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2022 Italian Leather Technology Essay

The Products and the Consumers of Tomorrow

Footwear has been an integral part of the human experience for thousands of years. Over the millennia, the materials, purpose, and process of footwear and its production has changed, but the core need will always remain. However, recent global events have displayed that the consumer, retail landscape, and supply chains have all drastically changed and footwear brands that fail to adapt will become increasingly obsolete.

Early shoes were made with local, natural resources like leather, hemp, and reeds for the practical purpose of protecting feet. As culture continued to evolve, footwear quickly became a popular method for expressing one's societal standing and to flaunt wealth. This was visible in many cultures; Romans developed different types of shoes to allow for easy distinction between societal hierarchies from patricians, senators, and soldiers to laypeople, pattens were used in the Middle Ages as overshoes in Europe to maintain the cleanliness and appearance of their shoes, and the Chinese used foot binding to show their valuation of having small feet. Using footwear to display status has only continued to grow and become even more impactful as many cultures have increased disposable income and seek to express individuality and status. Building outfits "from the feet up" has grown as a trend as people seek to exhibit their rare, expensive, stylish, or otherwise favorite kicks. Shoes tell a story about who we are and what we value – these are topics that have never been more relevant as individual expression continues to grow and there are more options for how to do that with one's footwear.

Success within the footwear industry is dependent upon a company's ability to understand their consumer and to then create and distribute product in ways that align with the consumer's preferences. Considering that e-commerce spending has grown by 300% in the past 10 years,¹⁹ the internet has dramatically shifted the role of the consumer from a passive acceptance of brand- and designer-led product assortments to a position of power where they can choose from a plethora of brands and styles based on their personal values, approach to sustainability, preferred shopping experience, price, and countless other factors. Brands are largely unable to operate in the shadows as consumers demand transparency and can share their opinions through social media platforms. Because of this, consumers are increasingly connected to each other which results in a consumer who has more power than ever before.

As consumers are increasingly empowered, the requirements necessary for a brand to succeed are heightened. Not only does that raise the floor for operating standards for all footwear brands, but it also motivates them to develop new services or distinguishing product features that are compelling to the buyer. These new services are often adopted by other brands to maintain competitive parity. The Amazon Effect epitomizes this; through Amazon's revolutionary ability to offer next day delivery, it soon became standard for other companies to expedite their shipping process as consumers grew to expect next day delivery.¹⁹ Not only do modern consumers expect speed, but they also strongly prefer personalized e-commerce shopping experiences. Whether it is a personalized homepage, location-specific product, customized style guides, or displays for recently viewed items, 63% of consumers will refuse to shop with brands that offer little to no personalization.¹² These are just a few of many possible examples demonstrating how the consumer is more connected and empowered than ever before.

As consumers evolve, they expect both a personalized shopping experience regarding marketing and e-commerce sites along with innovation and individualized product that fits their specific foot and needs. These consumer preferences, paired with the increased cost of manufacturing and labor in Asia, particularly China,⁹ have driven many footwear companies to explore new methods of additive manufacturing, predominantly in the midsole and outsole, along with innovative knit techniques for uppers. By utilizing automated machines to flat knit uppers,

cost and time are reduced while increasing productivity and response time.² While these innovations have provided sizable benefits for footwear companies, 3D printing and additive manufacturing are arguably more influential. Similar to the updates in upper manufacturing, 3D printed outsoles and midsoles decrease the amount of required human labor, save time, improve the ease and timeliness of prototyping, and mitigate or remove the factory manufacturing learning curve for producing new product lines.

These techniques have been seen in many brands within the footwear industry. Adidas partnered with Carbon to develop styles that feature 3D printed midsoles, including the Futurecraft 4D, AlphaEdge 4D, and 4D Fusio. These technologies have evolved from producing purely aesthetic and novel components to improving performance while simultaneously reducing material waste. Due to the relative speed and ease of using 3D printing, Adidas saw a tenfold increase in the number of potential iterations¹¹ meaning they have more opportunities to perfect the details.

