



The Human Factor in Textile Color Management

Why No Region Can Out-Price Its Way to Growth

Executive Summary

Textile color labs worldwide are facing a convergence of pressures: compressed development timelines, a shrinking pool of experienced colorists, and tightening sustainability and traceability requirements.

These pressures play out differently by region — nearshoring economics in North America, labor contraction in Europe, import competition in Latin America — but they share a common root. Processes still depend on individual expertise and manual intervention instead of connected data.

This paper examines that problem, introduces connected color intelligence as a direction for the industry's next evolution, and shows early evidence of what labs gain when they make the shift. Not a smaller workforce, but a more leveraged one.

Introduction

Walk into almost any textile color lab today, large or small, anywhere in the world, and you will likely hear some version of the same sentence: “we have the tools, they just don’t talk to each other.”

It is a line that captures a real tension in the industry. The modern color lab has access to more precision than ever before: spectrophotometers, formulation software, automated dispensing. Yet that precision rarely moves as one connected system. Instead, it moves through people, through manual re-entry, through tribal knowledge held by a handful of experienced colorists. That gap, more than any single piece of technology, is what is driving the conversation this paper explores: the human factor in textile color management.



Three Forces, One Shrinking Resource

Three pressures are converging on textile labs at the same time.

- **Timelines.** Brands are demanding shorter development cycles, with less tolerance for trial and error than even a few years ago.
- **Expertise.** Senior colorists are retiring or moving into other careers, and the pipeline of new talent is not replacing them at the same rate. This is demographic, not cyclical.
- **Compliance.** Consumers, and the brands that answer to them, are paying closer attention to how and where fabric gets dyed, pushing labs toward more rigorous traceability and documentation.

Individually, each of these pressures is manageable. Together, they ask labs for more speed, more consistency, and more proof, exactly as the specialized expertise required to deliver all three becomes harder to find and retain.

What Disconnection Actually Costs

The cost of a disconnected lab rarely appears on a single line item. It shows up in the handoffs nobody is measuring:

- A recipe formulated correctly in the lab, then transcribed incorrectly when it is manually re-entered into the ERP.
- A completed job whose results never reach the brand's system, stalling approval for days without a clear point of failure.
- A correction round in production that would not have been necessary if the production team had access to the original lab data instead of reconstructing it from scratch.

Multiplied across thousands of jobs a year, these small failures compound into real drags on development time, on-time delivery, and margin.

There is a sustainability dimension too. Every avoidable correction round is water, chemicals, and energy spent twice. Improving the workflow and improving the environmental footprint turn out to be the same exercise.

And beneath all of this sits a quieter risk: when the knowledge to solve a color problem lives in one person's head, that knowledge leaves the business the day that person does. It rarely appears on a balance sheet, but it is a genuine continuity risk.



Global Pressure, Local Flavor

These forces are global, but they wear a different local costume depending on where a lab sits in the supply chain.

North America

US textile and apparel production has grown from roughly \$55 billion in 2020 to about \$65 billion in 2025. Mexico plays a growing role in that same story, nearshoring under USMCA's yarn-forward rule of origin. In both cases, the value proposition is not price. It is speed: three-to-four week turnarounds compared to twelve-to-twenty weeks from Asian suppliers.

Europe

Europe is arguably feeling this pressure hardest of all right now. Textile and apparel employment across the EU fell by close to 2% in the first quarter of 2026 alone — a contraction happening in real time, not a future retirement wave. Turkey, the region's own nearshoring advantage, illustrates the stakes: despite its proximity to EU markets, Turkish apparel exports to the EU fell more than 5% in 2025 as cheaper alternatives, including Egypt, close the gap. Proximity alone no longer guarantees competitiveness.

Latin America

Latin American producers are responding by competing on quality and trade access rather than price. Peru sends roughly 60% of its textile exports to the US under a duty-free arrangement built on the same yarn-forward logic that underpins Mexican and Central American trade. Brazil faces a different fight: a widening trade deficit driven by a surge in low-cost imports, mostly from China, met with investment in automation rather than an attempt to match import prices directly.

