

THE
Modern Textile Factory
REPORT



SMARTEX

At Smartex, we're pioneering the integration of Artificial Intelligence into the textile industry, with a specific emphasis on achieving zero waste and traceability throughout material production — otherwise known as Tier 2, the highest impact step within the textile supply chain.

With a current presence in over 100 factories, we are rapidly expanding our footprint. **However, our efforts are part of a broader movement.** Numerous exciting technology companies, influential policy-makers, forward-thinking factories and pioneering brands are actively addressing various challenges within the supply chain.

Recognizing the importance of collaboration, **we've established the first focus group around "The Modern Textile Factory," including a diverse, global team of experts, each contributing a unique perspective.** This passionate group is dedicated to reshaping the production landscape in response to the pressing need for change.

In 2023, we convened four in-depth sessions to delve into crucial topics, and this report serves as a comprehensive summary of our key findings. With that, Smartex takes pride in introducing the members of "The Modern Textile Factory" for 2023.

Together, we're shaping the future of textile production.



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Max Easton

**Global Innovation Director
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After seeing first-hand the benefits of collaboration during my time at Fashion for Good, an organization focused on sustainable innovation in textiles, I was excited to continue this at Smartex and bring together a wide range of experts to dig into a vital topic: the textile chain and its necessary modernization.

A lot of attention goes to brands, technology companies, and policy-makers. However, the data has shown that the vast majority of the environmental impact is within the supply chain. The factories hold the key to industry change.

Like most people fighting for a better way of doing things, I am impatient. How can the vital supply chain modernization process go faster? How can we improve factory data collection and communication systems? How can we raise up the best factories to act as role models for the rest of the industry?

How can this all be done without punishing factories that already fight for their razor-thin margins?

It was my great pleasure to discuss these topics this year with our ten MTF group members. It was truly a privilege to get their insights, concerns and hopes, and I am very grateful to each of them for their valuable time.

In this report, I have tried to organize the key takeaways into a clear narrative, balancing experienced and real-life examples. We don't have all the answers – and neither does this report – but I feel strongly there are some very interesting ideas that could serve as real economic and logical arguments for change.

I look forward to any and all feedback as we all try to continue to modernize the textile supply chain. It's definitely a group effort.

Let's get to it →



EXECUTIVE SUMMARY

Modernizing the Textile Supply Chain is Imperative to Progress the Industry's Commercial & Sustainability Goals

The fashion industry has been unregulated for years. Low cost has been king. But there is change afoot. The commercial attributes of speed and quality are growing in importance while regulation is coming. The Modern Textile Factory is the key.

But there is change afoot.

It has been well publicized that the rules of the textile game are changing through legislation - from banning the destruction of excess stock to tracking products through the supply chain. This is a crucial step, but the crucial actor is not the brands, legislators or technology companies. It is the supply chain that makes up 80% of the industry's environmental impact.

In order to prepare the supply chain for this seachange in primary data reporting and investment in more sustainable technology, the Modern Textile Factory (MTF) has to emerge. The quicker the supply chain can modernize, the quicker we can go. The question is - do we really have to wait for regulation to become law with enforced penalties for non-compliant companies to start modernizing the textile supply chain?

There are emerging commercial advantages for factories to modernize:

- The growing importance of speed to help brands both capture trends and reduce deadstock inventory

- The realization by suppliers that better quality control means higher profits and more reliable speed
- The ability to utilize data-led pricing to factor in real costs and compete globally with confidence

If factories want to thrive in a market that demands the same competitive prices as well as increased speed, quality and compliance, they need to accelerate their modernization now.

Challenges exist. From financing, susceptibility to macro trends and a traditional mindset. However, with support, these can be overcome. Brands must help with financing, technology companies must work to provide a clear return on investment and the industry must promote the best factories and their success stories.

Sustainability is powerful - but financial incentives are more developed and powerful still. If we can help showcase the changes that are coming and the benefits afforded to the modernizers, the Modern Textile Factory can start to emerge at scale and become the new standard.

The Modern Textile Factory would be a win for us all.

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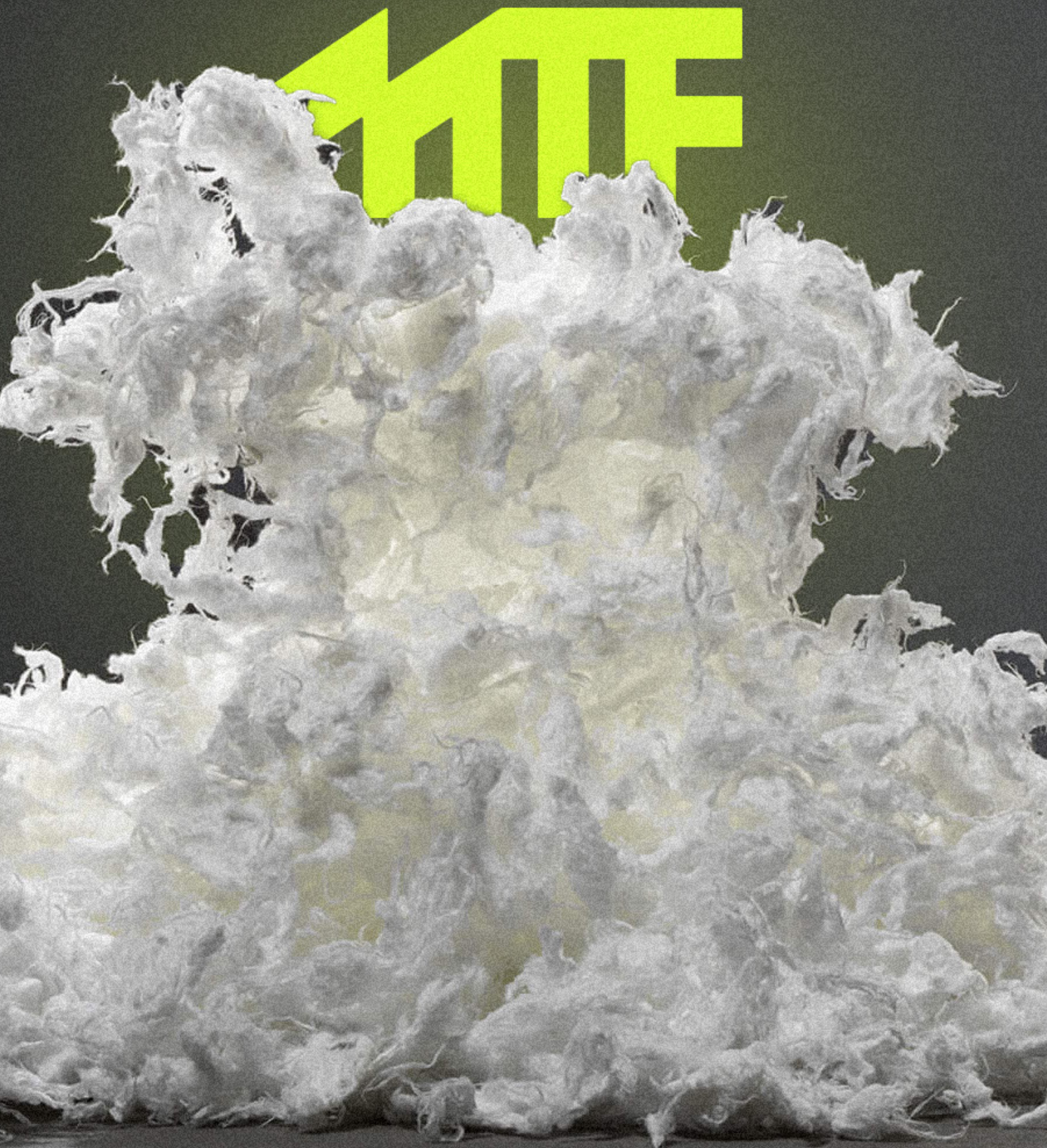
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CHAPTER ONE

An Introduction to the Modern Textile Factory & its
Significance in Today's Textile Industry

For those outside of its sphere, the supply chain is invisible. But the textile industry has a strong claim to being the most hidden and misunderstood. The idea that a t-shirt goes through upwards of ten processes at multiple factories often located on different continents is incomprehensible to most of us.

Now the visible face of the industry – the brands – are beginning to ramp up demands on their outsourced and offshore supply chains.

These demands include:

- Super-charged speed to capture trends and compete with ultrafast fashion
- Reduced deadstock inventory to save cash and improve profit margins
- Improved quality to avoid errors that slow speed to market and add to sourcing costs
- Increased primary data to handle growing regulatory and compliance requirements and track production progress
- Oh – and those suppliers better not add a cent to the price or that brand will move its business elsewhere. *Tough right?*

However, this ramp-up of demands also opens the door for a re-think of how textile factories operate.

The status quo will not serve the purposes of either financial growth or impact reduction. The joint incentives for modernization of a commercial carrot and a regulatory stick provide an impetus for change. This confluence allows a rare handshake between advocates of a more sustainable textile industry and pure-profit seeking brand owners. The enabler for both sustainability and greater economic strength for both brands and suppliers is the same: a supply chain fulfilled by Modern Textile Factories.

We'll go much deeper into what we mean by a Modern Textile Factory – but we can start with what it doesn't mean. Operating by eyesight, relying on pen and paper, and manually inputting information are all blockers to both competitiveness and sustainability. Why? Because it keeps operations and processes hidden from any overall improvement or accountability.

“It is not necessary to change. Survival is not mandatory.”

- W. Edwards Deming



There are real challenges and modernizing textiles factories is not a quick or easy endeavor. Suppliers must radically prioritize their limited investment bets. The textile supply chain has tight margins, limited budgets and a need for quick returns on investments – primarily because fashion brands are unforgiving on price increases and will switch suppliers without a second thought. Factories are driven by a defensive mindset because of the uncertainty in their customer relationships.

Despite this, factory owners need to spot the approaching commercial and regulatory storm and take action. They must be supported by technology companies making simple, effective and cost-efficient innovations and brands providing financing and longer-term relationships to allow the leading factories to not just survive, but thrive.

Why do we call this evolution of the textile supply chain, “The Modern Textile Factory”? Why not the more audibly pleasing, “Factory of the Future” (alliteration always attracts). The answer is simple – factories need to start modernizing now, not in the future – or risk becoming obsolete.

Alongside the commercial imperative – including investors now requiring brands to provide supply chain metrics – why is modernization so crucial for sustainability?

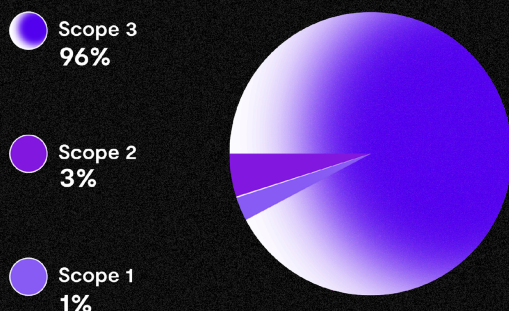
Scope 3 – emissions that occur in the value chain of the company, including both upstream and downstream emissions – accounts for 95%+ of most brand emissions, with around 80% of these emissions occurring in the production of clothing¹. Primarily in the growing and processing of raw materials (Tier 4) and the processing of fabric (Tier 2).

1. Fashion for Good x Aii: The Trillion-Dollar Fashion Decarbonisation Opportunity (November 2021)

% OF TOTAL EMISSIONS BY SCOPE

Total Emissions (%) by Scope of Apparel Companies with an Approved SBT.

