Data and Skills, Not Algorithms, Hold Back AI in Textiles, Finds New ITMF and ITA White Paper

Global study says the industry is digitally fragmented rather than under-digitalised, and calls for collective action to make AI useful and trusted by 2030

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— Olivier Zieschank, Director, ITMF

The International Textile Manufacturers Federation (ITMF) and the Institut für Textiltechnik of RWTH Aachen University (ITA) published „AI in the Textile Value Chain: A Strategic Guide to Artificial Intelligence for the Global Textile Industry". The white paper finds that the main barriers to AI adoption in the textile and apparel industry are poor data integration, skills shortages and gaps in governance, not the technology itself. It argues that the industry's progress will depend on coordinated, industry-wide capability-building.

The paper draws on the ITMF & ITA webinar series AI in the Textile Value Chain (2024–2026). Across ten sessions, more than 20 experts from companies, research institutes and policy bodies spoke in the series. The paper also draws on a World Café discussion with practitioners at the ITMF Conference 2025 in Yogyakarta, Indonesia.

According to the authors, AI is becoming relevant because of structural pressures rather than technological hype. These pressures include demographic decline, persistent skills shortages, volatile markets, and rising demands for quality, traceability and sustainability. Decades of digitalisation have left the sector with abundant data but fragmented systems. As a result, the paper describes the industry as "not under-digitalised, but digitally fragmented."

Key findings include:

- AI is already delivering measurable value in well-defined applications. Examples include computer-vision fabric and yarn inspection, predictive maintenance, energy optimisation and demand forecasting. In one example cited from a nonwovens line, causal AI reduced scrap by 10%.
- Data and skills are more limiting than algorithms. Participants warned that AI does not fix poor data but amplifies its flaws. Many companies hold far less usable, structured data than they believe.
- AI is moving from decision support to action. Agentic systems are starting to coordinate multi-step processes such as sourcing. Causal AI is beginning to adjust production settings directly, in both cases under human supervision. The realistic horizon for end-to-end AI workflows is estimated at two to three years.
- Trust is the decisive currency. Industry participants named clear conditions for AI use: control over sensitive data, strong cybersecurity, transparency about system limits, and preserved human accountability.

The paper recommends that companies invest in people before scaling technology and treat data as shared infrastructure. It also advises proceeding incrementally, starting with bounded use cases. It highlights a strong role for industry associations and pre-competitive collaboration, particularly for SMEs. Examples include shared data standards, data spaces that keep ownership with the data originator, and sector-specific tools such as a controlled "Textile GPT."

„AI is not a shortcut around the structural challenges our industry faces, but it can help companies manage complexity and make the most of scarce expertise. Understanding where AI genuinely helps is a learning process. That is why exchange through associations like ITMF matters so much." said Olivier Zieschank, Director, ITMF.

"Companies need a dedicated task force to embed data integration into their day-to-day and strategic technical and business processes. Partnering with external experts on a transparent assessment — a data or automation waste walk — and on effective implementation is not only decisive to future success, but essential to survive!", said Prof. Thomas Gries, Director, Institut für Textiltechnik ITA, RWTH Aachen University.