The Future of Chinese Manufacturing

An Apparel and Footwear Industry Perspective

Consulting-Outsourcing-Capability Building

A White Paper by Weave Services Limited

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Foreword

After presenting Weave's manufacturing trends triangle at the China and Asia Footwear Summit 2015, we received much interest regarding appropriate ways to respond to these trends. This paper provides a detailed extension of the ideas presented and a deeper insight into how the Chinese Government and corporations should respond.

We hope that you find this paper thought provoking.

Our intention is to stimulate debate and change in the Chinese manufacturing industry, and to encourage you to think more laterally about the impact of mega-trends on the Chinese manufacturing industry.

As you read the paper, we ask you to consider which trends will impact you most?
Do you need to take action now?
What do you need to monitor and track going forward?
How might the rules of the game change and what would you do?

We would welcome the opportunity to discuss and reflect on the themes covered and encourage you to contact us to discuss how these megatrends will impact your business.

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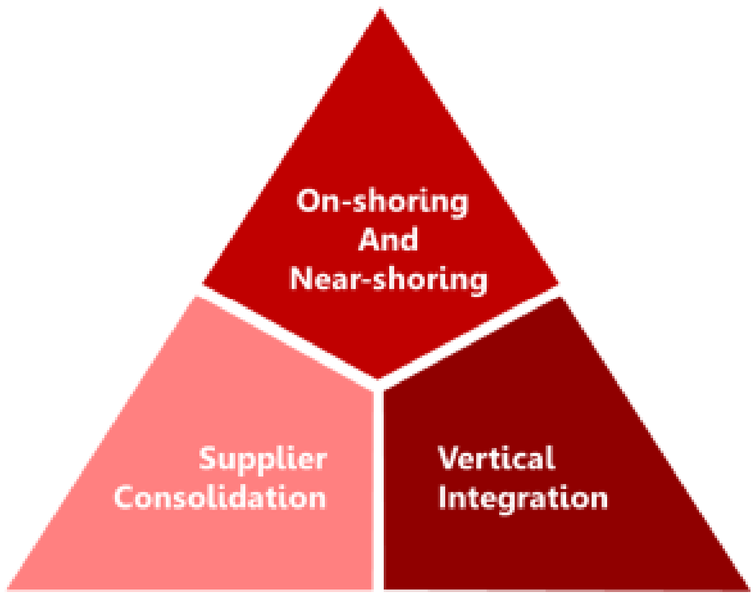


Fig 1. Weave 3 Manufacturing Trends Triangle

"China, the factory of the world, is under threat"

China, once the factory of the world, is under threat. A wave of change is reshaping manufacturing in the apparel and footwear industry. The foremost amongst these new trends is the trifecta of on/near-shoring, vertical integration and supplier consolidation. Chinese manufacturers who are unable to respond adequately to these three trends will find themselves left behind, destabilizing China's position as the world's most dominant industrial center.

On/Near-Shoring

As manufacturing costs in China have increased, many international retailers and brands have begun to shift manufacturing to regions closer to their home markets in order to shorten lead times, reduce shipping bills and create supply chain flexibilities. A recent survey conducted by MIT found close to 32% of US and Western European companies have initiated or have already near-shored part of their production, with a further 48% planning to move production in the next 1-3 years.[1]

Vertical Integration

Driven by inefficient contractors, a need for better product quality control and a desire for greater cost transparency, many retailers and brands have started expanding their operations upstream by acquiring or setting-up their own factories. VF, a leader in the apparel and footwear industry, manufactures 24% of the products it sells.[2] Through owning its own manufacturing facilities, VF is able to experiment and develop new best practices, then push the new processes out to its contractors.

Supplier Consolidation

Many brands are actively reducing their number of suppliers to obtain better leverage for negotiations and improve control of quality and production. This movement is spearheaded by industry leaders such as Nike and Billabong, who have reduced the number of suppliers by 30% and 50% respectively.[3,4] This has forced manufacturers to create new value-added services to avoid being eliminated. For example, some manufacturers have begun offering design and R&D services.