Source: WRI & ALI (2021)



Without Modern Textile Factories, consumers, brands, investors and legislators are in for a big shock:

- Technology companies (referred to as “innovators” in this report) with genuinely more sustainable materials and processing improvements will struggle for adoption in an analogue supply chain.
- Brands will continue to have an incomplete and outdated understanding of their supply chains, including their share of factory emissions or the particular inputs and processes used on their products.
- Investors will struggle to scale technology companies in the space, hold large brands accountable or understand the risks of their portfolio.
- Legislators will struggle to incentivize market change because poor, inaccurate and slow data reporting means they can't tax externalities effectively (e.g. carbon tax).

Most importantly, the textile industry's approximate contribution of 2% of global emissions² won't really reduce – and may actually increase as a percentage as other industries decarbonize more quickly.

We'll be left with annual, 100+ page sustainability reports with lots of words but limited progress.

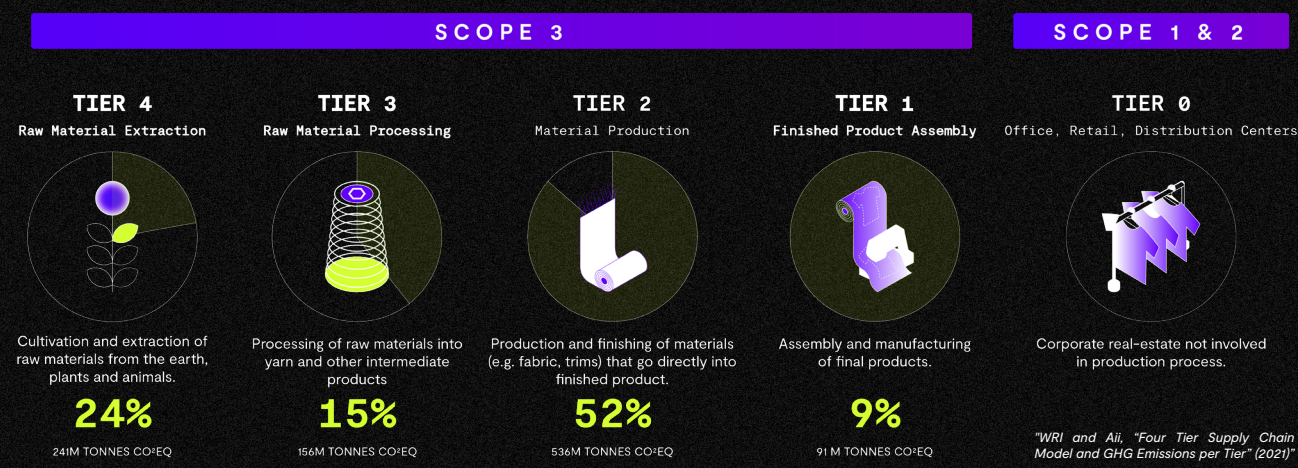
So Modern Textile Factories are at the heart of this transition. Thankfully, we are not starting from zero.

The best factories around the world – from Portugal to Pakistan, Turkey to Bangladesh, China to Vietnam, Sri Lanka to India – have started taking steps to modernize because they know sitting still means being left behind.

However, the pace needs to quicken.

The textile factory leaders of today adapted to price and speed expectations over the last 30 years. Now they must adapt again to even greater demands. Like with offshoring, there will be serious winners and unfortunate losers. Here's the argument for why factory modernization needs to start now

Only the modernizers will prosper.



2. "Lutz Walter, "What are the CO2 emissions of the fashion industry?" (December 2023)



Factories need to
start modernizing now,
not in the future.

CHAPTER TWO

The Commercial Motive to Modernize

For those of us who have visited the textile supply chain and talked with factory owners, the conclusion is always the same: this is a tough, low margin industry. Brands have no loyalty, deals are lost on cents, margins are small and suppliers are fully responsible for both compliance and the associated cost. To a lot of them, sustainability is just another burden they will have to bear.

The weak position of the textile supply chain is a result of strong industry power dynamics in favor of fashion brands. At a high level, this is driven by three factors:

→ Intellectual Property

- Fashion brands know the consumer better, have top designers and software tools ready to go.
- They create, shape and chase the demand – and are the reason clothing is sold in such quantities.
- *Suppliers take the orders.*

→ Negotiation Power

- Suppliers are in a very weak negotiating position. Typically, they are dependent on a few brands³, compete globally on price and excess supply capacity is generally available or quickly added due to low barriers to entry.
- *Suppliers take the orders and the prices from brands.*

→ Business Relationships

- Finally, brands have very little interest in cultivating long-term relationships with their suppliers. As they say in Turkey, it's all about “fiyat fiyat fiyat” (price).

- Brands view the supply chain as a means to an end and show it through only signing short-term contracts.

- *Suppliers take the orders, the prices and receive no certainty from brands.*

Brands are the undisputed leaders in the textile arena, while factories have had limited motivations to modernize.

However, there are new opportunities appearing, creating strengthened commercial motivations to modernize.

The Need for Speed

An increasingly attractive advantage. As we shall explore, speeds boosts brand revenue and profit margins, which are attractive selling points.

Quality = Factory Profitability

Crucial for factories to boost and maintain control over their profit margins while increasing their speed.

Data-Led Pricing

An opportunity for suppliers to better understand their cost of goods sold and ensure they price their products correctly and competitively.

Survival

Basic, but true. The best factories know that one has to modernize enough to survive as technology advances and expectations change over time. If you stay still, you will be left behind. This is only the motivation we won't explore in-detail as adapting simply to survive will never lead to a Modern Textile Factory.

3. Although the best factories limit each brand to 20% of their capacity to reduce their risk exposure to any one brand leaving them

The Fashion Brand Formula

DETECT / CREATE A TREND + DESIGN + PRODUCE + SELL + REPLENISH

Everytime

Not Everytime

The Need for Speed

Whether one agrees with fast fashion or not, speed is – and always will be – crucial to fashion brands.

To better understand why, let's stand in the shoes of your average fashion brand and their production team to think about the two key metrics they care about:

→ Revenue

- Revenue is determined by how quickly fashion brands can respond to trends. Trends have a sell-by date. Miss it, miss those sales and revenue opportunities.
- Brands need to bring new products quicker than their competitors and maximize the revenue opportunity by replenishing their stock in response to sustained or growing demand.
- For an example of a recent trend, look no further than Barbiecore. In July, it was reported that “a lot more brands [are] embracing rich bright pink shades from Valentino to H&M collections, in anticipation of the much-awaited release of the Barbie movie.”⁴ However, by December, it was reported that “Pink will soon be pushed out of the spotlight by red -- the color of passion, love and energy”. If you weren't quick, you missed it.⁵

→ Profits and Cash

- Speed of production also has a huge impact on brand profits and free cash (i.e. free to spend).
- If a brand has a quick supply chain, it doesn't need to order so much product

upfront as it can restock successful items quickly. Brands don't have to bet on the future, but rather respond to sales data. If a competitor finds a trend, you can respond quickly – then ideally turn up the volume. Fashion brands with the quickest supply chain can become the main beneficiaries of temporary trends like Barbiecore.

- Brands want to order in smaller quantities and take smaller risks on trends to start to avoid the dreaded “deadstock”, which has ballooned. It is a closely guarded secret for brands, but it has been reported that deadstock represents an annual loss of around a remarkable \$152⁶–288⁷ billion for the industry.
- Less deadstock means less product that has to be severely discounted or disposed of in order to clear out brand stores and warehouses for the next trend. Deadstock wastes brand cash and clearing product through discounts reduces brand profit margins – neither of which investors love.



4. Textile Focus, “Barbiecore: The Current Fashion Craze” (July 2023) Vogue

5. “Fashion Network, “What color will take the place of Barbie pink in the fashion sphere for 2024?” (December 2023)”

6. “LVMH's Latest Venture Is a Deadstock Fabric Platform” (April 2021)

7. Queen of Raw website

Zara was the first speed leader. From 2010–2020, the average lead times in clothing production dropped from 120 days to 60⁸ days. But Zara and its parent company, Inditex, managed to get it down to 21 days⁹. As a result, Zara kept its customers interested through their frequently changing product line and kept their investors happy with an industry leading inventory turnover (the rate that inventory stock is sold). As of November 2023, Inditex had a market capitalization of \$113.25 billion.

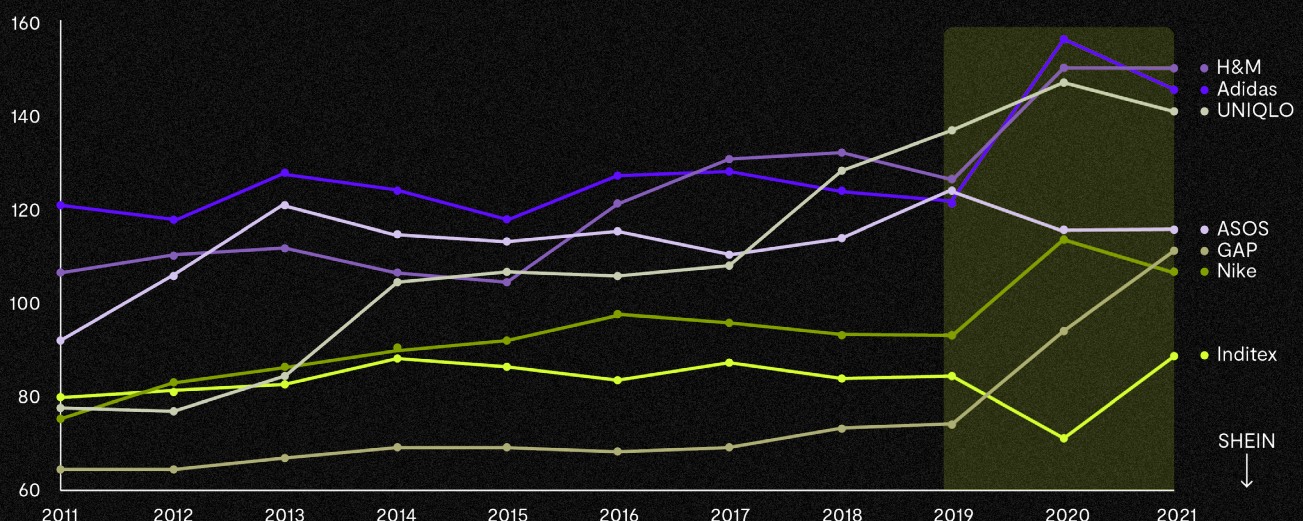
Recently, Shein has taken this to the next level. They can now go from design to production within 10 days¹⁰. As a result of this, they have a market-leading inventory turnover of 40 days vs over 80 days for most of the world's leading fashion brands¹¹ vs over 100 days for most of the world's leading fashion brands¹².

Shein's products are sold at absurdly low prices, but its market-leading

speed means it can respond to trends and choose which products to produce in larger quantities based on sales data – instead of predicting months in advance. Even if a competitor captures a trend first, Shein has the speed to jump on the bandwagon while other brands are scrambling to push it through their slow, high minimum order supply chain. Whatever your opinion of Shein, their speed makes them financially attractive to investors. At the time of writing, Shein has filed paperwork for an IPO with a target valuation of \$90 billion¹³.

