

Bayer: Financial Analysis of Restructuring Supply Chains

- Sri Vallabh Parupudi, Vignesh Chitra Ravikumar, Sai Charan Reddy Chennadi, Susruth Kagitala

Introduction

In the generation of constant improvement, global companies are thinking about re-evaluating their operational strategies to enhance competitiveness and avoid risks. One such company is Bayer, a leading pharmaceutical and life sciences firm with a vast global footprint. We as consultants are here to understand the overall global supply chain scenario of the pharmaceutical sector and understand how Bayer is performing in their own sector and analyze the company's global supply chain in an international business context. We have mainly focused on the restructuring of Bayer's supply chain by focusing on the aspects such as offshoring and re-shoring and their strategic implications. For this we have collected data from different sources that include their establishments in different parts of the world. Information about Global supply chain of pharmaceutical industry is discussed in the further sections which mainly focuses on the justification for pharmaceutical industries to go for offshoring is also discussed. In our capacity as industry consultants, we have suggested some recommendations that are specially crafted for Bayer, which can help in reshoring or friend shoring the supply chain.

Additionally, this report will delve into the financial aspects of supply chain strategies, examining how government incentives can influence operational and financial performance, thus guiding Bayer towards a more resilient and efficient supply chain architecture.

About Bayer

Bayer was founded on August 1, 1863 [\[1\]](#), by dye salesman Friedrich Bayer and master dyer Johann Friedrich Weskott, the company started out producing synthetic dyes, but later expanded into the chemical and pharmaceutical markets. Bayer patented aspirin on March 6, 1899, and began distributing it to physicians in glass bottles as a powder. The drug was originally made from a chemical found in willow tree bark and was called acetylsalicylic acid. Noted over-the-counter Bayer products include Aleve, Bayer Aspirin, Alka-Seltzer, Phillip's Laxatives, Bactine, One-A-Day Vitamins, Flintstone Vitamins, and Midol. Bayer is an internationally operating company with

340 consolidated companies in 80 countries. Revenue of Bayer as of fiscal year 2023 is 15,931 million euros. Bayer is also a very big player in the field of agriculture. Bayer Crop Science plays a major role in providing products and digital farming tools to support sustainable agriculture and enhance food security. Bayer is present in numerous countries and are committed to innovation and sustainability. Bayer focuses on reducing environmental impact, utilizing renewable energy, and optimizing resource use. By joining global initiatives and setting ambitious goals for 2030, Bayer aims to improve access to healthcare and reduce emissions, making significant strides towards becoming a more sustainable business.

Bayer's Supply Chain

Bayer AG's supply chain management emphasizes sustainability, ethical sourcing, and human rights, aligning with international standards and policies. The company operates globally with a vast network, evidenced by its **91,149** suppliers in 2022 [2], and prioritizes local procurement to support local economies and meet site-specific needs. Bayer's commitment to human rights is foundational, with its Human Rights Policy guiding operations and relationships across its extensive value chain, which stretches across healthcare and nutrition sectors.

In managing supply chain risks, Bayer undertakes comprehensive risk identification and assessments, focusing on issues like child labor, forced labor, and health rights, involving external experts and internal evaluations. The company's approach to supplier engagement is proactive, with sustainability assessments conducted through platforms like **EcoVadis** and on-site audits to ensure compliance with its ethical standards. Bayer's operations reflect a strategic focus on addressing potential human rights violations, particularly in sensitive areas like the seed and conflict minerals supply chains.

To reinforce its commitment to ethical practices, Bayer provides extensive training to its employees on human rights and has established grievance mechanisms for reporting and addressing compliance violations. The company actively participates in international initiatives such as the Pharmaceutical Supply Chain Initiative (PSCI) [2] and Together for Sustainability (TfS), aiming to promote responsible supply chain management and improve sustainability practices. Bayer's efforts in these areas demonstrate its ongoing commitment to responsible business conduct and sustainable development within its global supply chain.

