

Press Release

June 30, 2026Page 1 | 4

Data-Driven Tool for Sales and Production Planning

AI-based demand forecasting creates planning reliability in the textile industry

How can sales figures be forecast more reliably, production capacities planned fully digitally, and employee know-how systematically integrated at the same time? To address this issue, Fraunhofer IWU developed an AI-powered demand forecasting tool for frottana Textil GmbH & Co. KG, the company behind the MÖVE brand. The tool intelligently analyzes historical sales data and provides companies with a robust, data-driven basis for sales and order planning; in a subsequent step, production planning could also be adapted.

Planning is still often based on Excel, experience, and personal judgment

The terry cloth and home textiles industry is largely characterized by medium-sized enterprises, and demand is subject to seasonal fluctuations. While there is a stable base demand, seasonal peaks – such as in spring, during the holiday season, or in the Christmas business – pose major challenges for planning and scheduling.

In practice, sales and production decisions in many companies still rely on Excel planning tools, individual employee calculations, and the experiential knowledge of long-serving experts. In concrete terms, some organizations continue to recreate Excel spreadsheets every month for thousands of products – or even resort to handwritten lists. Although extensive historical sales and production data are available, they are often not systematically analyzed. The growing shortage of skilled workers, along with age-related departures that result in the loss of valuable institutional know-how, further exacerbates the situation. The result is high planning uncertainty, increased manual scheduling effort, inefficient production adjustments, and avoidable costs such as the labor-intensive transfer of data from ERP systems (Enterprise Resource Planning) into manual tools. Some companies are now deliberately embracing digitalization to place their planning on a solid data foundation.

Intelligent data use with AI and process mining

One of these companies is the long-established textile manufacturer frottana Textil GmbH & Co. KG in Upper Lusatia. With its MÖVE brand, the company stands for high-quality terry, bath, and home textiles. For frottana Textil GmbH & Co. KG, the IWU project team—working together with Logsol GmbH—developed a demand forecasting tool that predicts monthly sales figures based on historical sales data while automatically identifying trends and seasonal

demand patterns. Artificial intelligence methods are used, particularly neural networks, to analyze complex relationships in the sales data and generate reliable forecasts. This enables companies to obtain a transparent, traceable, and reliable basis for planning and scheduling decisions.

June 30, 2026Page 2 | 4

High forecast quality despite limited data availability

The project results demonstrate a high level of forecasting accuracy, even with a limited database:

- 82.7% of sales fluctuations are explained by the model
- Robust representation of stronger deviations in individual months (particularly accounting for the impact of forecasting errors)

At an average of 340 units sold per month, the forecast shows a typical deviation of only about 38 units – about nine percent – from actual sales. This accuracy was achieved despite the absence of differentiation by sales channels, regions, promotional effects, or COVID-related special influences, and with only four years of historical data available.

Automated, transparent – and people-centered

The developed tool replaces existing manual planning processes with a fully digitalized and automated forecasting solution. It reduces planning uncertainty and provides a transparent basis for decision-making. The onboarding of new employees becomes faster and easier thanks to the fully digitalized process, and absences of experienced staff due to illness can be more readily compensated for by less specialized colleagues. At the same time, people remain at the center: employees can actively review, adjust, and enrich the forecasts with their own expertise. This creates a combination of AI-based analysis and human know-how that significantly increases acceptance within the company.

Outlook: Integration into production planning

In the future, the demand forecasting tool is intended to be directly integrated into production planning. This will make it possible to optimize production sequences, adjust batch sizes more precisely to demand, and better distribute capacities over the course of the year.

Fraunhofer IWU: many years of experience in the textile industry

For example, in the SmarMoTEX project, Fraunhofer IWU developed innovative digital solutions for the textile industry. A central element is material flow simulation, which enables production processes to be modeled virtually, bottlenecks to be identified, and alternative production strategies to be tested based on data – without interfering with ongoing operations.

In additional projects, image-based defect detection was enhanced to assist employees in identifying weaving defects using existing imagery. One of the core contributions: retrofitting older textile machines with modern sensor technology, enabling them to remain economically viable and in productive use for many more years.



Fig. 1 frottana produces high-quality terry goods (towels, bathrobes, bed linen) in Großschönau, Saxony, and markets them under the brand name MÖVE. © MÖVE

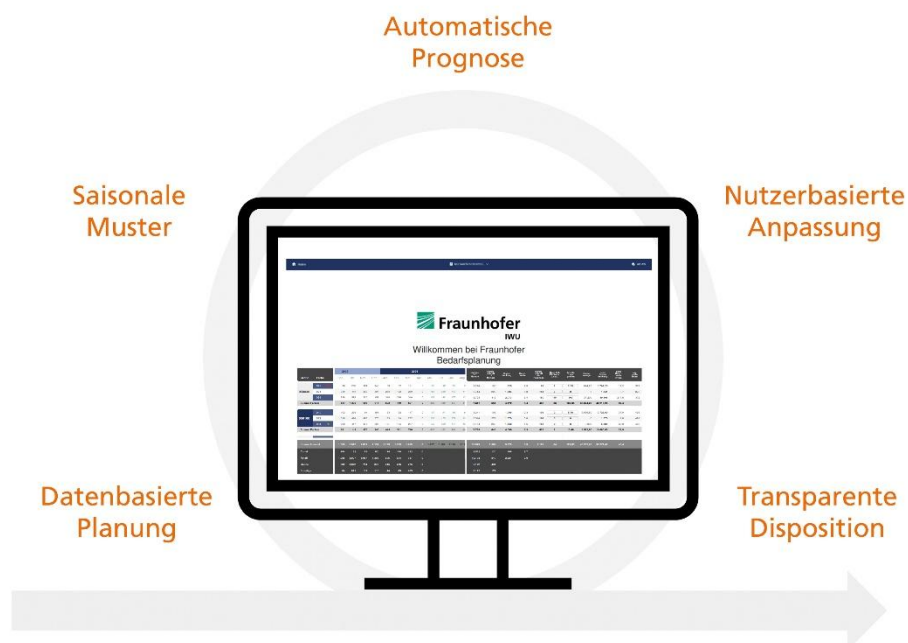


Fig. 2a The developed model provides a robust, data-driven basis for monthly ordering decisions and significantly reduces planning uncertainty – while still allowing for human oversight. (Orange letters: Automatic forecasting, User-based integration, Transparent planning and scheduling, Data-driven planning, Seasonal patterns) © Fraunhofer IWU

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