The demand for speed will not relent. It just doesn't make financial sense for the fashion brands or their investors – and this is sadly the only metric that counts until stricter legislation forces sustainability reporting and enforces punishment on the worst offenders. Even if the rules do eventually change to expand priorities from purely financial, catching trends will always be the job of fashion brands.

Inventory Turnover: Shein Off-the-Chart at 40 Days While Competitors at 80+ Days



Sources: S7P CapitalIQ; BCG analysis

Note: Examples shown here were selected to represent industry trends and do not necessarily reflect the brands analyzed elsewhere in the study.

8. BBC, "Seven ways fashion has changed in the 2010s" (December 2019)

9. Harvard Alumni, "ZARA: Achieving the "Fast" in Fast Fashion through Analytics" (April 2017)

10. Euromonitor, "How the Chinese Fast Fashion Brand Shein is Conquering the US Market" (December 2021)

11. Reuters, "Shein tries to thread US-China needle" (June 2023)

12. BCG, Agility Is Fashion's New Source of Competitive Advantage (March 2023)

13. TechCrunch, "Shein reportedly seeks \$90 billion valuation in IPO" (November 2023)

It's very important to note that these speeds are largely driven by supply chain innovation since the supply chain is the most time-consuming part of the design-to-market process. If suppliers can shave hours, days and even weeks off their lead times, brands will prioritize them for orders.

Given Shein is the recent success, let's look at two ways they modernized their supply chain to achieve market-leading speed so we can learn from it:

1) Shein connects all its suppliers to its digital production center. This is a big modernization step. Shein's suppliers are required to connect, share real-time capacity and demonstrate areas of expertise knits, wovens, plus-size, seamless etc).

As a result, Shein can assign orders automatically to the best-suited manufacturer who has the capacity to produce immediately.

2) Low minimum orders are financially enabled by consolidated fabric platforms, on-time payments and poor compliance. Shein is well-known for uploading thousands of new styles every week to its platform. Typically, this would generate huge amounts of deadstock (the dreaded word) as each style would have a high minimum order quantity. However, Shein is able to order much smaller volumes - 100 to 200 pieces of each new style - to test market demand. If consumers respond favorably, Shein will quickly order more via its digital production center; if the style flops, no more is produced.

Even if the rules do eventually change to expand priorities from purely financial, catching trends will always be the job of fashion brands.



These small orders are unique because typically small volumes mean no economies of scale and a higher unit price. However, Shein has managed to keep garment prices ridiculously low through a combination of tech, payment terms and overworking underpaid garment workers (this latter part cannot be ignored – and certainly is not part of a Modern Textile Factory).

First, the technology. Shein has consolidated its fabric suppliers on a single platform that its garment manufacturers purchase from. In addition, Shein sets master fabrics, limiting designers to those fabrics only. The company has consolidated 70% of its fabrics this way¹⁴

Secondly, the payment terms. Shein pays its suppliers on time (it's always amusing that this is groundbreaking)

– something that is a rarity in the fashion industry. Factories get better liquidity in return for their willingness to do smaller, faster production runs.

Finally, the human cost. Shein has notoriously poor traceability and compliance within its supply chain. By working with factories that force workers to work long hours (with low wages and poor health and safety¹⁵), they use people to maximize garment speed.

The cheap needle has not disappeared even though the smart needle is building momentum.

Shein has shown other brands what speed can do to their financials. Suppliers should be aware that offering speed is attractive and will require investments in communication systems, the right equipment and the right geography. Plus it is much better for it to be supplier-led than brand-led in order not to worsen the existing imbalanced power dynamics. Shein has implemented this technology themselves, focusing on small and medium-sized factories. These suppliers

are now vulnerable to Shein stopping orders and pulling out their technology. Suppliers need to be able to cater to multiple brands if they are to keep single brands from holding too much negotiating power

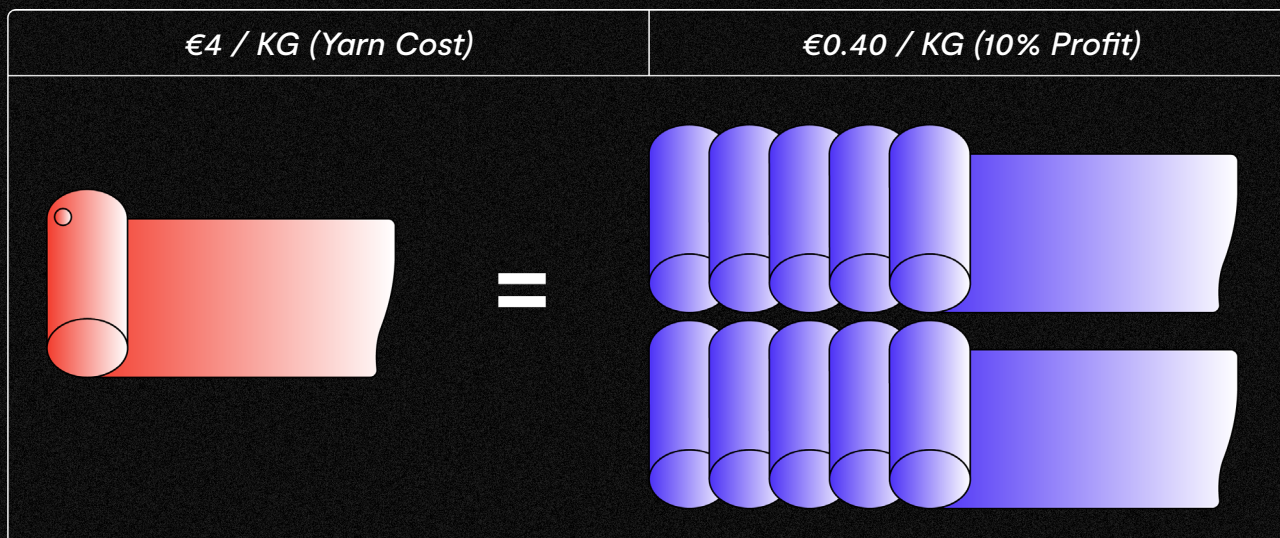
over them.

Finally, speed gives an opportunity for nearshore production locations to gain an advantage and capture more of the highest per capita fashion consumption markets. Turkey, Portugal and Eastern Europe for Western Europe; Central and South America for the US market. Speed will start to challenge price as the key determinant of fashion brand – and thus supplier – success.

Speed gives an opportunity for nearshore production locations to gain an advantage

14. BCG, *Agility Is Fashion's New Source of Competitive Advantage* (March 2023)

15. Business and Human Rights Resource Center



Quality = Factory Profitability

As speed ramps up, suppliers need to be careful not to let quality slip too much. Going too fast without quality kills factory profit margins.

Let's take a real example of fabric mills.

Fabric mills – which turn yarn into raw fabric, survive on 10% margins in the best case scenarios. The price of yarn varies based on a number of factors, but let's use a yarn cost of €4/KG in this example. If a mill buys yarn for €4/KG, it will sell its finished raw fabric for €4.40/KG. It makes €0.40/KG in gross revenue, which it uses to cover its operating expenses (and invest back into their facility if it's well-run).

However, if a single fabric roll is rejected for poor quality and goes to waste, the fabric mill will need to sell ten good rolls to get back to cash neutral. Ouch.

And it can get worse. We heard of one brand that scrapped a whole organic cotton collection because of a polyester yarn contamination discovered in the finished fabric only after dyeing (polyester and cotton uses different dyes so a white line

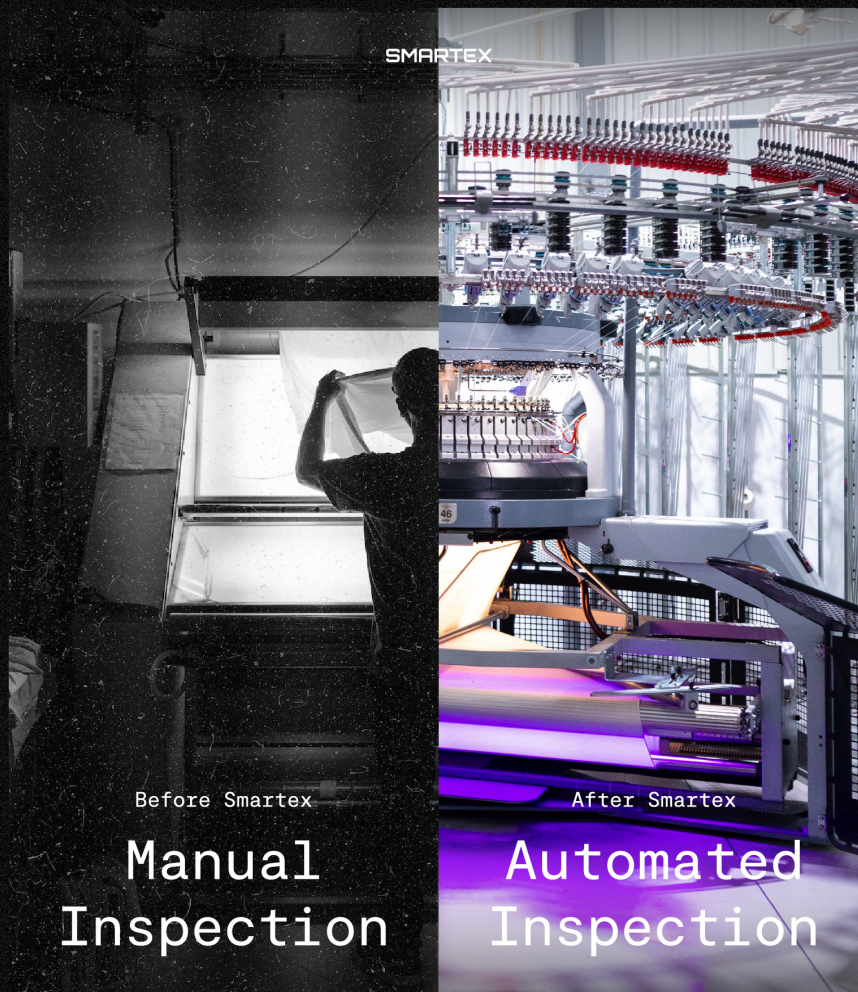
would have been visible through the dyed fabric). In this case, the fabric mills would be left on the hook for the finished fabric expense (8-15 Euros/KG), not just the raw fabric cost (4 Euros/KG). In this case, for each bad roll, 20+ good rolls would be required to get back to cash neutral.

Double ouch.

Reliable quality control is only becoming more important as higher value, lower environmental impact inputs (e.g. organic cotton, rPET and textile-to-textile recycled fiber) become a bigger focus for brands. Higher cost inputs mean yarn cost will rise and poor quality will become more and more expensive.

Modernization means being able to both increase speed *while* maintaining quality, which requires objective technology and data to assist your workforce.

We know this space well at Smartex. Manual human inspection is inconsistent, slow and subjective – and certainly ill-prepared for a ramp-up in speed. Like brands with production orders, factories need to rely more on data when it comes to quality control.



Data-Led Pricing

Despite pricing being the number one priority of mass-market brands since offshoring started in the 1990s, supplier understanding of their actual price of production is pretty basic – relying on murky estimates, not data. Their priority is broadly understanding the average batch costs and negotiating like mad in shouting-match discussions with brand sourcing teams.