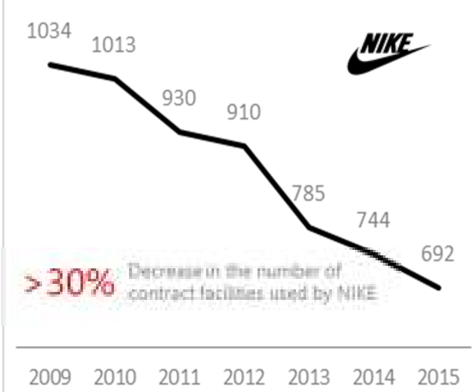


Fig 2. Nike has decreased the number of contract factories[3]

VF owns its own factories in near shore locations and is able to push out expertise and best practices learnt to its suppliers

Despite these unfavorable movements, China's position in manufacturing remains dominant. Indeed, apparel production in China has increased by 1.6% YoY in 2014,[5] and footwear production has seen similar growth. This leads to one question, *how DOES China maintain its leading position?*

Chinese manufacturers rely on historical strengths and growth limitations of its competitors

Although under increasing pressures from the market, China is able to remain dominant by relying on core strengths developed and accumulated over the past 15 years.

In the early 1990s, following Deng Xiaoping's opening up of China,

[1] MIT Forum for Supply Chain Innovation and Supply Chain Digest
[2] VF Annual Report 2015
[3] Nike Sustainability Reports (2010 – 2015)
[4] Just Style: Supply chain improvements to save Billabong $30m
[5] Just Style: Sourcing Shifts: Is garment production really shifting out of China

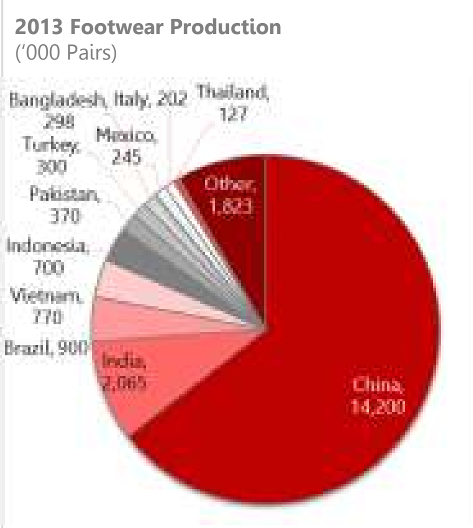


Fig 3. Chinese Footwear production dwarfs that of its competitors[7]

brands and retailers rushed to source from China to take advantage of low costs as well as its cheap and plentiful labor force.

The Chinese entrepreneurs were quick to respond to the surge in demand. Many families in regions such as Dongguan and Wuxi pooled money to set up factories and China's manufacturing capacity ballooned rapidly.

As manufacturing hubs began to form and grow in China, specialized suppliers of materials such as zippers and buttons began emerging, forming a well-connected ecosystem to feed raw materials to manufacturers. The Chinese government invested heavily in infrastructure to support the fast growing manufacturing industry.

Today, China is uniquely suited for manufacturing. It is home to a network of suppliers that provide raw materials not only for domestic manufacturing, but also for manufacturers around the world.

The manufacturing landscape is now dominated by family owned, Small to Medium Enterprises (SMEs). These SMEs offer great value to the Chinese market by specializing in niche products, taking on sub-contracts and offering flexible capacity to larger manufacturers.

Infrastructure investments have advanced China's highway and rail systems to one of the most developed transport systems in the world. As of 2015, there were over 123,000 miles of expressways in China. China is also now home to 7 of the top 10 busiest shipping ports in the world.[6]