Key locations of manufacturing

As of December 31, 2023

Bayer has 340 establishments in 80 different countries. The main locations that Bayer manufactures its products are listed below[3] :

- **Berkeley, USA** - This site is mentioned as part of the investment for expanding biotechnology and cell and gene therapy production.
- **Berlin, Germany** - Referred to as the future Center of Excellence for parenteral.
- **Leverkusen, Germany** - Planned to become a Center of Excellence for non-hormonal solids.
- **Bergkamen, Germany** - To be transformed into a Center of Excellence for contrast media and hormone products while expanding capacities for therapeutics.
- **Wuppertal, Germany** - Will receive investments focused on launch production and new production technologies.
- **Turku, Finland** - Part of an investment initiative, particularly emphasizing sustainability and family planning.
- **Alajuela, Costa Rica** - Also part of the investment focuses on sustainability and family planning.
- **Vapi, Gujarat [4]** - It is the largest producer of synthetic pyrethroids in the world. Additionally, they have divestment and operational transfer activities in:
 - **Karachi, Pakistan** - The production plant has been divested.
 - **São Paulo Cancioneiro, Brazil** - The manufacturing plant is being transferred to a new operator. Other German sites in Bergkamen, Wuppertal, and Berlin - Parts of infrastructure and services are planned to be transferred to external partners.

Global Supply Chain Overview:

Over the past two decades, the global pharmaceutical trade has expanded significantly. In the year 2000, the industry was valued at \$113 billion, and by 2019, it reached an impressive \$629 billion. This remarkable growth can be attributed to several factors, including the increased global demand for medications, advancements in pharmaceutical research, and the expansion of healthcare services worldwide.[5]

As the industry grew, pharmaceutical supply chains have become increasingly globalized, multifaceted, and opaque. Companies are not only outsourcing manufacturing but also incorporating novel treatment methodologies like gene and cell therapies, which often require stringent handling and storage conditions. Moreover, the logistics to deliver these products to patients have become more sophisticated, sometimes requiring a product to start in Asia and circle the globe multiple times before reaching the consumer.

The leading companies in the pharmaceutical sector have been strategically restructuring their supply chains, primarily to tap into growth opportunities and to manage costs more effectively. However, these changes have not always come with a thorough evaluation of potential risks. According to a McKinsey survey, about half of the pharmaceutical executives acknowledged that relying on a single source for materials or products is a significant vulnerability. Additionally, a quarter of these executives admit to a lack of transparency regarding the risks posed by their suppliers.

Supply chain risks, while unavoidable, can be mitigated. Companies are now encouraged to improve their supply chain visibility, which means having a comprehensive understanding of each stage of their supply chain, from raw materials to finished products. Furthermore, the implementation of robust risk management practices can help identify potential disruptions early on. This involves not only identifying and evaluating the risks but also developing strategies to manage or avoid them.

Emerging technologies play a crucial role in enhancing the resilience of supply chains. For instance, digital tools and platforms can offer real-time monitoring of supplies, predictive analytics can anticipate potential breakdowns, and advanced algorithms can suggest alternative supply routes or sources in case of a disruption. Blockchain technology can be used to create immutable records of transactions, ensuring traceability and accountability across the supply chain.