New Balance followed a path similar to Adidas by leveraging a third-party to incorporate 3D printing into their midsoles. Through their collaboration with Formlabs, New Balance released the 990 Sport and FuelCell Echo which both have midsoles that incorporate 3D printing techniques.⁵ Just as Adidas was able to improve performance with 3D printing through the design of the midsole's 3D lattice structure, Formlabs also pushed the boundaries of performance by introducing Rebound Resin which boasts improved energy return and tear strength when compared to other printing resins.

While performance and aesthetic can be increased through additive printing, so can sustainability. The Heron Preston brand embodies this as they've developed the HERON01 which is a fully 3D printed shoe. This removes the need for glues or toxic binding agents while

the single material construction allows for complete recyclability as even the scraps and waste can be reused in future product. This caters to the modern consumer's desires; 78% of people state that they are more likely to choose products that are marketed as environmentally friendly.⁷

Performance and sustainability are crucial facets of footwear, but so is fit. FitMyFoot, formerly Wiivv, and Ecco have both sought to solve the elusive problem of individualized fit through different processes. FitMyFoot uses a private smartphone app to convert foot shape data into 3D printable files which provides a simple user experience in the process of receiving custom insoles or sandals. These custom insoles are reported to reduce pain and foot fatigue while improving stability.⁴ Similarly, ECCO has produced a 3D printed silicone insole that is customized to the wearer's foot. ECCO has achieved this through an in-depth process of standing on a foot scanner and then walking on a pressure-sensitive mat. This method can only be performed in particular ECCO locations that have this technology, but the insole is available in an hour and is highly accurate.

Nike has also invested in additive manufacturing and has experienced impressive benefits as well. From a cost perspective, Nike improved their cost efficiency by 10% through 3D printing. Just as Heron Preston showed environmental benefits from 3D printing, Nike was able to reduce their environmental footprint by \$3.5M in 2017.⁸ By partnering with Hewlett-Packard, also known as HP, in this venture, they've been able to secure numerous patents around their products and processes in this area and their 2016 release of FlyKnit with 3D knitting left them in a strong position to produce both 3D printed outsole/midsole components along with a 3D knitt upper.

The above examples demonstrate how 3D printing has been adopted by some of the most forward-thinking brands in the industry. Additive manufacturing dramatically reduces the time and cost required for outsole and midsole prototyping, reduces the environmental impact, and can provide better performance through fit and structural design. By simplifying the number of materials and components involved, sustainability can also be improved through additive manufacturing.

The evolution of consumer buying habits, expectations, and footwear manufacturing processes has resulted in a profound impact on the retail landscape. Many brands built their success and processes around a commitment to brick-and-mortar store fronts, but widespread product availability on the internet challenged that model. Brands such as Bon-Ton, Sports Authority, and Payless ShoeSource refused to update their business model quickly enough to capitalize on the online market. Bon-Ton closed over 40 stores, about 15% of their total stores, in 2018,⁶ Payless closed all 2,600 stores in 2019 while filing for bankruptcy, and Sports Authority closed all 460 stores while filing for bankruptcy.¹⁸ Many of the brands that struggled to remain afloat at this time refused to acknowledge the ever-evolving landscape around them – from the growing need for a digital presence to the manner in which the goods were produced and distributed.

The transformation from purely physical retail to an increasingly digital space forced many brands to re-evaluate their supply chains, distribution channels, and business models. Many large brands were unable to adapt appropriately, but those that did were soon met with an even larger challenge: COVID-19. A global pandemic itself is incredibly difficult for businesses to navigate, but global businesses have also had to deal with international relations such as the trade war between the U.S. and China along with the Russo-Ukrainian war.

Much of the footwear industry relies on very long supply chains due to a cascade of outsourced vendors. Many companies rely on materials, components, and labor from a multitude

of vendors scattered across the world which ideally results in cheaper production costs in peaceful times, but any turbulence shatters this approach. Since there is an increased number of involved parties, there are more potential disruptions and longer lead times which have recently become exposed. Within Fortune 1000 companies, 94% experienced COVID-related supply chain interruptions¹⁷ and the footwear industry was no exception. Many large brands relied on Chinese and Vietnamese labor and vendors, but both countries implemented zero tolerance COVID policies which resulted in a large number of factory shutdowns and vendor delays. Ultimately, the consumer felt this through delayed product launches and product scarcity which, in turn, inflated footwear prices.