The inherent challenge of genuinely understanding the price of production lies in the complexity of comprehending the intricate processes each product undergoes and the subsequent expenses incurred, encompassing elements such as energy consumption, chemical usage, water consumption, and labor. This complexity is particularly pronounced in the dye house, where the tracking of a finished fabric roll's processing history—whether it has undergone a single round of processing, required reprocessing, or even a second round of re-reprocessing—is seldom recorded. Consequently, pricing is based on broad approximations rather than precise assessments.

When price competition is so fierce and margins are so tight, this lack of clear costs can result in missed pricing opportunities or accidental loss-making pricing.



Gizem Çalış

Operational Excellence Deputy Manager
Ekoten

MTF Member Contribution
Factory Perspective

Technology is rapidly evolving. At Ekoten, we are actively exploring ways to integrate these advancements into our business operations to enhance productivity. Our primary goal is to harness the synergy of human expertise and Industry 4.0 technologies for optimized task allocation.

We have assembled a dedicated team that is focused on identifying the most suitable technologies for specific tasks and conducting in-depth research in this regard. **Technology serves as a crucial means to achieve our core objectives, which include producing top-quality products and streamlining work processes to enhance overall efficiency.**

Our approach to digitalization consistently revolves around a meticulous assessment of our operational requirements and the subsequent enhancements achieved through digital transformation. We derive our strategies and needs from the insights obtained through our digital maturity index, which we have developed by aligning with international standards while considering our business's unique dynamics.

This comprehensive evaluation covers all aspects, from the initial design stages to the final steps in our production processes. Based on the scores from our digital maturity index, we make informed decisions regarding the specific areas and projects in which we will invest and further develop. One crucial aspect of this assessment pertains to the cultivation of a digital culture within our organization, prompting us to take strategic steps in this direction.

For instance, we have made a significant investment in a new system focused on fabric quality. Following the implementation of the Smartex fabric quality control system, we provided comprehensive training to our machine operators on the system's functionalities. We also educated them about one of the key tools within Industry 4.0, namely artificial intelligence. In an effort to facilitate their learning, we prepared informative booklets, effectively designating them as artificial intelligence experts.

Digitalizing factory operations takes real commitment – but we know it is the only way forward.



Yael Gairola

Board Member
PDS Limited

MTF Member Contribution
Brand Perspective

The textile industry – which relies on close collaboration between brands and their supply chain partners – has been slow to adapt to the digital age and incorporate technology into its practices particularly on the supply chain front. This sluggishness can be attributed to the inherent nature of the supply chain players, often consisting of small-scale enterprises (mom and pop, cottage industry). Additionally, the industry's inclination to constantly seek the most cost-effective sourcing options, commonly known as "chasing the cheap needle," further complicates the adoption of technology.

This is coming to end due to the exponentially increasing complexity of the fashion industry (8-16 collections a year, fast fashion, etc) and the finite number of manufacturing locations coupled with inflationary pressures. In the last decade, we are slowly starting to see technology playing a role in design, sourcing and production – however, still at limited scope and not in a connected way.

Some examples include the increased adoption of digital product design tools across both Brands and Tier 1s (Clo, Browzwear) and digital passports/traceability solution (EoN, Fairly Made, etc) – the former is

driven by efficiency and the need to reduce speed to market and the latter by a growing consumer demand for supply chain transparency and looming regulation.

While digital tools have transformed some parts of the fashion value chain, there is still a lack of end-to-end value chain integration to create more efficient and profitable ways of operating. Brands and their suppliers still work in silos, many of the operations are still manual and rely heavily on Excel with no “real time” ability to track POs through the supply chain despite existing technological breakthroughs (RFID, Blockchains) and a patchy to non-existing application of AI tools, which can boost productivity, reduce waste and over-production and enhance sustainability.

In my opinion, the next decade will be a defining one for our industry, but to be able to develop the end-to-end digital supply chain, a few key things must happen: first, a shift of mindset in the transition of brands to be open and pursue disruptive technologies; second, an investor community which will support and invest in disruptive tech startups; and third, the acceleration of regulatory intervention which will require brands to finally have better data, visibility and control over their respective supply chains.

CHAPTER THREE

The Regulatory Stick to Drive Factory Modernization

The textile industry is bracing for an unprecedented wave of incoming regulations and increased compliance requirements. These changes pose a real threat to suppliers who fail to comply.

Up until now, environmental and social compliance has been all bark, no bite.

Voluntary, inaccurate and poorly audited – it's been a 'nice to have' for brands to use for marketing purposes with no real consequences if missed, incomplete or fraudulent. For example, although 98% of the S&P 500 now produce CSR (Corporate Social Responsibility) reports, a minority of them are validated by third parties¹⁶. As a result, a lot of the input data is misleading and / or incomplete. By contrast, financial reporting follows agreed-upon standards and compliance is ensured by a referee (in the United States, the Securities and Exchange Commission). Serious fines and jail time are possible punishments.

However, the stick of mandatory environmental and social compliance is coming – and it's needed urgently given the growing repercussions of inaction, such as the 2022 floods in Pakistan, which submerged one third of the country, affecting 33 million people¹⁷.

With 16 pieces of legislation alone in the EU (such as Ecodesign for Sustainable Products Regulation, Extended Producer Responsibility and Green Claims Directive), fashion will become a regulated industry. In the words of Lutz Walter, a EU Textile Legislation Expert, "the textile and

VOLUNTARY



MANDATORY

fashion business in Europe and by extension in its main supplier countries across the world will look very different from today"¹⁸.

The focus of these pieces of legislation can be divided into three buckets:

Supply Chain Transparency

Demands for greater transparency in supply chains, requiring companies to disclose information about the origin and production of their materials and products. This forces accountability for environmental and social impact, and helps consumers make informed choices.

Environmental Impact

Regulations to control pollution, reduce carbon emissions, reduce water usage, and encourage the use of sustainable materials and manufacturing processes. These measures aim to mitigate the industry's contribution to climate change and resource depletion.

Social Responsibility

Regulations to address labor practices and worker rights within the industry. These policies are focused on improving working conditions, ensuring fair wages, as well as eliminating child labor and other exploitative practices.

16. Harvard Business Review / Ken Pucker, *Overselling Sustainability Reporting* (May 2021)

17. Unicef, *"Devastating floods in Pakistan (August 2022)*

18. Lutz Walter, *"What will a regulated fashion industry look like?"* (October 2023)

Up until now, environmental
and social compliance has
been all bark, no bite.



Regulation will disproportionately impact the textile supply chain since it accounts for ~80% of a fashion brand's environmental emissions and employs the vast majority of workers in the textile industry.

Although fines and punishments are levied at the brand-level, this will have an immediate knock-on effect on their suppliers. Those suppliers that cannot comply will lose business as brands need to sell in the lucrative EU and US markets where per capita consumption is still much higher than other regions¹⁹.



A recent, clear example of how enforced regulation can impact supply chains is the Uyghur Forced Labour Prevention Act. The piece of legislation, which started to be enforced in June 2022, meant US customs could start holding imported products that couldn't prove its origin. By February 2023, the Financial Times reported fashion brands actively looking to shift their supply chains away from China in order to reduce supply chain risk²⁰. Brands don't want to be slowed down by regulation and incur more dreaded deadstock.

This is an important moment for the supply chain. There is the very real threat of suppliers' losing business with the big brands selling in the regulated EU and US markets. However, there is also the incentive of becoming a locked-in supplier while your competitors lose out.

Brands are already starting to feel the pain of swapping suppliers every 6 months over cents because of existing compliance regulation. Checking certifications, auditing operations, establishing quality standards, understanding that supplier's supply chain – swapping increasingly has real costs associated that will only increase as more regulations are enforced.

It is a reasonable prediction, therefore, that regulation will make textile supply chains more stable. Suppliers that can provide primary data on their operations, manage the various regulations and communicate data seamlessly to brand compliance departments will gain more brand interest. Compliance will become about risk – and if the penalties are large enough, brands will be willing to pay those suppliers who are seen as “de-risked”.

Brands will ultimately allocate units based on some balance of price, speed, quality and sustainability plus compliance. Suppliers need to modernize in order to service these competing demands.

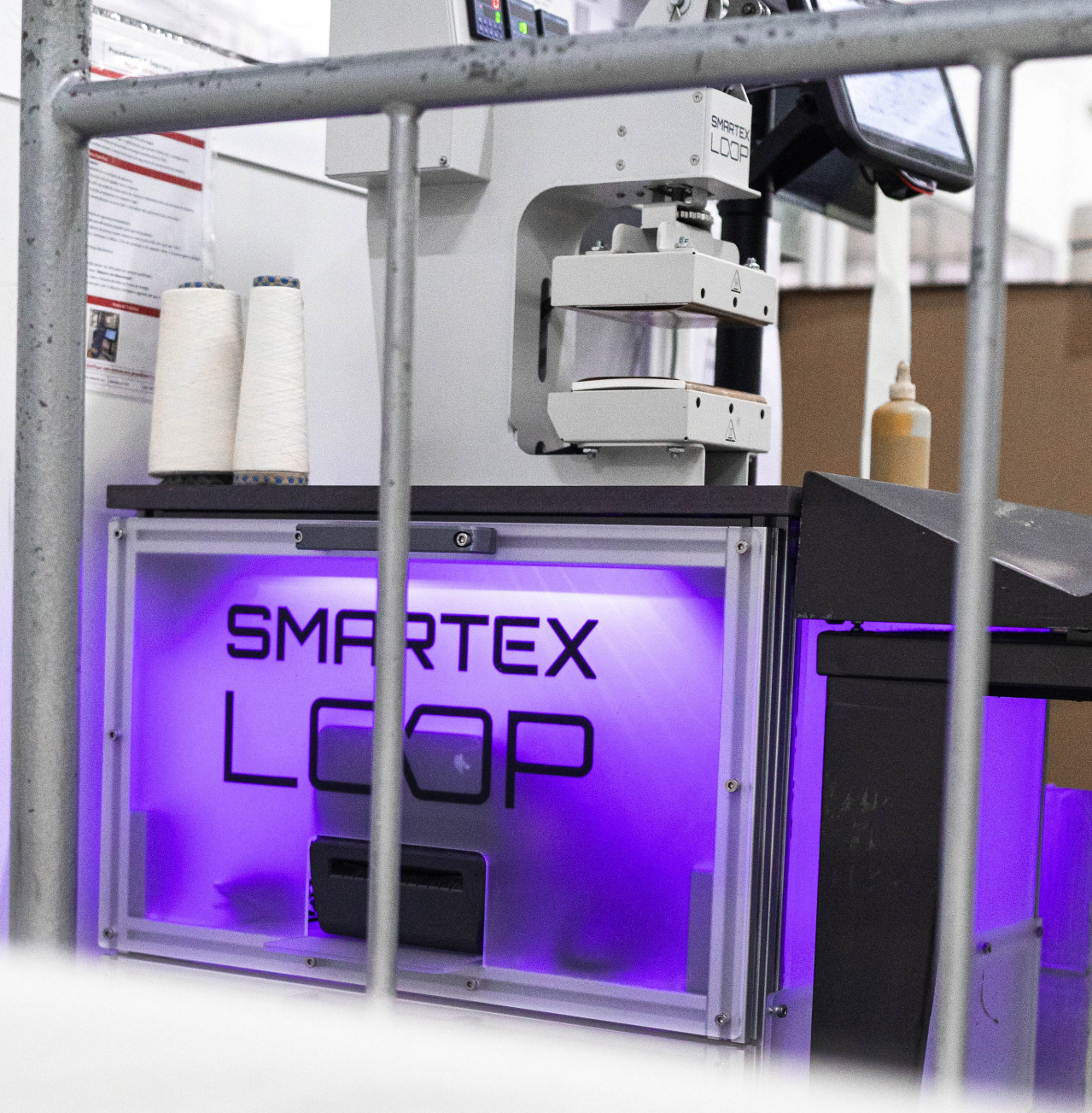
Supply chains [+ Add to myFT](#)

Clothing companies look to reduce China manufacturing exposure

Brands have begun to shift away from mass textile production in the country as they seek to reduce supply chain risks

19. Statista, “Ranking of the per capita consumer spending on clothing and footwear in Europe by country 2021” (August 2023)

20. The Financial Times, Clothing companies look to reduce China manufacturing exposure (February 2023)





Dolly Velanki

Innovation Associate
Fashion for Good

Guest Contributor
Legislation Perspective

The global legislative landscape is undergoing a profound transformation, and it is having a significant impact on the textile industry, which has traditionally been less regulated than many other sectors. This regulatory shockwave is driven by a growing recognition of the environmental and social challenges associated with textile production and supply chains.