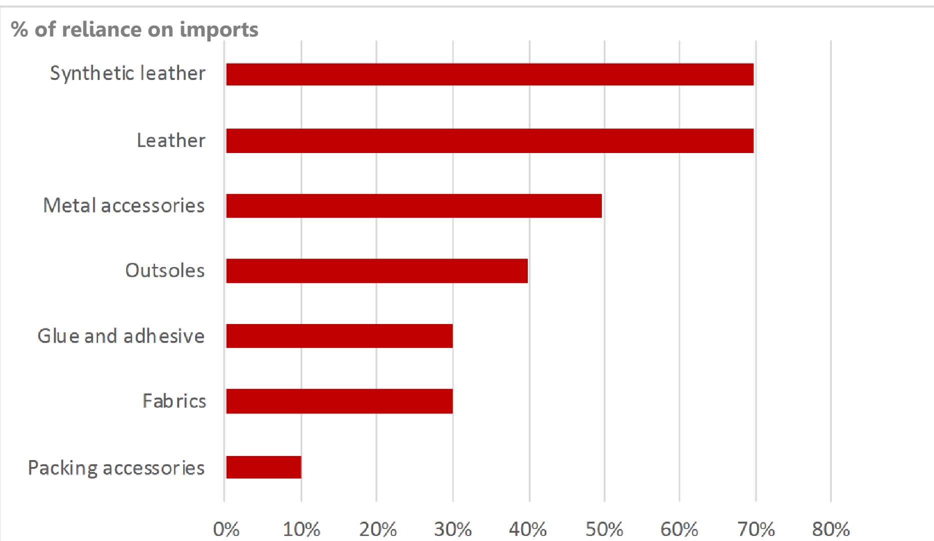


Fig 4. Vietnam footwear industry's reliance on imported raw materials[9]

At the same time, *none* of China's current competitors can dent its dominant market share.

Bangladesh and Vietnam, China's most significant competitors for apparel and footwear exports, are not in a position to replace China (See Fig 3).

These competitors do not have large enough population bases to significantly take away from China's market share. Indeed, China's population is currently more than 8× larger than Bangladesh and 10× larger than Vietnam.[8]

The lack of land suitable for building factories also limits the potential capacity of these competitors. Manufacturing in Vietnam is primarily concentrated in industrial parks in prime locations close to ports, and receive special treatment from the government, such as tax breaks and expedited paperwork. Competition for these locations is fierce and rents have already increased significantly. Bangladesh, a primarily low land country, suffers from a shortage of land considered safe from flooding during cyclone season.

These nations are also heavily reliant on Chinese raw materials (See Fig 4) as the domestic markets are not large enough to support their own supplier networks. This is especially true for the footwear industry, which requires a large number of specialized components such as shoe soles and metal eyelets.

Relying on historical strengths and

[6] Forbes: The World's 10 Busiest Ports
[7] APICCAPS World Footwear Yearbook 2014
[8] World Bank Country Data
[9] Vietnam Leather, Footwear and Handbag Association—Presentation at China & Asia Footwear Summit 2015

Fig 5. Wages in China have increased exponentially over the years[10]

weak competition, China is currently able to withstand the forces that are reshaping the market … but for how long?

Failing strengths and increased competition

The historical strengths, while still significant, are gradually being eroded away. *China's average monthly wages have increased almost six-fold since 1990* (see Fig 5). At the same time, other manufacturing costs have remained constant. A recent study by BCG highlighted that China's average manufacturing cost index has increased from 86.5 in 2004 to 95.5 in 2014 when benchmarked against the US.[11] Many manufacturers have already begun relocating to lower cost regions with abundant workforces to preserve margins.

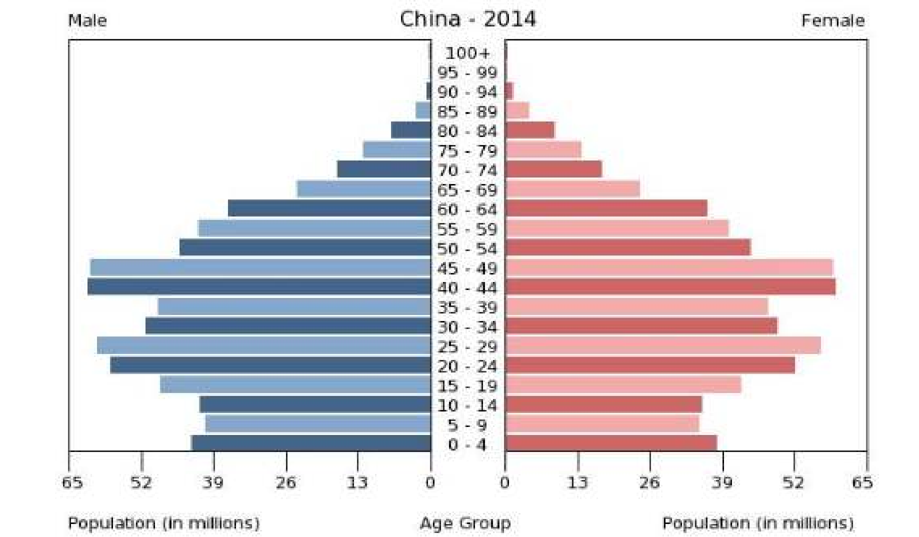


Fig 6. China's optimal working age population is falling[12]

