufacture products. Digital designs made through CAD are physically produced through 3D printing. Plastic products such as thermoplastic polyurethane and polylactic acid are often used because of their flexibility, durability and biodegradability.	3D printing automates the production of clothing, replacing handmade clothing that is highly valued in high-end fashion. It allows for the customisation of clothing and reduces waste by using required materials for production.
Smart fabrics	Smart fabrics are materials or structures that can sense and respond mechanically, thermally, chemically, or electromagnetically to prompts from the environment or an individual. Smart fabrics are integrated with electronics and sensor technology (Hu et al., 2023). The Internet of Things (IoT) in smart fabrics includes integrating sensors into fabrics and clothing to monitor physical activity and the environment. For athletes, it monitors movements and performance.	Smart fabrics improve performance for athletes and monitor health for individuals. Body scanning sensors are used to customise the fitting of clothing. Sensors accurately capture body measurements, informing precise clothing production. It improves customisation and service to customers while reducing production costs (Stewart, 2018).
Industrial Internet of Things (IIoT)	IIoT is the application of IoT in industrial processes, referring to connecting physical objects such as devices containing sensors, software, and processors to machinery through the internet (Cunningham, 2022).	Connectivity through IIoT enables remote control of an entire value chain, connecting multiple factories. For instance, designs can be sent to a weaving loom that automatically changes its own pre-programmed settings (Stewart, 2018).
Sustainable textiles	Sustainable textiles are recyclable, renewable, and biodegradable materials. Materials can be recycled polyester from plastic products, renewable materials include organic cotton and bamboo, and biodegradable textiles include natural materials such as cotton.	Reduce environmental impact from clothing and textiles. Sustainable textiles reduce greenhouse gas emissions and water usage in clothing production. They also reduce waste by recycling materials.

TECHNOLOGY/PROCESS	DESCRIPTION	IMPACT
Quick Response Manufacturing (QRM)	QRM is a sourcing strategy used to reduce lead times and manufacture clothing in small batches. It is a shift from sourcing clothing in large quantities, mainly from global suppliers. Local production allows clothing manufacturers to be more responsive to market demands.	QRM has resulted in localisation of clothing manufacturing, increased vertical integration, and reduced lead times. High inventory turnover has improved profitability, with retailers moving away from discounting clothing to make sales.
Live track dashboard	A live track dashboard tracks inventory, production, and order fulfilment.	A live dashboard provides real-time insights for supply chain management. As changes emerge, users can address inefficiencies and substantiate prompts to meet market demand.

Source: Authors' compilation.

3.1. Drivers of technological change in the clothing and textile industries

Before QRM, retailers preferred sourcing clothing in large quantities, mainly from producers in Asia, contributing to the deindustrialisation of the South African industry. This was because it was cost-effective to hold a large inventory, despite significant lead times. Retailers' sourcing strategies have shifted to QRM, leading to localised manufacturing, reduced lead times and small batch production. Retailers, however, continue to have dual sourcing strategies. Localisation coincides with increased vertical integration as large retailers acquire clothing and textile manufacturers to control and oversee their supply chain.

The production and consumption of clothing and textiles result in pollutants to the environment. Synthetic textiles such as polyester are produced from petrochemicals, emitting high greenhouse gas (GHG) emissions and plastic waste. Environmental concerns have prompted a shift to sustainable materials and production processes, such as recycling polyester, while renewable and biodegradable products have become more valuable because they are generally environmentally friendly. Sustainable production of textiles is also influenced by the need to reduce water consumption, which is mainly due to textile dyeing. The high cost of electricity has also prompted moves to energy efficiency in the production processes.

Consumers are moreover increasingly seeking clothing and fashion products that support their preferences and biomechanics through competitively priced customisation. There has been growing demand from high-end consumers for personalised and customised clothing, leading to a decrease in favouring mass-produced clothing. Through QRM, this has prompted the increase of small batch manufacturing as retailers reduce reliance on long-term forecasting, large inventory and irrelevant fashion that leads to discounts to make sales (Stewart, 2018).

4. TECHNOLOGICAL CHANGE IN THE CLOTHING AND TEXTILE VALUE CHAIN

Technological advances in the clothing and textile value chain have, over time, improved the quality of raw materials and fabrics, enhanced product design processes, improved efficiency and productivity, and become more sustainable at the various stages of the value chain. This section will discuss the technological advances at the different stages of the clothing and textile value chain.