The impending regulations will fundamentally alter how brands and suppliers collaborate, with a strong focus on reducing Scope 3 emissions within the supply chain. Initiatives like Ecodesign, Green Public Procurement, REACH, and Extended Producer Responsibility are targeting emissions and environmental challenges across the textile supply chain. These regulations are driving companies to reevaluate their practices and make substantial reductions in their environmental footprint.

These shifts bring new challenges. Reporting and Due Diligence requirements are placing immense pressure on brands and suppliers. The textile industry currently grapples with data inconsistencies and a lack of interoperable data mechanisms. Suppliers are also facing increased data demands.

To ensure high-quality data is collected, managed, and shared efficiently across the supply chain, robust and high-quality data systems must be established. This process requires close collaboration with supply chain actors and the implementation of financial and non-financial incentives to manage the escalating data requirements effectively.

Amidst the industry panic, there is a silver lining. Textile businesses are responding proactively, seizing the opportunity to pivot towards circularity and scaling sustainable innovation. They are embracing change by investing in next generation materials, innovative manufacturing and chemical processes, and responsible sourcing. These efforts are not just about compliance; they are about reshaping the industry's future.

Legislation and policy are acting as both carrots and sticks to foster innovation and enable a circular textile industry. However, for these policies to be truly effective, it is essential to move beyond mere compliance. The industry must focus on efficient policy implementation and establish long-term strategic partnerships to drive meaningful change. In this rapidly evolving regulatory landscape, collaboration, innovation, and a commitment to sustainability will be the keys to success for the Modern Textile Factory.



Lutz Walter

Secretary General
Textile ETP

Guest Contributor
Legislation Perspective

In the textile industry, today's buzzwords are "traceability" and "transparency." These concepts are crucial for the future of fashion and sustainability, and it's vital to clarify what they mean and why they matter. Traceability and transparency don't require sharing every supply chain detail with the world; rather, they mean systematically collecting, securely storing, efficiently processing, and reliably transmitting data to authorized stakeholders, creating a chain of custody.

The stakeholders with legitimate interests in this data are diverse, from production managers optimizing schedules to designers understanding material impacts, and sales managers making commitments.

When thinking about what data to collect, it helps to sort data into two buckets – the data that must be collected – compliance data – and the data that is useful for business operations to collect – efficiency data. The overlap between compliance data and efficiency data is substantial, making it vital for companies to embrace a comprehensive data strategy.

The textile industry's data management capabilities have been hindered by its analog nature, complex supply chains, limited resources, and supplier interests in maintaining opacity. However, change is underway as regulations tighten in the fashion industry. European legislation is leading this transformation, with numerous legislations set to come into force between 2025 and 2027.

To address this challenge, companies should start by mapping their suppliers and understanding their data needs. Then, they can explore tools and services to automate data collection and processing efficiently. The transformation will lead to a more stable and professional fashion industry, but challenges like data quality and compliance risks are expected.

The industry will see a surge in IT development, integration, and consulting services. Auditors and certification providers will need to adapt, and policymakers must consider the pace of regulatory change. In conclusion, **textile supply chain traceability is a fundamental building block for a cleaner, more efficient, and more accountable fashion industry.** It's driven by legislation but will also optimize business operations, making transparency the new norm.

CHAPTER FOUR

The Five Pillars of the Modern Textile Factory

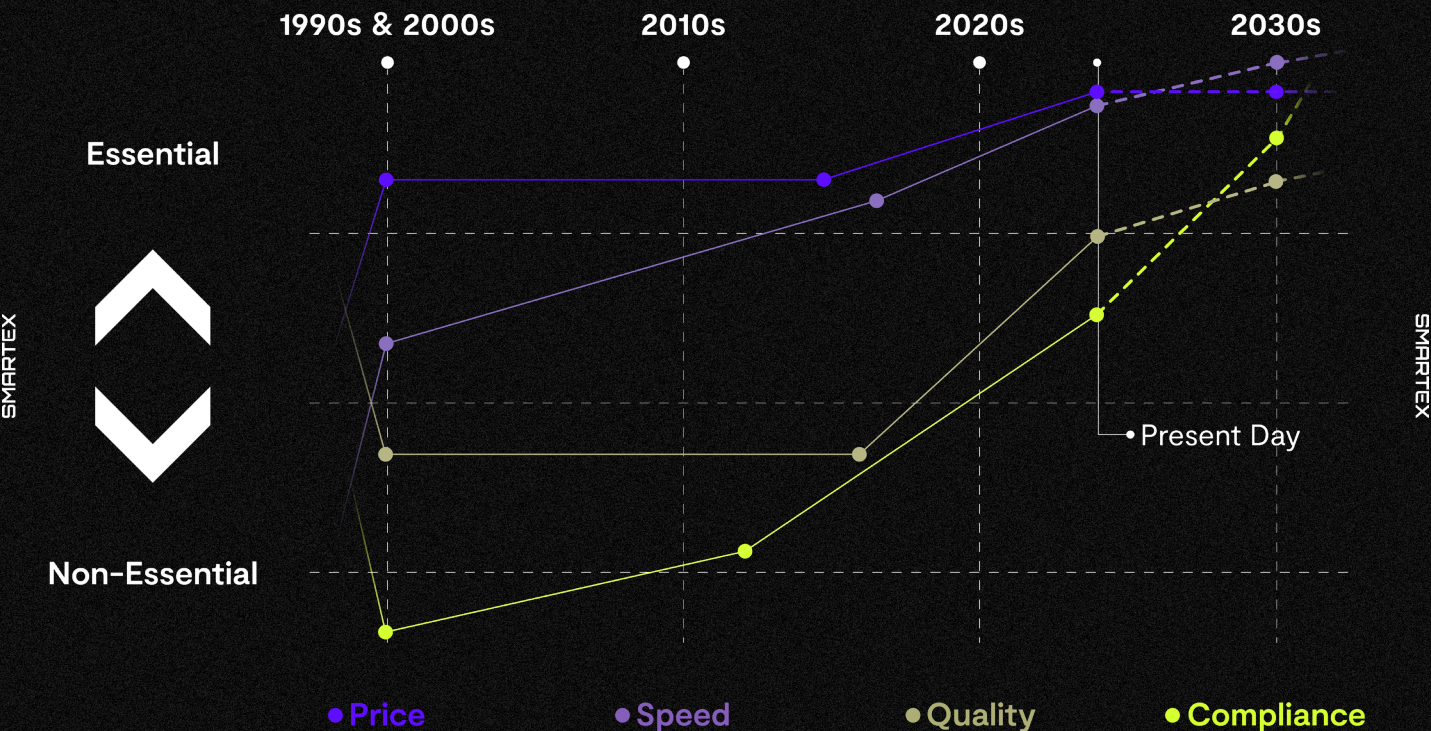
If we qualitatively map the essential demands on textile factories, we see that the industry is evolving from one singularly focused on price to one simultaneously focused on price, speed, quality and compliance.

Without modernization, factories will be overwhelmed by these competing priorities.

In our discussions this year, we got it down to five key elements:

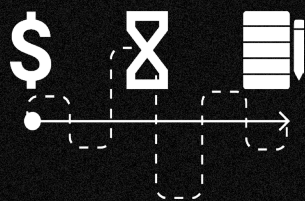
- Resource efficient
- Real-time data collection
- Data-driven decision-making
- Integrated with its stakeholders
- High quality, safe jobs

Let's dig a little deeper into each one.

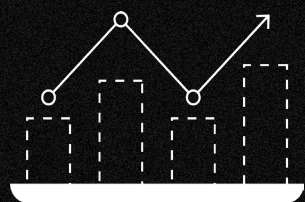


How do you identify a **Modern Textile Factory**?
What should be the main focuses of any factory
looking to **modernize**?

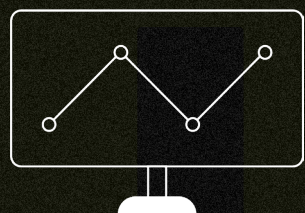
Resource Efficient



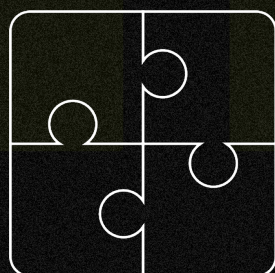
Real-Time Data Collection



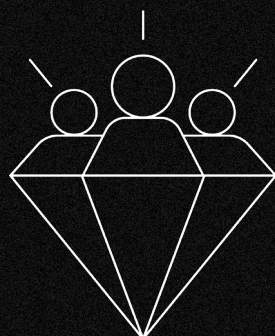
Data-Driven Decision-Making



Integrated with its Stakeholders



High Quality, Safe Jobs



Resource Efficient

Reduced cost, higher profits, reduced emissions. This one is ESG capitalism's dream. As a brand recently told me, anything that reduces wastage "is an easy implementation as everyone wins".

Modern Textile Factories will continually seek to improve their resource efficiency to lower their cost and the environmental impact of each unit produced.

Real-Time Data Collection

For suppliers to stay competitive on speed, quality, price and compliance, objective, verifiable and real-time data is key. At Smartex, we call this type of data, "Golden Data".

"Golden Data" enables an accurate understanding of the full cost of a product, a factory's free capacity, clear quality metrics and environmental and social impact

In a lot of ways, this is the first domino that needs to fall in a factory's modernization journey since it is a key enabler for improvement.

Data-Driven Decision Making

Once data is available, decision-making needs to switch from traditional to fact-based. Pen and paper textile factories are known for believing in the "tried-and-tested method". For example, operators are certain that their machines must run at certain speeds or settings "because that's the way it has always been done".

However, in an era of balancing revenue-generating speed with quality-dependent profits, technology is a more reliable compass. Using data to make decisions will be a recurring theme within the best factories.

Integrated with its Stakeholders

There is no benefit to working in silos. Factories need to understand what they're buying (quality, quantity, material, origin) in order to most effectively process it and send it on – enriched both physically and digitally – to their customers.