The compounded effects of the one child policy have also caught up with China. The optimal demographic for apparel and footwear manufacturing has fallen to less than 6.5% of the population.[12] Many factories now routinely experience seasonal labor shortages, a recent study by the FDRA has found that 47% of footwear manufacturers rated labor shortages as a medium to serious issue.[13]

At the same time, other regions with large populations and abundant land supply, such as India and Africa, are experiencing record breaking export growth. These regions are rapidly industrializing to the point where they will soon be able to support a domestic supplier network in the next 10-15 years. India's raw material manufacturing capacity has grown significantly, with large increases in the number of raw materials suppliers such as textile mills. (See Fig 7)

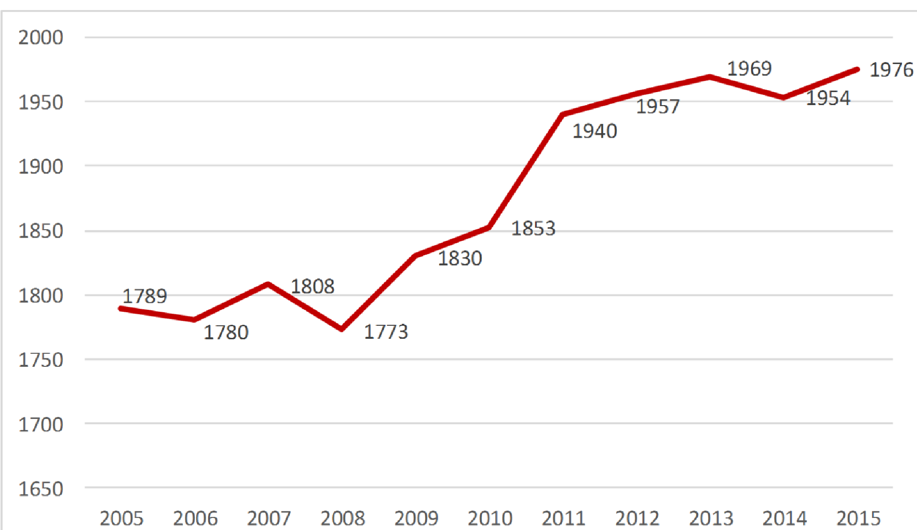


Fig 7. India has greatly increased the number of operational textile mills[14]

The governments of these regions have made sizable investments in upscaling the infrastructure to support the manufacturing sector. Indian Prime Minister Narendra Modi launched the much publicized *"Make-in-India"* campaign on 25 September 2015, which focuses on improving infrastructure and reducing red tape to create a better business environment for manufacturers in India.

Africa has also committed to a major

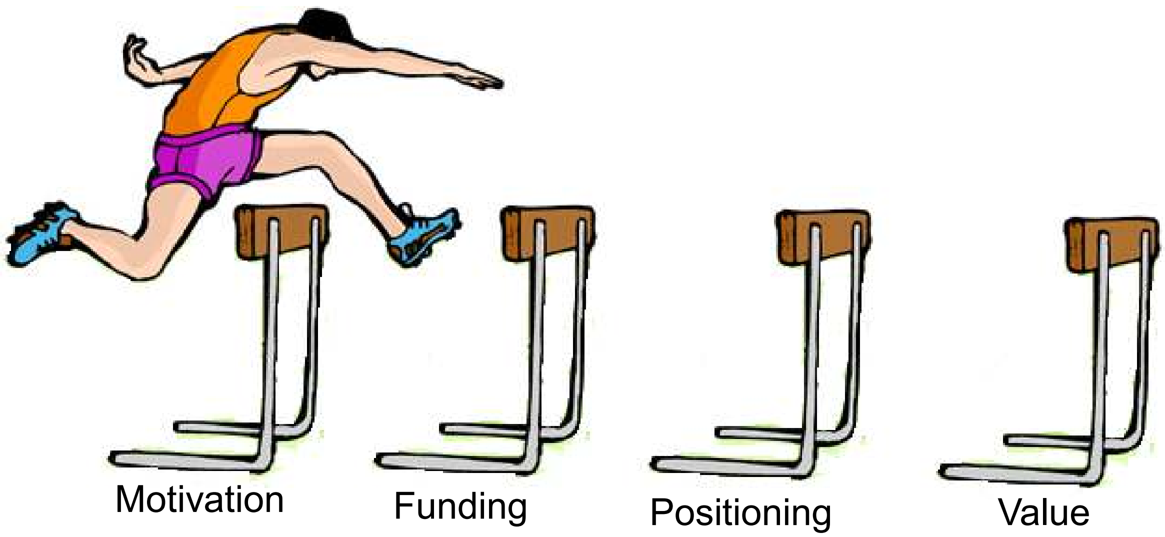
[10]The Economist: The future of factory Asia: A tightening grip
[11]The BCG Global Manufacturing Cost-Competitiveness Index
[12]The CIA World Factbook—China Country Profile
[13]Footwear Distributors and Retailers of America: Factory Survey Analysis 2015
[14]Office of Textile Commissioner—India: GROWTH IN CAPACITY OF COTTON / MAN- MADE FIBRE TEXTILE MILLS