4.1. Natural fibre farming and synthetic fibre production

Early advances in technology in the textile industry were driven by “short cycle” technology, which involves the manufacturing processes and systems with short lead and quicker turnaround times. These advancements were particularly significant in the early development of cotton textile machinery and synthetic fibre production (Whitfield and Mkhabela, 2023). The textile industry has come a long way since then, and the advances are discussed below.

Natural fibre production has advanced significantly from the days of manual cotton picking, feeding silkworms and unwinding silk threads by hand, and manually shearing wool. Cotton harvesting has advanced to a stage where mechanical harvesters, which are self-propelled machinery, have replaced the labour-intensive harvesting methods whereby cotton was harvested by hand. This has increased productivity greatly, whereby the mechanical harvesters can harvest six rows of cotton at a time, versus one row being harvested by hand. Research is currently being conducted on robotic cotton harvesters, which aim to increase productivity and efficiency in the cotton harvesting process. These robots are being created to pick cotton throughout the season, thereby improving the quality of the fibre by picking the cotton at the optimal time, reducing maintenance costs as the robotic machinery works slower than the large mechanical harvesters, making less use of chemical sprays that are harmful to the environment, and having less compaction of the soil due to their small size (Ryan, 2023).

Sericulture is the production of silk and has advanced using new technologies in biotechnology. Gene therapy, gene editing, and nano-biotechnology have assisted in producing better quality and larger quantities of silkworms, which are used in medical and pharmaceutical fields due to their strength, flexibility, biodegradability and compatibility with the human body (Sharma et al., 2022). In contrast, the harvesting of flax fibres to create linen remains a manual labour-intensive process that requires farmers to pull the flax plant out of the ground by hand, as the more technologically advanced methods compromise the quality of the fibre.

Although these technologies have been widely adopted, there is debate within the industry as some firms are still apprehensive about not using manual harvesting of natural fibres, which is a delicate process and machine harvesting cannot mimic the delicacy of the natural hand, thus being said to reduce the quality of the fibre.

Regarding synthetic fibres, nanotechnology has introduced new fibres to the production of clothing and textiles. Making use of nano-fibres allows for more flexibility in fabrics, to be incorporated with other fabrics or the creation of new, unique fabrics (Soliwal, 2022). This technology has also introduced the manufacture of lighter and more breathable fabrics, using less energy and water, rendering the manufacturing process more sustainable.

4.2. Yarn spinning

Advances in yarn spinning technology have led to increased efficiency, productivity, improved yarn quality, more sustainable manufacturing practices, and fibre innovation. Automation is being used in blow rooms, carding and ring spinning processes in the production of yarn.[1] In blow rooms, feed rates, cleaning and blending fibres are automated processes which were once done manually. Carding uses

[1] Blow rooms: The initial stage in yarn spinning processes. It involves transferring of yarn from machine to machine through blowing air. Carding: Process of separating, cleaning, and mixing fibres into a continuous web. Ring spinning: A process of spinning fibres into yarn through a drafting system, twisting fibre through a whirling spindle and lastly winding through a traveller and ring.

algorithms and sensors to ensure precise fibre separation. For ring spinning, computer-controlled machines ensure consistent yarn fibre.

Advanced mechanisms in the form of sensors and precision devices (IoT), namely compaction devices, have also improved the removal of impurities in natural fibres to improve the quality and strength of the yarn in blow rooms and the compact spinning stage of yarn production.

4.3. Design and fashion

Designing clothing and textiles has come a long way since drawing a pattern on paper and scanning designs into machines by hand. Generative Artificial Intelligence (AI) allows designers to feed information into an AI tool that generates multiple design styles and ideas in a short space of time. Predictive AI tools, in addition, allow for the inputted data, current and future trends to be analysed speedily, thus removing the need for individuals to do so manually.

CAD tools allow designers to work in the digital sphere, allowing for increased variation in possible design styles. As with generative AI, the design process is significantly sped up with increased creativity and possibilities for designs. Initially developed in the 1960s for the construction industry to design precision machines, the textile industry adopted CAD systems around ten years later. Coupled with more recent advances in computing, once the design process has been completed, information can be stored on the cloud for later use or transferred to computer-aided manufacturing systems for production (Denomme, 2024).

4.4. Fabric, clothing, and furnishings manufacturing

The CAD process is usually followed by Computer-Aided Manufacturing (CAM) systems, which use software and computer-controlled machinery. This automates the manufacturing process from the final design stage to the final product, turning what was inputted into the CAD systems into manufacturing instructions, ensuring greater levels of precision (Deans, 2021).