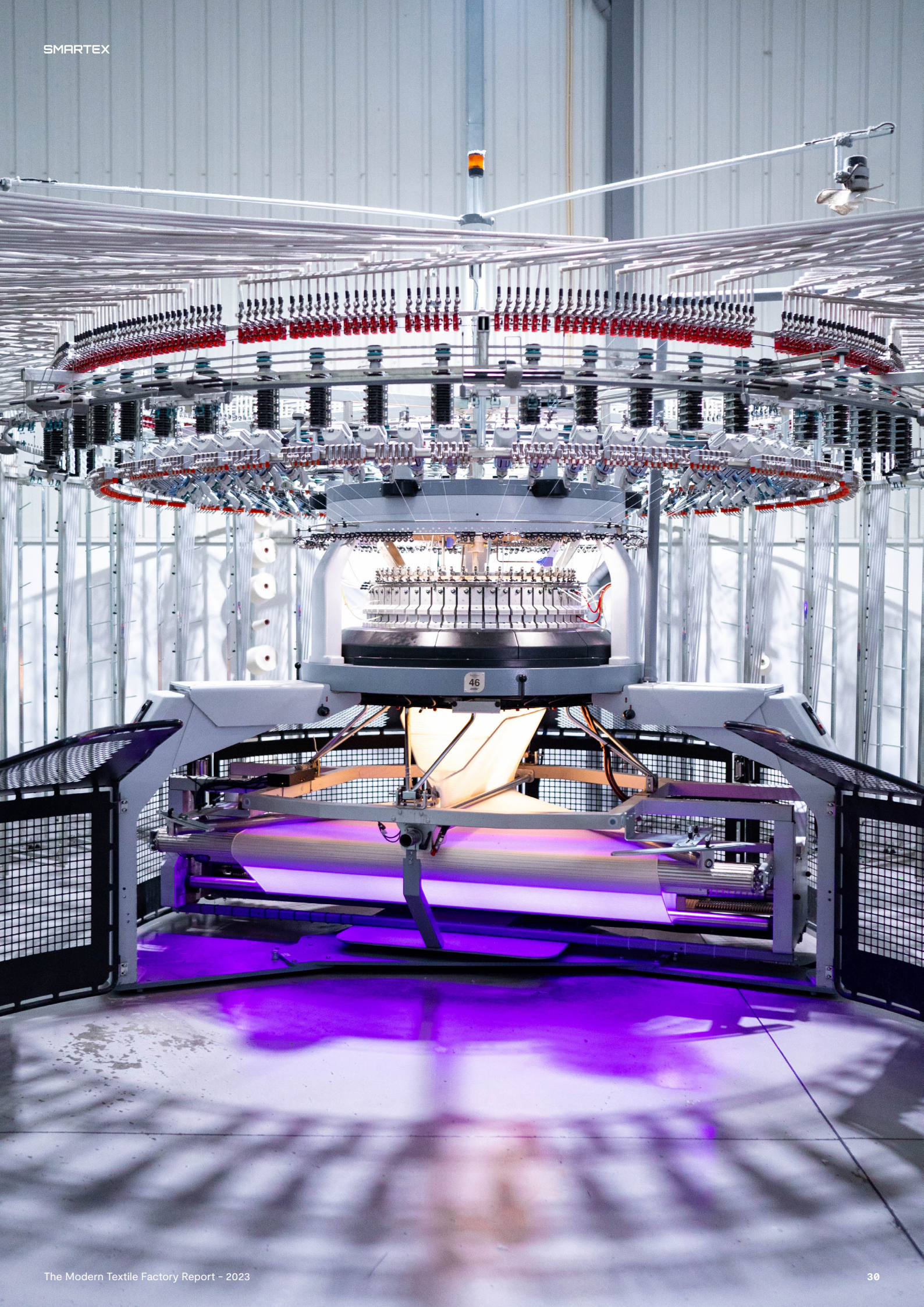
This is certainly a strength of vertically-integrated facilities, which can connect more easily with other supply chain steps by linking up factory systems. As a result, they can have full visibility on the production process to review order progress, identify problem areas and continuously improve.

High Quality, Safe Jobs

Modern Textile Factories will be safe, non-toxic and innovative places to work. What is considered the status quo today will seem a relic of history in Modern Textile Factories, as NTX have shown by removing chemicals from the air in their new Cambodian dye house²¹.

Factory workers will work closely with smart machinery to achieve fast, efficient and high quality results. As a result of technology progression, workers will require constant training and upskilling to maximize the factory's investment in technology and deliver products with the right mix of price, speed, quality and compliance.

21. NTX, *First Impressions of Our Low Carbon Dyeing and Printing Facility* (January 2023)





Ricardo Silva

CEO
Tintex Textiles

MTF Member Contribution
Factory Perspective

If we could ask every person in the world how they visualize a Textile Factory, would we be surprised by the answers? Would the general picture be a dark and disorganized place or a high-tech clean space where top-notch products are manufactured? What if we ask the same question regarding electric bicycles factories or chocolate factories?

In fact, textile factories used to be dark, disorganized and full of rags and paper, always doing the same thing over and over. But other industries were too... technology changed and keeps changing them.

The Modern Textile Factory is a place where data is effortlessly available, correlations and quick decisions are accessible for everyone in the factory. Repetitive mistakes and low efficiency is something in the past...

At Tintex, we are focused on bringing online real-time valuable data to every employee, from every production unit to the top management, together with the passion for challenging the status quo and assessing new ingredients and new technologies in a way that makes us constantly evolve and learn from these experiences.

We have a saying in the company: "Innovation is the only constant". For it to happen, technology and data-driven decisions are key enablers for sustained growth.

Looking ahead, with traceability and mass customization as two of the main trends of change in the industry, Modern Textile Factories are the places where responsible fashion and responsible manufacturing are granted.



Jeffrey Hsu

Chief Innovation & Marketing Officer
NTX

MTF Member Contribution
Innovator & Factory Perspective

The two biggest problems we have been plagued with in the textile industry are sustainability and inventory.

Within the entire textile manufacturing value chain, the dye house (where the wet chemistry happens) is the most inefficient and highest carbon footprint (CFP) contributor. **The basics of wet chemistry have remained essentially unchanged in the past 2000 years and remain more an artform than an exact science.** There's a vessel, add water, add the dye chemical(s), add the substrate, and add energy in the form of heat. Cover it up, "cook" it for several hours, spin around 3 times, pat yourself on the head and mutter a Hail Mary – praying that the color of the fabric comes out right.

Each fabric construction and yarn composition of the material leads to a variation of the outcome. Thus the "cooking recipe" has to be redeveloped each and

every time; variations often lead to the inconsistencies and a lack of reproducibility. Such conventional means of getting color particles into the substrate medium are forever tied to the system stoichiometry of the dye bath – which necessitates a chemical excess.

The entropic necessity that creates bottlenecks in the textile supply chain, particularly at the dye house, is the driving force behind initiatives by brand houses and solution providers to develop dry chemistry and/or digitized processes. The ultimate solution lies in finding a balance—facilitating genuine, lean local-to-local manufacturing repatriation. This approach not only addresses sustainability and inventory challenges but also propels local consumerism and employment opportunities. In navigating this delicate equilibrium, the industry seeks to harmonize efficiency, environmental consciousness, and economic revitalization.

CHAPTER FIVE

The Challenges Ahead for the Aspiring Modern Textile Factory

So we have our five pillars of a Modern Textile Factory and strong motivations to pursue them – a strong commercial carrot and regulatory sustainability stick.

However, we must also recognize the challenges for factories to modernize.

Investment / Financial Risk

All of this modernization – data systems, new machinery or upgrades, regular employee training – requires money. A lot of money. On the sustainability side alone, the long road to Net Zero is estimated to cost over \$1 trillion²² – from renewable energy, more sustainable materials and processes, and coal phase-out.

Brands are starting to invest in software solutions that speed up their design processes (such as Browzwear, Clo, Swatchbook, Material Exchange) – but investments in the supply chain are left up to the factories. On top of this, there are plenty of shameless stories of brands wanting to have their cake and to eat it too. One such story concerns a certain factory in Pakistan, which invested in a new dyeing system that required significantly less water per batch, reducing its production footprint as well as the factory's operating costs. When the brand found out, it demanded that the cost savings were shared. Motivating, right?

Brands are not even offering medium-term commitments (let alone long-term!) to reduce the risk of supplier investments. What advantage do suppliers have to change their production if brands won't guarantee orders and signal demand?

There are some green shoots – but much more is needed:

→ Brands are starting to invest and set-up cheaper debt funds

H&M is the leader here. H&M's Green Fund rewards select factory partners with below-market interest loans to invest in sustainable improvements. H&M has recently doubled down in this area in collaboration with Southeast Asia's largest bank, DBS, to offer more attractive financing to decarbonize.

→ Non-Profits (funded largely by brands) are offering investment and grants to factories and innovators

For factories, the Good Fashion Fund (GFF), an initiative by Laudes Foundation and Fashion for Good, offers long-term USD loans in addition to technical, environmental and social expertise to manufacturers in Asia, primarily India and Bangladesh. It has completed four deals to date with the most recent being the upgrade of the Effluent Treatment Plant at one of Epic Group's Bangladesh facilities²³. For innovators, the Apparel Impact Institute (AII) has raised a \$250 million Fashion Climate Fund to offer USD grants to proven decarbonization solutions to accelerate and help de-risk them to unlock up private financing. They awarded their first six-figure grants to five companies in September 2023²⁴.

→ Private Investors

More private capital is starting to find supply chain tech – including in the high impact, but less financially attractive (due to high capital requirements and long growth cycles), “hard tech” (i.e. there is a hardware / physical component).

22. Fashion for Good and Apparel Impact Institute, “Unlocking the trillion-dollar fashion decarbonisation opportunity” (November 2021)

23. Good Fashion Fund, “The Good Fashion Fund and Epic Group Collaborate to Drive Sustainable Innovation In Bangladesh's Fashion Industry” (November 2023)

24. Apparel Impact Institute, “Apparel Impact Institute announces first grant recipients from its climate solutions portfolio (CSP) to promote decarbonization in the fashion industry” (September 2023)

- NTX Cooltrans, a waterless dyeing and printing system that delivers proven water and energy savings, raised a \$200m Series C in 2022 led by Centurium Capital to expand its joint-venture factory footprint.
- On the material side, Recover, a cotton recycling company, raised \$100m led by Goldman Sachs via their Sustainable Investing business unit. Recover will use the financing to increase their output to over 350,000 metric tons of recycled cotton fiber per year by 2026.
- Recently, Checkerspot (\$55m), traceless (€37m), Circ (\$30m), Ecovative Design (\$30m), Smartex (\$25m) and Ambercycle (\$21m) have all raised significant rounds to keep developing their hard tech solutions in the high impact supply chain areas of Tier 2 (Processing) and Tier 4 (Raw Materials).

→ Brands and Investors Investing Directly into their Supply Chains

Finally, we have seen the start of brands and investment groups investing directly into supply chains. Luxury brands are leading the way here. Prada, Zegna, Chanel and Brunello Cucinelli have all acquired equity in their key Italian and French suppliers.