infrastructure overhaul, with a significant expansion plan for the Port of Djibouti, as well as some smaller developments for ports in Tadjourah, Ghoubet, Damerjog and Doraleh. An electrified railway line linking the manufacturing center of Ethiopia to the port is also under construction.

As these new competitor regions continue to develop their infrastructure and supplier networks, they will evolve into serious contenders to become a manufacturing destination of choice. Unless China continues to evolve and develop new strengths, it will be unable to hold onto its position as the dominant manufacturer.

The Port of Djibouti is undergoing expansion plans which will soon open African manufacturing to the world

"Unless China continues to evolve and develop new strengths, it will be unable to hold onto its position as the dominant manufacturer"



Four Hurdles Chinese SMEs must overcome to build new strengths

Currently, over 99% of footwear manufacturers in China are family-owned SMEs;[15] with apparel manufacturers having similar ratios. China's industrial evolution cannot materialize without the impetus coming from SMEs.

SMEs are experiencing increased downstream pressures. Customers are aggressively pursuing supplier consolidation and vertical integration which threatens to squeeze out smaller players. At the same time, manufacturing has become more complicated, requiring more processes and becoming more costly.

Larger manufacturers are able to mitigate some of these pressures by moving production to factories in lower cost regions. However, SMEs generally do not have the diversified production base to do so and have to absorb the impact in their bottom line. This has forced many companies to close down or sell to larger manufacturers.

As a result SMEs are suffering the most from China's gradual loss of manufacturing competitiveness. The recent Caixin manufacturing Purchasing Managers Index (PMI), which focuses on private SMEs, was 47.2, significantly lower than the government manufacturing PMI of 49.8 (a PMI of less than 50 indicates activity is shrinking).[16]

Weave has identified four major hurdles that SMEs must overcome to build lasting strengths and maintain China's manufacturing dominance.

SME manufacturers lack motivation to change: In order to build new strengths, an organization must first find the motivation to change. Many Chinese manufacturers are aware of that it is becoming increasingly difficult to do business, however they are often not motivated to change beyond attempting to relocate factories.

The lack of motivation originates from the complacent mindset of SMEs. Chinese manufacturers are perceived by many low-cost regions, such as Bangladesh and Vietnams, as leaders in the apparel and footwear manufacturing. The perception is reinforced by the fact that many of the factories in these regions are owned and run by Chinese companies. This has created a sense of complacency amongst Chinese manufacturers, leaving them unwilling to evolve and retain their competitive advantage.

This problem is further compounded by the fact that many of the manufacturing families follow a hierarchical, family orientated management struc-

[15] China Footwear Association—Presentation at China & Asia Footwear Summit 2015
[16] CNBC: A tale of two China PMIs: Manufacturing still in contraction mode

ture. Younger members with alternative viewpoints and new ideas are often unable to challenge the patriarchy and drive necessary changes. The difficulty in introducing new ideas and concept can be seen in the average spend on consultancies. Although estimates for the consulting market in China vary greatly from USD $2.9 to $14.7 billion in 2013,[17] this is dwarfed by countries such as Germany with an estimated consulting market size of USD $26.9 billion.[18] To put this in context, China's population is more than 15× and GDP is more than 3× that of Germany.[19]

The resistance to new ideas has caused many SME manufacturers to stagnate; some SMEs continue to use the original manufacturing processes and technologies implemented when the factory was first established with minor, incremental improvements.

As the saying goes, if you are not moving forward you are moving backwards. Unless Chinese SMEs are able to adjust their mindset to embrace change, they will continue to fall behind. China must first address the problem of mindset if it is to remain a dominant manufacturer.

