

The Adoption of Sustainable Textiles & Smart Apparel Technology for the South African Healthcare Sector

Authors : Winiswa Mavutha

Abstract : The adoption of sustainable textiles and smart apparel technology is crucial for the South African healthcare sector. It's all about finding innovative solutions to track patient health and improve overall healthcare delivery. This research focuses on how sustainable textile fibers can be integrated with smart apparel technologies by utilizing embedded sensors and some serious data analytics—to enable real-time monitoring of patients. Smart apparel technology conducts constant monitoring of patients' heart rate, temperature, and blood pressure, including delivering medication electronically, which enhances patient care and reduces hospital readmissions. Currently, the South African healthcare system has its own set of challenges, such as limited resources and a heavy disease burden. Apparel and textile manufacturers in South Africa can address these challenges while promoting environmental sustainability through waste reduction and decreased reliance on harmful chemicals that are typically utilized in traditional textile manufacturing. The study will emphasize the importance of sustainable practices in the textile supply chain. Additionally, this study will examine the importance of collaborative initiatives among stakeholders—such as government entities healthcare providers, including textile and apparel manufacturers, which promotes an environment that fosters innovation in sustainable smart textiles and apparel technology. If South Africa taps into its local resources and skills, it could be a pioneer in the global South for creating eco-friendly healthcare solutions. This aligns perfectly with global sustainability trends and sustainable development goals. The study will use a mixed-method approach by conducting surveys, focus group interviews, and case studies with healthcare professionals, patients, as well as textile and apparel manufacturers. The utilization of sustainable smart textiles doesn't only enhance patient care through better monitoring, but it also supports a circular economy with biodegradable fibers and minimal textile waste. There's a growing acknowledgment in the global healthcare sector about the benefits of smart textiles for personalized medicine, and South Africa has the chance to use this advancement to enhance its healthcare services while also addressing some persistent environmental challenges.

Keywords : smart apparel technologies, sustainable textiles, south African healthcare innovation, technology acceptance model

Conference Title : ICTF 2025 : International Conference on Textiles and Fashion

Conference Location : Rome, Italy

Conference Dates : June 05-06, 2025