3D printing, an additive technology which is relatively new, is used across various industries and has vastly advanced the manufacture of clothing and textiles. It stacks and layers materials to create various styles of textiles and uses layers of different materials. This technology is used in the prototyping of designs (before moving to full-scale production) and can customise textiles and clothing for various uses and body types, thus increasing and diversifying product offerings in less time. 3D printing uses the exact amount of materials needed in production, thus reducing wastage in the manufacturing process (Arumugam et al., 2024).

4.5. Communication between manufacturers and retailers

The clothing and textile value chain is demand-driven, with demand from consumers informing production and inventory levels across the value chain. Manufacturers face demands to quickly produce a range of products to meet dynamic market needs, leading to challenges such as high inventory costs, low efficiency, and increased need for flexibility (Nelfiyanti et al., 2025). QRM has emerged as a response to reduce production and delivery/order cycle times. QRM allows manufacturers and retailers to improve operational efficiency by speeding up the order fulfilment process and addressing issues that may arise in the supply chain.

Local QRM further reduces lead times through localised manufacturing. Local retailers such as Foschini have become more fashionable through QRM, improving competitiveness against international retailers such as Zara and H&M, significantly outcompeting on costs (Shevel, 2023). Local QRM emerged as a shift from Asia, mainly China, due to its lead time competitiveness as localisation reduces shipping time and costs. The South African environment makes vertical integration, that is, ownership of a manufacturer by a retailer, advantageous because of deteriorated manufacturing capability, which has created opportunities for local manufacturing to inform QRM processes (Shevel, 2023). While the domestic value chain is fertile for supply chain consolidation, the local clothing and textile industries are still characterised by a fragmented value chain. Vertical integration has allowed retailers to control production processes and ensure that manufacturers meet standards and fashion requirements set by the retailer.

QRM links the demand side (consumer purchases and market trends) to the supply planning and production. This includes sending information from the demand side to supply planning in real time, as retailers monitor sales in stores and share information with manufacturers, informing design and production planning. This informs the production of clothing in demand, avoiding overstocking and consequently discounting items for sales. The real-time inventory management systems are automated and use data analytics to evaluate inventory, consumer purchases and supply chains.

Automation's role in the export of clothing and textiles, as with other processes in the value chain, has enabled real-time monitoring and tracking of products, shipments and processes through digitisation, which has improved efficiency. AI has enabled businesses to analyse trends and predict customer preferences, as in retail, which in turn improves the identification of growth opportunities.

4.6. Distribution

Logistical arrangements in the distribution of clothing and textile industries have vastly transformed, with delivery times becoming shorter. Automation has become the norm in warehousing, where robotics and automated conveyor systems are used to sort, store, and retrieve products.

Various technologies are employed in the process of getting products from the warehouse to the consumer. Supply chain management systems are used to ensure that products are tracked at every step of the distribution process, including tracking, forecasting and processing orders. Blockchain technologies and IoT technologies are used to track transactions in real time. From putting sensors onto containers and trucks, and measuring the temperature of storage systems.

4.7. Retail and export

Retail has transformed from traditional brick-and-mortar stores to a combination of in-person and online shopping, catering to both consumer preferences. E-commerce dates to 1969 when CompuServe, the first major online commercial service for businesses, was launched, and 10 years later electronic shopping was launched. The advent of e-commerce was driven by changes in technology, internet expansion and consumer changes, and this technology keeps advancing (Laukaitis, 2025). Online retail offerings now include virtual try-on technologies using augmented reality to simulate products on a consumer through their mobile or web camera, which allows users to virtually try on products (make-up, clothes, shoes and other accessories) with a click. The global COVID-19 pandemic propelled the use of e-commerce sites globally as, during the strict lockdowns, brick-and-mortar stores were closed to curb the spread of the virus. Therefore, consumers relied on e-commerce sites to meet their everyday needs. However, the growth of Chinese online clothing retailers, particularly Temu and Shein, with their small parcel format to avoid duties,[2] has negatively impacted physical stores and domestic online retailers, accounting for an estimated 3.6% of the clothing, textiles, leather and footwear market share in 2024 (Localisation Support Fund, 2025).

[2] Clothing items imported into South Africa valued at less than R500 from 1 July 2024 are subject to the same duties as larger orders. These clothing imports exceeding R500 are liable for a 45% import duty plus Value-Added Tax (VAT) (SARS, 2024).

AI has become an integral part of the online shopping experience. Other than its ability to analyse data and forecast trends through machine learning, it has also enhanced the online shopping experience through AI-generated chatbots, which can respond to product queries and make suggestions on product selection, thus improving customer service (Soliwal, 2024).