Manufacturers are finding it increasingly difficult to obtain funding: SMEs often do not have the capital to fully fund projects internally. As a result, there is a high reliance on outside investors to fund improvement projects.

However, there are many more attractive alternatives in the market and this has made it difficult for manufacturers to obtain funding.

For example, real estate in China has provided higher, more stable returns than manufacturing (see Fig 8); stock investments in technology and other exciting high growth industries offer the potential for significantly higher returns.

Within the manufacturing industry, apparel and footwear tends to be less attractive than other sectors, such as biotech, aviation and shipping. Apparel and footwear is considered oversaturated and in decline, and the industry's potential is often overlooked by investors.

Given China's current financial environment, SME manufacturers are likely to continue to have difficulties obtaining the funding required to transform their businesses.

China is in "no-man's land" in terms of positioning: Chinese manufacturers must identify a niche where they can compete.

Currently, China is falling into a "no-man's land" of high-cost and low productivity. Rising wages in China means it is no longer possible to compete on low labor costs. Productivity has not experienced comparable growth to offset the wage increase. (See Fig 9)

Fig 8. Property sectors have experienced spectacular growth in recent years[20]

In order to remain competitive. Chinese manufacturers must reposition away from low cost production to high productivity production.

As shown by China's position on the productivity curve (See Fig 10), China is currently situated in the lower bracket in productivity, some distance from reaching the productivity of leading manufacturers. While Chinese manu-

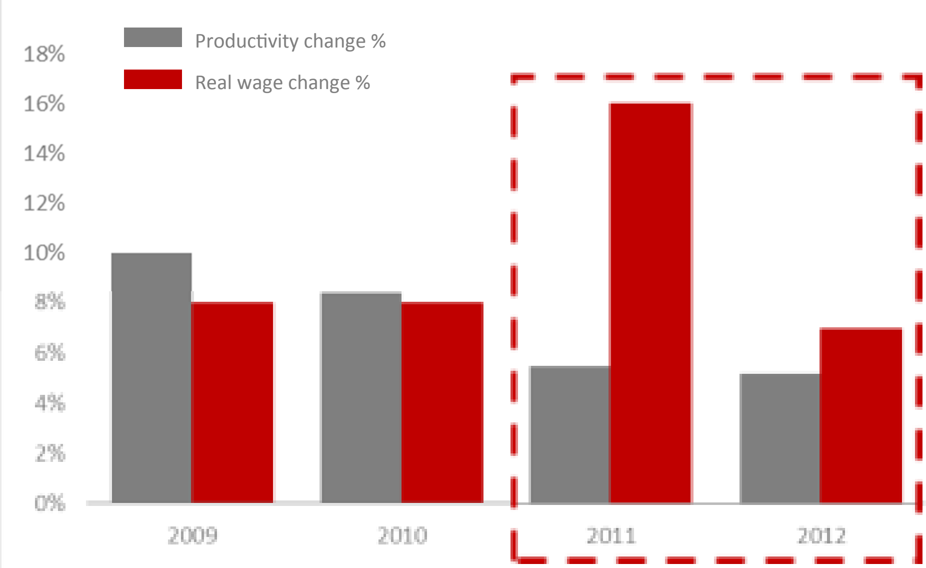


Fig 9. China's productivity is not keeping up with wage growth[21]

[17]China Business Review: The Dawn of Chinese Consultancy Companies
[18]Consultancy.uk: Consulting market of Germany grows to 25 billion (With Weave Analysis)
[19]The World Bank Country Data (With Weave Analysis)
[20]Global Property Guide: China Profile
[21]The World Bank Country Data (With Weave Analysis)

facturers have invested heavily in technology (as shown by high capital intensity), labor productivity lags significantly behind.

One reason is because lean production methodologies have not been widely adopted by the SMEs. Weave's work with Chinese SME manufacturers has shown that the average manufacturer has opportunities to improve efficiency by 20-30% if they adopt lean principles. Investing in machinery alone will not be sufficient to reap wider productivity gains at stake.

China does not capture significant portions of the value chain: To truly develop long term strengths, Chinese manufacturers need to lead changes through innovation. In order to do so, players in the market have to be able to exert influence other sections in the value chain.

Many manufacturers have already started to address this by integrating upstream in the value chain and providing design services as well as raw materials sourcing.