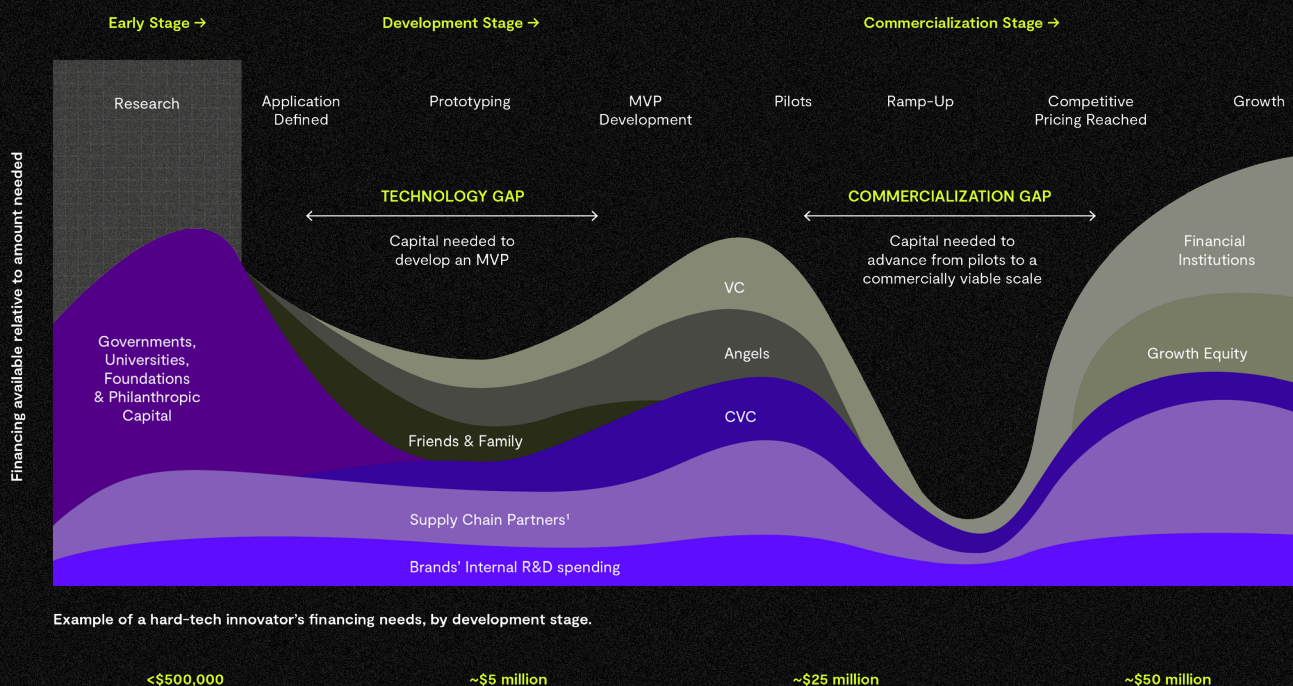
Gruppo Florence, a hub of Italian luxury clothing and leather goods manufacturers founded in 2020 by VAM Investments, was recently valued at more than 1 billion euros (\$1.1 billion).

Consolidation is a continuing trend in the industry, driven by a realization that progress will require investment and digital platforms, which well-financed groups can better afford.

These investments are crucial for supply chain innovators to get through early development and commercialize their technologies at scale.

Typical Financing Demand and Supply Landscape for a Hard-Tech Innovator

For hard-tech innovators, two financing gaps during the development stages are especially challenging to bridge.



Source: BCG and Fashion for Good analysis

Notes: All dollar amounts are in US dollars; actual financing needs may vary.
CVC = corporate venture capital | MVP = minimum viable product | VC = venture capital.

¹ Refers to both external investments and internal R&D spending by suppliers.

Macro Cycle

The fashion industry is very susceptible to macro economic downturns. Clothing is an easy item to cut back on for consumers, which has knock-on effects on brand sales and supplier orders. The disincentive to invest during a tight cash environment is true to any industry.

We are in the midst of a macro downturn right now with brands and suppliers seeing their string purses tighten. Brands are applying price pressure to control their costs amidst inflation, and ESG has slipped down the priority list.

Finding ways to keep investing in a downturn is a challenge.

Traditional Mindset

The textile supply chain has traditionally had a low focus on innovation.

We discussed several reasons for this during our sessions this year:

→ Family Ownership

It is very common for textile factories to be family-owned and operated. This has two effects:

- Although the more technology-minded children may have the titles (CEO, Head of Innovation etc), the old-school parent holds the purse strings and the real power.

- Meritocracy is limited with family members getting top management positions, whereas outsiders are normally limited to middle or low management.

→ If it Ain't Broke, Don't Fix it

The textile industry has deep-rooted practices that have been passed down through generations. This long history can make it challenging to break away from established methods and embrace new technologies. On top of this, resistance may stem from concerns about operational changes, retraining costs and the proven effectiveness of new technologies.

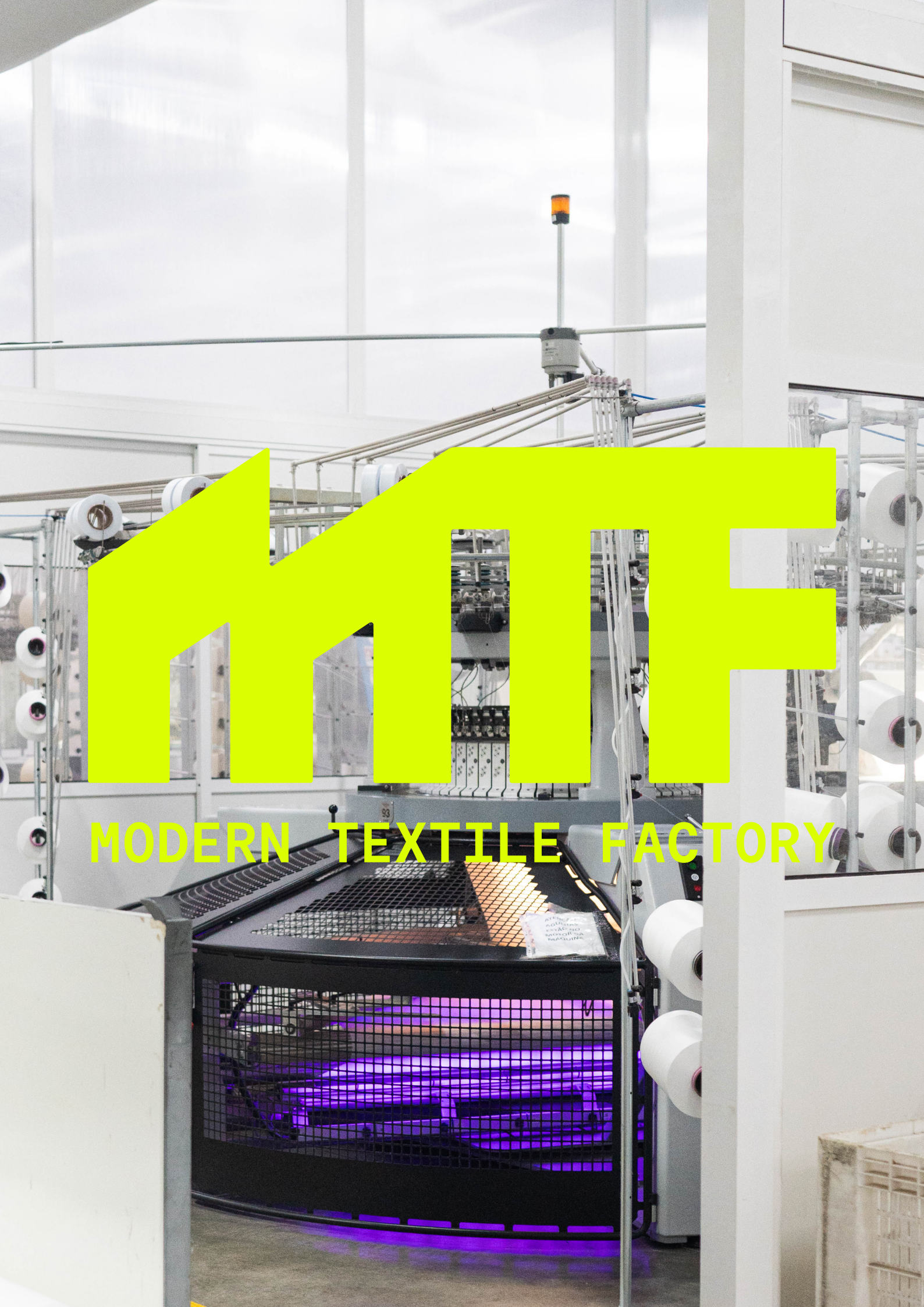
→ Cost is King

The textile industry has learned to focus on price above everything. If existing methods are delivering on the current price requirements from brands, the upfront investment in new technologies can seem unnecessary.

→ Lack of Awareness

Some companies within the textile supply chain may not be fully aware of the available technological innovations or the potential benefits they could bring. Education and awareness about new technologies is crucial for encouraging their adoption.

This mindset must evolve if the Modern Textile Factory is to emerge at any scale. Public case studies of Modern Textile Factories commercially thriving will help.



MTF

MODERN TEXTILE FACTORY



Ken Pucker

Senior Lecturer
Tufts Fletcher School

MTF Member Contribution
Brand & Legislation Perspective

If we were able to visit a semiconductor or auto factory fifty years ago and compare it to one today, they would bear little resemblance to each other. Yet, **if we were able to turn back the clock a half-century and visit a tannery or a cut-and-sew factory, much would look the same – apart from the address.** This is because the fashion industry has chosen a peripatetic path instead of one of modernization.

To a certain extent, it has worked. The real (inflation adjusted) cost of a garment has fallen considerably over the past thirty years. For example, inflation adjusted a \$20 shirt in 1990 should cost \$45 today; and yet, it would retail for \$21. This is because the industry has chosen to move from country to country to reduce wage rates – instead of investing in modernization.

This choice is likely driven by several key strategic factors. First, different from semiconductor or auto companies, most fashion companies do not own their own factories. As a result, brand led capital investment makes little financial sense. In addition, to push consumption, fashion

relies on “new” not better (e.g. functionality) to entice consumption. This makes automation challenging, given the rate of change mandated by a model reliant on shorter and shorter product cycles.

If brands are not, then, well situated to advance modernization, what about factory owners. Here too, structural changes confound. Most factories are in countries where financing rates are more than double the rates in the developed world. At the same time, factories operate on thin margins and likely do not have the capital readily available.

Given this industry structure, how can factories afford to modernize?

Modernization requires different system structure, rules, and incentives. For example, legislative efforts (or rules) ought to assure that costs to drive sustainability in factories be shared between brands and producers; financing vehicles ought to be conceived with brand backstops and regulation to assure sane environmental and social goals ought to be elevated across developed economies.



Luke Henning

Chief Business Officer
Circ

MTF Member Contribution
Innovator Perspective

Innovation is difficult. When you are trying to transform complex supply chains in a fragmented industry, like fashion, it is even more so. **People tend to forget that the textile industry has been optimizing its production for decades and that even the tiniest changes may cause a ripple effect throughout the supply chain.** If we want the industry to transform, we need to understand these ripples and we also need to get comfortable with them.

Easy to say, difficult to do. In Circ's case, until you have flowed raw material through to garments you do not know what challenges may exist on legacy equipment. As an example, you may have equipment that needs to run at a slower or faster speed. If the machine cannot change speed, you may need to replace the equipment. If it can change speed, you need to know what that does to your upstream processes.

Figuring this out takes money. Who pays? The investors or the innovators? Is it the supply chain that has already been forced to razor-thin margins? Is it the brands? Or is it the consumer? This is something that has not yet been settled and may ultimately be decided by regulation.