Technology advancements are also crucial for managing risks and ensuring compliance with international trade regulations through software and digital platforms, which keep businesses updated on regulatory changes and automation of compliance checks (Shalom International Trading and Logistics, 2023).

Robotics have impacted the clothing and textile value chain, with online sales triggering supply chain responses through highly automated warehousing and distribution infrastructure. Pick and pack automation has significantly increased in warehousing, reducing the need for semi-skilled workers for these functions (Stewart, 2018).

5. TECHNOLOGICAL TRENDS IN SOUTH AFRICA'S CLOTHING AND TEXTILE VALUE CHAIN

Technology is mostly adopted by retailers in South Africa, with omnichannel retailing being prevalent. Retailers use live track dashboards to track production, inventory, and order fulfilment. Live tracking is facilitated by Barcode Scanners and Radio-Frequency Identification (RFID) tags, which help identify products (Stewart, 2018). Figure 2 details technological changes and processes at a clothing manufacturer, Prestige.

Box 1: Technological change and processes at TFG's Prestige Clothing

The Foschini Group (TFG) acquired Prestige Clothing in 2012 to bring production in-house and reduce dependence on suppliers from countries such as China and Bangladesh. This decision was influenced by TFG's adoption of QRM, which aimed to minimise the time from concept design to presenting a sample to retailers and placing production orders. Traditionally, this process could take up to three months, but with QRM, orders can be completed within weeks. This sourcing strategy enables TFG to stay ahead of competitors while lowering costs and production times. As a result of QRM, more customers are attracted to TFG's in-fashion clothing, and there is a decrease in large discounts to offload old stock offered in stores due to small batch manufacturing, replacing the sourcing strategy of ordering large quantities. QRM aligns with TFG's efforts to build its own local manufacturing capacity.

The Epping factory focuses on high-end clothing, making it well-suited for automated machinery. The factory is equipped with various automated tools, including auto-cutting machines and auto-sticking machines. The factory has an automated template machine that loads digital patterns before sending them to the auto-cutting machine. This entire process, from pattern design to cutting, is automated. Furthermore, an automated scanning machine can scan packed boxes in nine seconds, whereas manual counting would take approximately three minutes to complete.

An electronic planning system was implemented to digitalise the entire production process. This system includes digital boards that make the production process visible to the team. A process management system was introduced to track and monitor inventory effectively. TFG also adopted CAD software, which digitalised the pattern-making process and grading. This automation of repetitive tasks enhances both the efficiency and accuracy of patternmaking.

To manage and monitor inventory cycles, TFG uses group RFID, which helps in supply chain management and logistics. The company transitioned to an entirely online system to improve communication and monitoring throughout the organisation.

Source: Grawitzky, 2023.

6. GOVERNMENT SUPPORT

The Industrial Development Corporation manages the Clothing and Textiles Competitiveness Programme (CTCP), which consists of two programmes that support firms' technological advancement ambitions, offering incentives for acquiring new technologies, upgrading existing machinery, and enhancing manufacturing processes to boost innovation and competitiveness.

Within the CTCP, the first programme, the Production Incentive Programme, aims to upgrade individual companies' industry processes, products and employees through offering a 7.5% incentive on Manufacturing Value Added (net sales – costs such as imported goods and materials). The programme aims to improve the clothing and textile industries by offering funding assistance for competitiveness improvement programmes such as acquiring new plant and machinery, the upgrades to existing plant and machinery, improving manufacturing processes, and developing new products.

The second programme, the Competitiveness Improvement Programme, aims to develop globally competitive firms and clusters[3] by enhancing the capacity and competitiveness of manufacturers and designers within the clothing and textile-related value chains. The programme offers clusters a cost-sharing incentive of 70% of the costs of the qualifying project, with the remaining 30% coming from cluster participants. Competitiveness improvement support targets the different parts of the value chain that require upgrading or support, including people, product processes, market development, and technological innovation. The technological innovation programmes, for example, include new software and hardware technology demonstrations, and process innovations (the dtic, 2024).