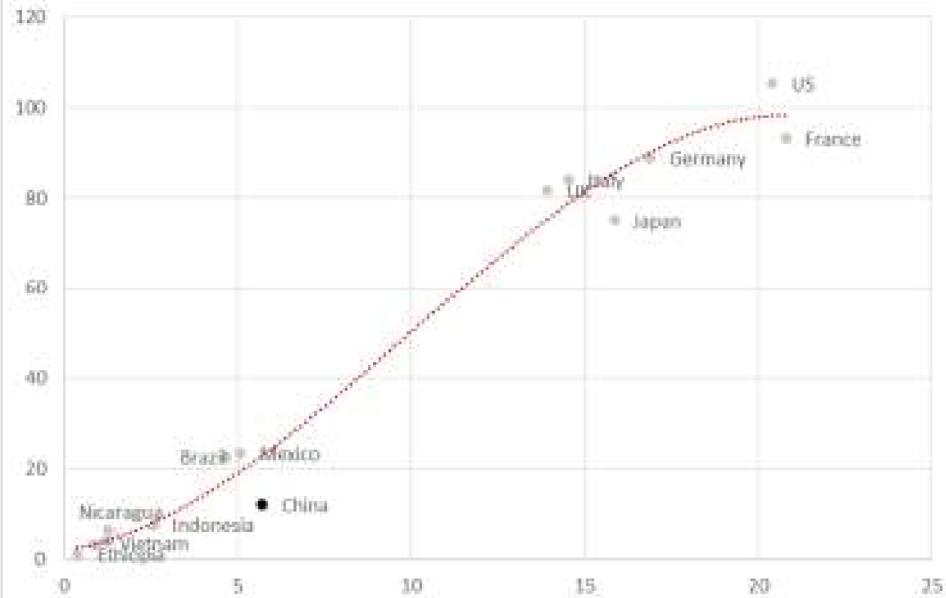


Fig 10. Higher cost manufacturing nations have an corresponding higher labor productivity and capital intensity[22]

In order to capture greater sections of the value chain, Chinese manufacturers should also look to expand supply chain services and develop branding strategies.

Manufacturers are able to offer services that can positively impact their clients warehouse cost and/or contribute to further sales growth.

Examples of such services include Vendor Managed Inventory (VMI) and Direct to Store (DTS) services. VMI is a service whereby vendors take on responsibility for the inventory management and replenishment of the retailer/brand. DTS is a service whereby the manufacturer ships directly to stores removing the need for retailers/ brand to own warehouses and distribution centers.

The final step down the value chain would require manufacturers to build their own brands. This is an area of weakness in China. In Millard Browns 2015 Brandz survey, none of the Top 10 most valuable brands in the apparel industry are Chinese. Indeed, the brand value of Chinese apparel brands actually decreased by 35% in the last year.[23]

There are significant barriers to developing profitable brands. Most importantly, Chinese brands are often associated with low quality products both domestically and internationally. Modifying this perception will require significant time and a concerted effort by Chinese manufacturers.

Developing brands also requires greater, and more fundamental changes within the organization. Merchandising, planning and distributor network management are significant barriers to entering these segments. Weave sees supply chain services as a more reachable stepping stone in the manufacturing transformation journey of Chinese manufacturers.

A Simplified Overview of the Value Chain

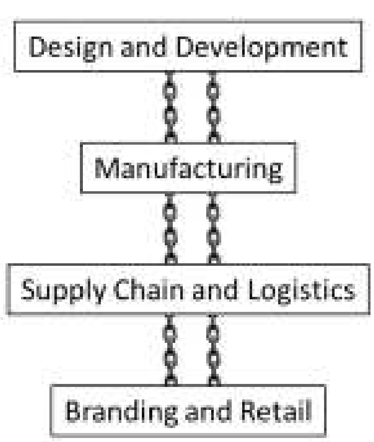


Fig 11. China must find more ways to contribute to the value chain

[22]The World Bank Country Data (With Weave Analysis)
[23]Millard Brown: Brandz Top 100 Most Valuable Brands Report, Top 100 Chinese Brands Report

“China needs to upgrade and shift its manufacturing sectors”

China must emulate the manufacturing evolution that other countries have undergone in order to remain competitive

China is at a crossroads. It is no longer the low cost manufacturer that it used to be, but hasn't yet attained the level of productivity to remain competitive. Looking into how other countries have tackled similar scenarios in the past could provide a relevant roadmap for China to follow.