Christine Goulay

Founder & CEO
Sustainabelle Advisory Services

MTF Member Contribution
Brand & Legislation Perspective

The brand-supplier relationship can be the engine for impactful change. Historically, most relationships between fashion brands and their suppliers have been arm's length, transactional, and top down as brands attempt to safeguard flexibility in uncertain markets. This can and has led to strained interactions and criticism (e.g., coverage of brands leaving suppliers for less expensive alternatives) with suppliers feeling as though they are subject to more risk and burden than their brand customers.

Today, we have a prime opportunity to change this dynamic and create a more integrated and symbiotic relationship between brands and suppliers to effectuate impactful change. There are many drivers that bring this opportunity to the forefront. First, there is incoming regulation, the topic that currently dominates conversations and concerns among both parties. Second, we have ambitious brand sustainability targets around Net Zero and nature positive. As a result, there is a greater emphasis placed on supplier emissions reduction, sustainable chemistry management and efficient water use. Third, we have new lower-impact technologies – materials, dyes, manufacturing process improvements and data capture such as Smartex CORE and LOOP, etc. These innovations are enablers

for brands to achieve their compliance and sustainability targets, promise potential business efficiencies, and meet growing consumer demand for new product offerings. All of these drivers are leading us toward a more modern textile factory and toward a new brand-supplier relationship.

Many brands are beginning to see this and realize that, to reach their goals, business-as-usual will not work. More integrated brand-supplier relationships are needed to create the conditions which will allow for this transition, which often involves investment, capacity building, and trust. Successful brands will make this transition sooner rather than later, working hand-in-hand with their suppliers toward longer-term partnerships where improvements and investments can be implemented together. Solutions like Smartex CORE and LOOP are examples of win-win opportunities which support brands in achieving their objectives while also alleviating the supplier burden regarding data capture and reporting, resulting in proven cost efficiencies. It will be exciting to witness this relationship transition as the industry works to integrate such solutions which will lower risk on both sides and accelerate the achievement of sustainability and business objectives through the implementation of a more Modern Textile Factory.

CHAPTER SIX

How can we Support and Incentivize Modernization?

If we want to incentivize a shift towards the Modern Textile Factory, the best factories need to have a platform to demonstrate – and be rewarded for – their progressive approach.

This approach aligns with our strategy at Smartex, where we identify early adopters to set the market tone and leverage their success stories to attract first followers and, subsequently, a broader audience, including the slower adopters.

Industry press – both brand and supplier-focused – have a large role to play here.

We need case studies of Modern Textile Factories with brands publicly and commercially supporting them. We need more success stories.

Innovation creates barriers to entry. This is a positive for the industry as it will drive change. It will also allow the best suppliers to finally start holding some pricing negotiation power while brands financially benefit from their supply chain's market-leading speed, top quality and verified impact reduction.

A stronger, modern textile supply chain is the only way for the industry to achieve commercial and sustainable success.

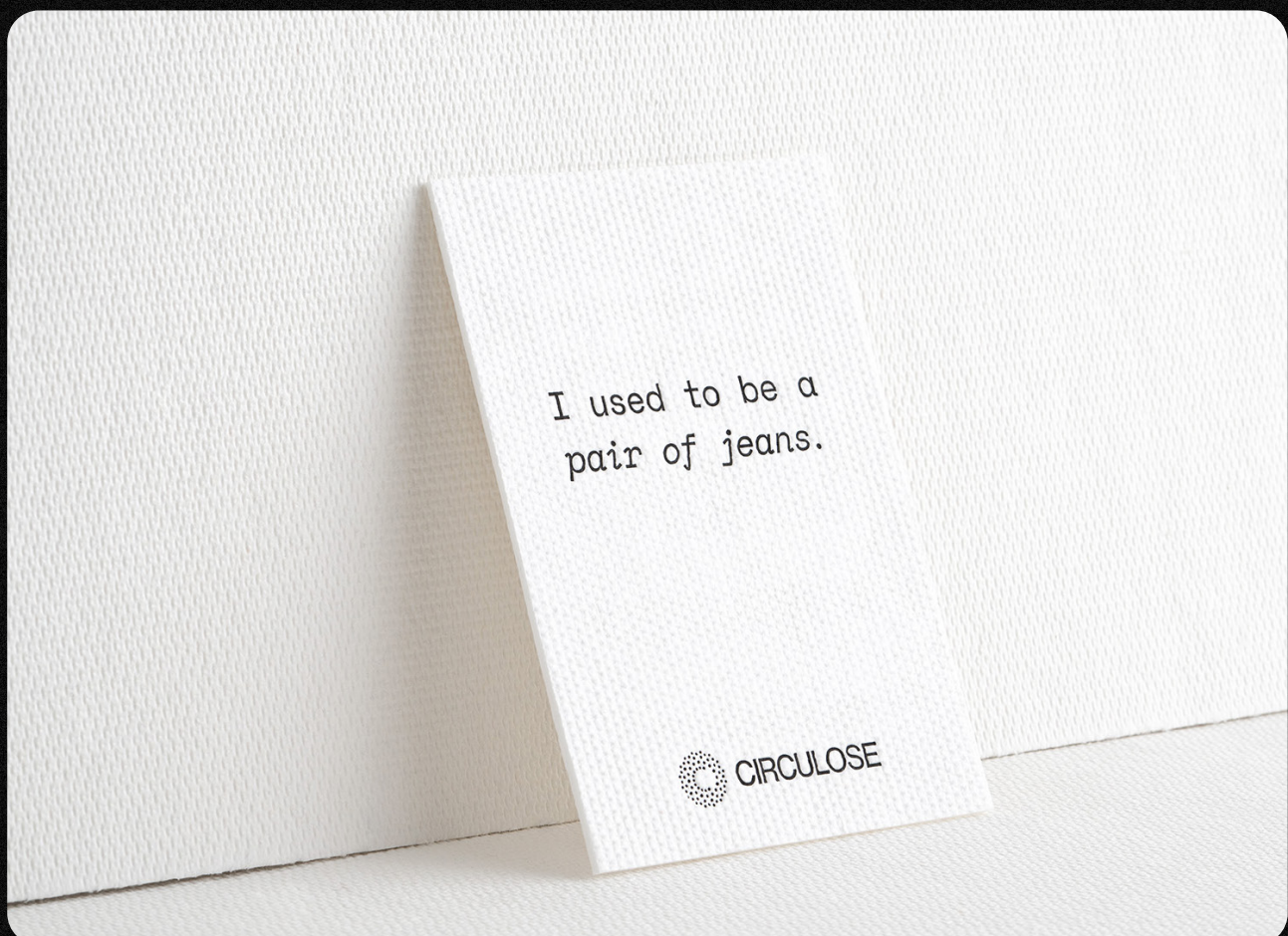


Image source: CIRCULOUSE



Tricia Carey

Chief Commercial Officer
Renewcell

MTF Member Contribution
Innovator Perspective

Systemic change in the textile and apparel industry for circularity means more than taking a linear process and twisting it into a circle. To realize this change we need to connect each company, creating a looped network with no beginning or end. Renewcell is pioneering textile-to-textile circularity by recycling cotton to make a dissolving pulp, branded as CIRCULOSE®. Additionally, **the CIRCULOSE® Supplier Network offers a new approach to sourcing.**

The ability to bring circular solutions to market with forward-thinking factories cannot be overstated in today's world. The CIRCULOSE® Supplier Network plays a crucial role in ensuring the sustainability and integrity of the entire production process. In addition to staying informed about circularity, suppliers need to continuously develop new fabrics and provide estimated volumes. Some suppliers also have the capacity to provide textile waste for the production of CIRCULOSE®. Suppliers who adhere to these criteria are committed to responsible sourcing and manufacturing practices. This includes sourcing discarded cotton clothing, diverting them from landfills, and using innovative technologies to transform them into high-quality fibers. By prioritizing sustainability, the supplier network helps reduce waste, conserve resources, and minimize the environmental impact of textile production.

The CIRCULOSE® Supplier Network partners receive the latest information about circularity and policy, as well as marketing

tools and educational, branded displays. Renewcell promotes the network retailers and brands to bring circular solutions to market in collaboration with forward-thinking factories. These factories embrace innovation and are equipped with the necessary infrastructure and technologies to efficiently produce yarns or fabrics made with CIRCULOSE®. By collaborating with such factories, CIRCULOSE® ensures that its circular solutions can be scaled up and made accessible to a wider market.

The value of the CIRCULOSE® supplier network criteria and forward-thinking factories extends beyond environmental benefits. It also addresses the growing consumer demand for sustainable products. Today's consumers are increasingly conscious of the environmental impact of their purchasing decisions. By offering a circular alternative to traditional textile fibers, CIRCULOSE® meets this demand and provides consumers with a choice that aligns with their values.

Overall, the value of the CIRCULOSE® Supplier Network criteria and its collaboration with forward-thinking factories is immense. It not only contributes to the development of a circular economy but also satisfies the demand for sustainable products. By prioritizing responsible sourcing and manufacturing practices, CIRCULOSE® sets an example for the industry, demonstrating that circular solutions can be successfully brought to market in a way that benefits both the environment and consumers. Let's make fashion circular now!



Gilberto Loureiro

Co-Founder & CEO
Smartex

MTF Member Contribution
Innovator Perspective

We can't be asking for either "Traceability" or "Sustainability" while the supply chain runs their systems on pen and paper and has no digitization, automation and often not even internet access.

Therefore, we need first to equip these factories with the necessary systems, technologies, tracking tools, etc.

Now, the big question is: how can these factories adopt technologies for traceability-sustainability? Two options present themselves:

Option 1: Stick: Force them to use new systems (i.e. manual input data hubs, bringing extra costs such as hiring people to input data and manage subscriptions)

Option 2: Carrot: Implement systems that not only save them money, but also make them more efficient. Identify pain points, and offer solutions which act as painkillers, addressing their needs to boost productivity, increase sales, and cut costs.

So, after 5 years of implementing tech in factories at Smartex, here are our main lessons:

Lesson 1: Money is ALWAYS king

No one will implement systems for "Traceability" or "Sustainability" if those

systems don't save them enough money and resources, while justifying a tangible return on investment. External pressures, like those from clients, might force compliance but the costs will inevitably reflect in their product bills.

Lesson 2: Money is REALLY ALWAYS king

Textile factories risk losing deals over a minute increase in fabric prices, even as low as 1 or 2 cents per kilogram, constituting less than 1% of the fabric's total cost. Coupled with their slim profit margins, integrating traceability-sustainability systems proves exceedingly challenging.

Lesson 3: Go local

To effect change in the supply chain, a deep and immersive approach is imperative. It is necessary to engage in on-site activities, provide training, and fly to visit factories in Bangladesh, Turkey, India, and anywhere else necessary. This proactive approach is crucial, especially as these areas may not traditionally attract software start ups or tech professionals.

This has been a key part of Smartex success, and I strongly believe it is a model other technologies providers should emulate. This approach aligns the incentives of everyone, and eventually creates a win-win-win solution for factories, tech providers, and brands.

LOOKING FORWARD

Our hope is that this first edition of the Modern Textile Factory Report ignites robust debate and meaningful discussions. Our goal is to refine these ideas collaboratively, fostering a collective effort among stakeholders in the textile industry. By doing so, we aim to enhance the utilization of these concepts and pave the way for the realization of the Modern Textile Factory.

The work doesn't stop here. We will continue to dive deeper into the Modern Textile Factory - and how we can encourage the development of this pivotal player that holds the key to both commercial and sustainable success in the textile industry.