Currently, many companies and countries are also struggling with the effects of the ongoing Russo-Ukrainian war. Two of the most impacted areas within the footwear industry are transportation and fertilizer availability. Oil and gas prices have skyrocketed since many countries relied on Russian exports. The European Union has experienced some of the most severe effects of this as it depends on Russia for 20% of crude oil imports and 35% of natural gas imports.¹⁴ Not only has the cost of transportation increased due to rising fuel prices, but some trade routes have also been disrupted. Some countries and industries relied on the train route between China and Europe, but that avenue passes through Russia, Belarus, and Poland which is hotly contested and risky.

Fertilizer costs have also risen due to increased scarcity as Russia is the world's biggest fertilizer exporter.¹³ This has potential trickle-down effects in the footwear industry as many of the natural materials used in footwear may rely on fertilizer. Depending on the farmer's practices, plant materials such as cotton may rely on fertilizer to increase their yield and profits.

The leather industry could also experience issues as cattle may feed on fertilized pastures so the unfertilized fields wouldn't be able to support as many cows.

In situations like these, businesses with short, resilient supply chains will fare the best as there are fewer players involved, the supply chain is likely closer to the market or geographically consolidated, and any compromised links in the chain can be replaced. When building a business, supply chains have often been considered unfortunate necessities that once designed, can be left to mostly self-regulation. However, the recent pandemic and geopolitical troubles have revealed that supply chains are not just for defending one's current business, they can be competitive advantages if developed appropriately. By curating and coordinating a network of suppliers or vendors, businesses can forecast, anticipate, and respond quickly to any risks that may arise. As technology and artificial intelligence continue to progress and mature, companies can implement systems to aid human efforts in the supply chain. Automation is another technology that improves business functionality as it reduces human error, cost, and helps fortify the supply chain against labor shortages.

Technologies such as artificial intelligence and automation can offer some supply chain protection, but identifying a diverse, yet simplified, network of suppliers is crucial. By diversifying across location and manufacturing capabilities, disasters or other unexpected events have a lessened impact. One successful approach to supply chain protection has been to work with partners who have a wide network; for example, a manufacturing company who has factories across numerous countries and continents.

At an organizational level, the best way to incorporate resilience into a supply chain is through systems thinking methodology that encourages company leadership to see how strategic supply chain planning can benefit the entire corporate structure. Supply chain planning can optimally align supply, demand, and production by analyzing and executing on collected data. Another method of building a resilient supply chain is to implement inventory and capacity buffers. While this approach will initially cost more, it reduces the impact of disruptions and can potentially save money long-term by increasing inventory turnover. Digital tools also enhance decision-making capabilities as disparate suppliers can communicate more easily, assisting in identifying internal process inefficiencies.

Embedding resilience within a supply chain has shown notable business advantages, including shorter product development cycles and expanded output capacity.¹⁹ In light of how quickly the consumer and retail environment has been changing, shorter product development cycles mean that products can be adjusted more quickly to marketplace changes. These improvements also affect the consumer – resilient supply chains can raise customer satisfaction scores by up to 30% since they are more consistently able to meet the consumer's demands.¹⁵ Not only do resilient supply chains reduce risk, but they can elevate organizational functioning which translates into consistently pleasing customers and partners.

When considering building resilience into a supply chain, reshoring a portion of the supply chain is an increasingly appealing tactic. As disruptions have become more commonplace, developing local manufacturing can result in a higher degree of certainty. Salomon exemplified this as they've built a manufacturing facility in their home country of France. Their high-tech factory is highly automated which reduces the number and cost of employees needed to 20% of what an Asian factory would employ.¹⁰ Reshoring some of their production succeeded in accomplishing the initial aims of reducing carbon emissions and shortening the supply chain, and the reduced transportation costs and duties made the products as profitable as previous production in Asian countries. Another positive impact of reshoring is that

tighter control can be kept for product quality and employee working conditions, both of which have haunted many larger brands as outsourced vendors or suppliers have been found guilty of unsavory business practices. Reshoring or nearshoring is not a silver bullet solution for all supply chain problems; they are best implemented in tandem with international production to capitalize on increased supply chain stability and optimized product production costs.