7. CONCLUSION

This industry study presented technological change and processes in the clothing and textile industries. The study demonstrated the clothing and textile value chain, outlining emerging technologies and processes, including automation, Computer-Aided Design, 3D printing, smart fabrics, Industrial Internet of Things, sustainable textiles, Quick Response Manufacturing, and live track dashboards. The study highlighted that the biggest shift has been in QRM, which has made local retailers competitive against global counterparts that use a similar quick response sourcing strategy. While automation improves precision in production processes and replaces workers, different tasks are created for workers in other parts of the value chain. QRM has emerged in part due to the value chain being demand-driven, requiring retailers to respond to and track consumer demands. This has resulted in small batch manufacturing, a shift from orders in large quantities from offshore suppliers. Environmental concerns have prompted the sustainable production of clothing and textiles, resulting in the production of renewable, biodegradable, and recyclable clothing.

The industry study details technological change in the value chain, including fibre production, yarn spinning, design and fashion, clothing manufacturing, communication between manufacturers and retailers, distribution, and retail and export. The study further highlights the technological changes and processes at Prestige Clothing, indicating that the clothing manufacturer has automated its production processes.

The industry study lastly indicates that the clothing and textile industries in South Africa are supported through the Clothing and Textile Competitiveness Programme.

[3] South Africa has two main clothing and textile clusters: The Cape Clothing and Textile Cluster and the KwaZulu-Natal Clothing and Textile Cluster. The clusters link manufacturers, retailers and government. Clothing and textile manufacturers produce items that are sold by retailers. Manufacturers in clusters collaborate and share resources.

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ANNEXURE

Table 2 highlights institutional support through training programmes that inform technological development in the clothing and textile value chain. The qualifications include both specialised support programmes, which offer solutions and support for specific challenges, and training programmes, which impart skills and competencies on technologies and processes. These programmes are hosted by universities, with some collaborating with research organisations that offer technical expertise and experience.

Table 2: Institutional support for the clothing and textile industries

INSTITUTION	QUALIFICATION	DESCRIPTION	NQF LEVEL
Cape Peninsula University of Technology (CPUT)	Diploma in clothing and textile technology	The three-year (and four-year extended studies) course includes courses on CAD design, with the aim of exposing students to technical knowledge and skills in textile-related technologies.	6
	Advanced diploma in clothing and textile technology	This one-year diploma focuses on new techniques and technologies in the clothing and textile industries. Courses studied include Innovative products and processes in clothing and textiles, and green smart, and sustainable textile technologies.	6
	Postgraduate diploma in clothing and textile technology	This course aims to equip students to become specialists in the technologically advancing clothing and textiles industries. Courses include advancement in innovative textile production, sustainable clothing and textiles and technical and smart textiles.	6
	Technology Station Clothing and Textiles (TSCT)	The TSCT is located at CPUT's faculty of engineering and provides technological services in product simulation, technology demonstration and transfer, design services and small batch production, amongst others. The station aims to support innovation, enhance competitiveness and stimulate the industries' growth.	N/A
Central University of Technology	Advanced diploma in design technology	This one-year course aims to equip students with technical skills and skills in technologies over production methods which are analogue, digital, low and high tech.	7
Durban University of Technology	Diploma: Clothing Management National Diploma: Clothing Management	These three-year courses, as well as the four-year extended National Diploma in Clothing Management, include courses in product technology and technologically advanced pattern-making programmes. These courses aim to prepare students to work in a technologically advancing clothing industry using automated techniques and technologically advanced machinery.	6
	Advanced Diploma in Apparel Technology	Courses offered in this one-year programme include apparel technology and apparel technology project, which aim to prepare	7

		students to work across the apparel value chain and deepen their knowledge in the theory and practicality of modern apparel technologies.	
	Diploma in Textile Technology National Diploma: Textile Technology	These three-year courses have scientific foundations with students doing courses in physics, chemistry and mathematics in the beginning stages of the courses. They aim to prepare students for specialist careers in textile industries and include courses such as yarn technology, production engineering, textile technology and weaving, knitting, and colouration technologies.	6
	Bachelor of Technology: Textile Technology	This three-year course includes courses in textile technology and product engineering.	7
Nelson Mandela University (NMU)	MSc (Textiles) PhD	NMU offers postgraduate courses in clothing and textile science by research. The Centre for Scientific and Industrial Research (CSIR)'s Material Science and Manufacturing Operating Unit acts as the department of Textile Science and has advanced machinery and qualified staff. Disciplines include computer simulation, clothing science and technology, intelligent textiles, textile engineering and environmentally friendly processes in labelling and production processes, amongst others.	9 and 10
University of Johannesburg	Diploma in fashion	This course applies advanced textile applications and computer technology (CAD) to the manufacturing processes of a diverse range of fashion products.	6
Vaal University of Technology	Diploma in fashion	This three-year course includes courses such as CAD, garment construction and pattern engineering, and applied apparel technology.	6