The Rest of the World

The same pattern extends further still. Central America's apparel manufacturing model is built on trade-preference logic nearly identical to Peru's and Mexico's. In Africa, countries like Egypt are emerging as the next nearshoring option for European buyers. Wherever a lab sits on the map, the lesson is consistent: nobody wins by being the cheapest. Labs win by being faster, more consistent, and able to prove where materials came from.

What the Human Factor Becomes

It would be easy to read the preceding sections as an argument for replacing experienced people with software. That is not the argument.

Consider what an experienced colorist actually contributes: not data entry, not memorized auxiliary combinations, but judgment. The ability to recognize that a sample which technically passes still will not look right on the finished garment. To know when to override a suggested recipe because something about a specific dye lot is off. To mentor a junior technician through a difficult correction. That expertise took years to build, and no system should attempt to replace it.

What changes when the right tools are in place is everything sitting underneath that judgment. Remove the repetitive, administrative layer — re-typing data, chasing approvals, manually tracking jobs — and that same colorist spends more of their time exercising judgment and less of it on tasks a connected system can handle on its own.

There is a longer-term benefit as well. When a colorist's decisions and formulation history live inside a connected system rather than solely in their memory, that expertise outlives their tenure. When they eventually retire, their pattern recognition does not leave with them — it remains available to the next generation of colorists, who ramp up faster as a result. Lab managers benefit too: rather than firefighting and hoping the right person is on shift, they gain visibility into where their team's strengths genuinely lie, and can develop people deliberately rather than simply keeping operations running.



“The goal was never to replace the colorist. It’s to give them leverage, and make sure what they build doesn’t disappear the day they walk out.”

— Mathieu Bonenfant, Senior Director of Product Management, Datacolor

Connected Color Intelligence

Datacolor has a name for the direction this points toward: connected color intelligence. It is not a specific product, but a concept, and a direction — the next evolution of digital color management.

In practice, it begins inside the lab itself: formulation software, spectrophotometers, dispensing equipment, and business systems such as ERP and MES operating as a single workflow rather than isolated systems. Data enters once and moves wherever it needs to go. Recipes draw on real formulation history rather than memory. Job management happens in real time, and, critically, the knowledge an experienced colorist builds is captured rather than lost.

The concept does not stop at the lab door. A recipe that performs perfectly at lab scale must still perform at production volume, and that quality needs to be visible to the brand that specified the color in the first place. Much of that brand-supplier communication today still runs through email threads and shared folders that go stale the moment they are sent, turning approvals that should take days into processes that take weeks. The same human-factor problem that plays out inside the lab plays out again at the scale of the full supply chain.

Early Evidence

Datacolor's Textile Lab Manager is the company's first expression of connected color intelligence inside the lab. Two early results illustrate what is possible.

- Lianfa Textile connected its lab operations with Textile Lab Manager and reduced its development cycle by 30%, while improving on-time completion by 15%. Those gains came from removing the specific steps where data was being lost or re-entered, not from working longer hours.
- Yangzi now reaches target color in one or two attempts and has cut yarn delivery time to under a week, reducing repeat dyeing, physical sample shipping, and customer wait time.

Both examples are currently based in China, the market where Textile Lab Manager has been live longest, but the underlying pressure they responded to — the same mix of speed, consistency, and traceability demands described throughout this paper — is not unique to any one region.

Conclusion

The challenge facing textile labs worldwide is not a shortage of technology. It is an overreliance on individual expertise running through manual processes, at precisely the moment that expertise is becoming scarcer, in a market that is simultaneously demanding more speed and more traceability. The answer is not to remove people from the process. It is to remove them from the repetitive, administrative work standing between them and the judgment only an experienced human can provide.

Every lab's version of this question is the same: do you have the tools, but are they connected?



Ready to find out?

Schedule a conversation with the [Datacolor team](#) about your lab specifically.

Or learn more about [Datacolor Textile Lab Manager](#) at datacolor.com