New Balance provides a prime example of reshoring as well. New Balance has been pursuing this idea for years as their MADE in USA category began 75 years ago and MADE in UK started 40 years ago. By manufacturing close to their markets, New Balance has forged a unique niche of higher quality, premium products that resonate with local citizens who are proud of their heritage. To meet their standards, each style must contain a domestic value of 70% or more and the retail prices are notably higher to signal the quality. This concept has worked well for New Balance as they are able to shorten supply chains while also building brand equity and desire through high quality, locally relevant items. These lines are particularly significant since consumers consider quality to be one of the most influential aspects in their shopping habits^{1,16}.

Diadora has also taken on the challenge of producing locally with their Equipe Atomo running shoe. Manufacturing this product locally resulted in numerous benefits for the brand, including rapid iteration due to close collaboration between the design team and the cobblers since there was no need to send revisions to an overseas factory. Partnering with overseas companies can also decrease the level of detail since there are more barriers to communication and prototype delivery takes far longer. Diadora's attention to detail informed their choice to solely release this product in running specialty stores³ since passionate sales staff are more likely to tell the story of this product's quality than sales teams in general sporting goods stores. Diadora should serve as a template for other brands who similarly want to nearshore: they streamlined the product creation and manufacturing process by keeping everything "under one roof", maintained an artisanal degree of quality, and entered retail through specialty channels that increased the likelihood of the consumer grasping the story behind the product.

If businesses hope to return to "business as usual" after weathering the storm of a global pandemic and numerous geopolitical hurdles, they are doomed to fail. As Winston Churchill has famously been quoted, "Never let a good crisis go to waste". Businesses and their leaders must re-evaluate their operations and strategies in order to remain profitable as the consumer, retail landscape, and operations such as supply chains have been deeply altered. This should be viewed as an opportunity for companies to become more efficient and effective as the market has shifted.

The most foundational principle and lesson within this entire topic is the importance and necessity of listening to, understanding, and acting on the consumer's changing needs. As consumers expect more in terms of speed of delivery, product and shopping customization, and visible corporate values, the businesses that fail to adapt will quickly be forgotten. An unwavering commitment to honoring the consumer's wishes is the cornerstone for future business success.

Understanding the consumer is a vital first step, but that foundation must be built on to truly capitalize on that potential. Creating and distributing product in appropriate avenues and timeframes is the next requirement to be met. Adapting to the new consumer is evident through updated sales and marketing channels, including the decision between brick and mortar and/or ecommerce. To be able to meet consumers where they prefer to shop, companies must first have a process for delivering product. As stated above, a diversified, resilient supply chain that is built on data and internal visibility will have the highest likelihood of persevering through the inevitable unexpected stressors in the world. Ever since ancient civilizations, footwear has been a formative part of culture and that influence has continued to grow. Shoes have become an identity and method of self-expression which means that brands who can effectively connect with their consumers and deliver consistent, positive experiences have an incredible opportunity for growth. However, responsibility comes with that opportunity. We, the footwear industry, have the responsibility to serve though continuously evaluating business practices to ensure that we have contemporary solutions that are built to be dynamic and flexible. As long as businesses listen to their consumers and adapt their processes to fit the market, their products will find an audience who will eagerly embrace them.





In 2021, I (in the apron) visited Italy at Il Borrow Estate and worked with <u>Leonardo</u> <u>Palaia</u> to learn how he approaches customshoe making. I was already passionate about footwear at this point, but this is where I fell in love with Italian quality and craftsmanship. Since then, I've longed to learn more about Italian production and am incredibly excited at the prospect of learning from you.

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