Germany's progression to a leading position in manufacturing despite high labor costs and restrictive regulations provides a perfect case study of how a country does not need to rely on low costs to be a manufacturing powerhouse. In the early 2000's, following a short boom in Western German manufacturing as a result of the German reunification, manufacturing was in the doldrums, with real value added declining from 7% in 2000 to 2% in 2002.[24] With manufacturing stagnating, the German Government focused on developing SMEs as the core engine of growth. They also issued a banking system mandate to invest in local businesses and not engage in risky, speculative behaviors.[25] The Fraunhofer Society, a non-government institution was also pivotal to the German manufacturing transformation by providing high-quality, short-term, affordable research to SMEs. Fraunhofer enabled small manufacturers to continually upgrade their processes and products to stay ahead of the competition. The effect of the German government's focus on SMEs is obvious, a 2007 study by the management consultant Bernd Venohr found that more than 1,130 German SMEs held either the number one or two positions in the world market for their products.[26] As a result Germany is once again a dominant manufacturing nation in the world.

China needs to also make a similar upgrade and shift in its manufacturing sectors.

The Chinese government has kick started a shift in mindset with the "*Made in China 2025"* Plan

In recognition of the precarious position, China's government published a new strategy report titled *"Made in China 2025"* on May 2015 to revolutionize the manufacturing sector. The report states that while the Chinese manufacturing sector is large, it is not strong; emphasizing China's need to drive innovation, informatization, fundamental efficiency and branding for manufacturing. The strategy outlines a vision for 2025 where China will be an innovative manufacturing center with world beating productivity and is home to multinational manufacturing corporations able to contribute along the entire value chain.

"Made in China 2025" to varying extents addresses the 4 hurdles discussed. Firstly, it serves as a wake-up call to *motivate manufacturers* to change. It also outlines reforms to the financial system to make it easier for manufacturers to *obtain funding*. However, while the document makes reference to the importance of improving productivity to shift China's position and contributing more to the value chain, the government can only work to encourage and support development in these areas.

'Made-in-China 2025' shows commitment from the central government to reform the manufacturing industry. Yet, the plan requires buy-in and change from manufacturers. Ultimately, manufacturers are responsible for making changes to push the country over the last two hurdles of positioning and value. If Chinese manufacturers are able to make the change, China will continue to lead apparel and footwear manufacturing.

The Fraunhofer Society offers German SMEs access to advanced R&D that they would otherwise not be able to afford

[24]Michael Grömling – Reunification, Restructuring, Recessions and Reforms, The German Economy over the Last Two Decades
[25]Economy in Crisis – German Example Shows How to Run a Successful Manufacturing Economy
[26]THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS – How Does Germany Do It?

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About the Company

Weave Services Limited is a Demand & Supply planning consulting firm. Our unique business model aims to deliver lean and responsive supply chains through 3 sets of supply chain services: Consulting Services, Outsourcing ser- vices and Capability building services.

Weave was born in 2011 out of an increasing demand from the customers of our sister company, TAL, to share our expertise in managing complex supply chains on a global scale. Weave encapsulates the best practices developed over 20 years of impactful engagements with our retail clients.

- We provide deep supply chain consulting services in 3 functional areas: Lean Demand Fulfillment, Supply Risk Management and End-2-End Integrated Planning. We have strong beliefs in applying a scientific approach to problem solving, accompanying our clients from diagnostic to implementation and being extremely focused on delivering impact to your P&L.

- We offer supply chain outsourcing services through a set of broad and flexible solutions: Read & Plan, supplier production and capacity planning management. Read & Order: Downstream DC and store replenishment. Gate-2-Shelf: E2E sales and operation planning collaboration. Clients who use our supply chain services love the fact that they can release valuable time in their commercial teams while having a reliable E2E planning and replenishment business partner to integrate their order plans. Increase in product availability, reduction in bullwhip effects and significant reduction in fire-fighting keeps our clients coming back.

- We have very strong beliefs in delivering sustainable impact. To this end we offer supply chain capability building services. Our supply chain academy program allows our clients to build competencies across 3 levels of expertise, junior/advanced/master planner. In addition, we can set up a Train-the-Trainer program to create a virtuous learning and development cycle in your organization.

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