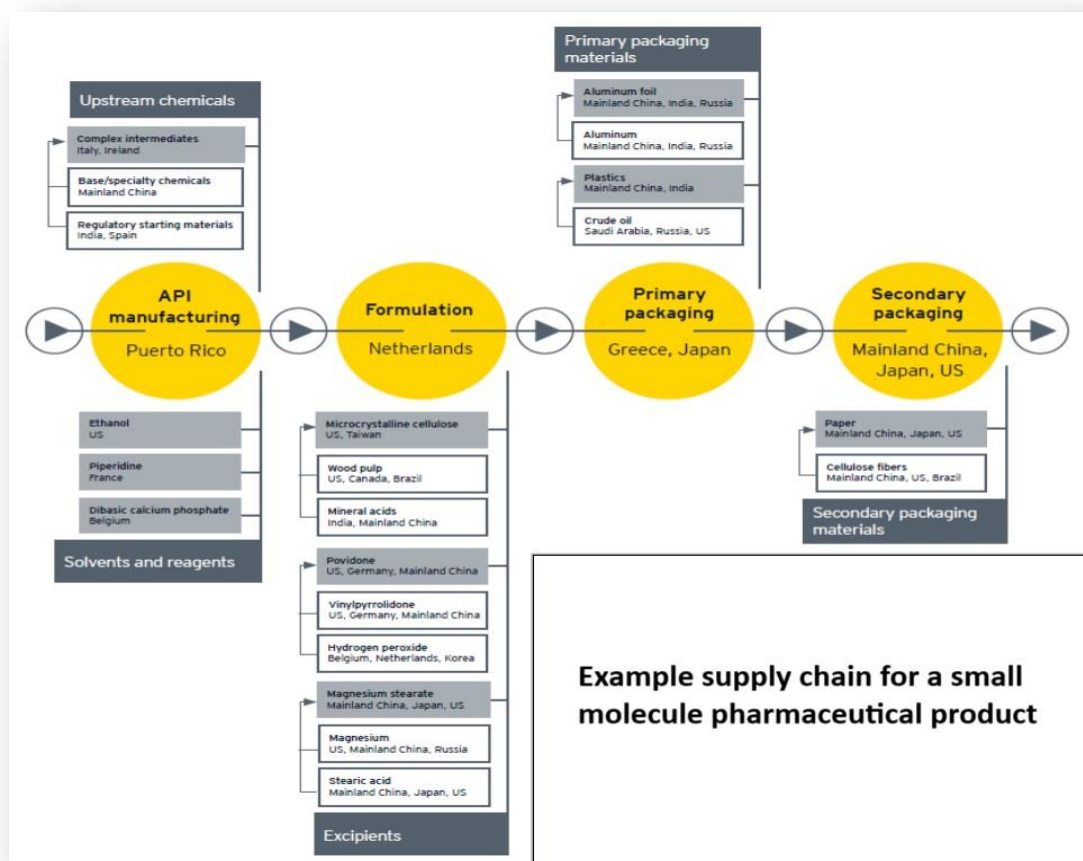


Figure 1: Example supply chain for a small molecule pharmaceutical product* [6]

Investment in such technologies, along with a proactive approach to risk assessment, could help pharmaceutical companies navigate through complex global supply networks. By doing so, they can ensure the uninterrupted supply of critical pharmaceutical products to patients, even in the face of unforeseen global events. This is not only essential for the financial health of the companies but also critical for the well-being of populations around the globe who depend on these vital medications.

However, building resilience starts with understanding the nature of supply chain risks. The pharmaceutical industry has increasingly globalized and offshored its supply chains over the past few decades, resulting in complex and opaque supply chains that span multiple countries and continents. Some key reasons driving this offshoring include:

*Small molecule pharmaceuticals: The Pharmaceuticals that deal with chemicals with very minute molecular weights majorly made in a lab.

Cost savings: Companies have offshored manufacturing and sourcing of raw materials, and raw material costs.

Access to expertise: Certain countries/regions have developed specialized expertise and capabilities in areas like chemical synthesis, bioprocessing, etc. Pharma companies have tapped into this expertise by offshoring.

Labor availability: Regions like Asia provide access to large pools of skilled labour required for pharmaceutical manufacturing.

Incentives: Some countries have offered tax incentives, subsidies, and other benefits to attract pharma investments in manufacturing.

Resilience of Pharma Supply chain:

This geographic distribution leverages regional cost and expertise advantages but makes supply chains increasingly opaque, vulnerable to disruptions, and difficult to monitor end-to-end. The COVID-19 pandemic exposed these vulnerabilities, leading to shortages of critical materials and supply bottlenecks.

As a result, there is an emerging trend towards supply chain localization or regionalization, with governments looking to secure domestic production capacities for essential medicines as part of national strategic interests. Major trading blocs like the US, EU, and China have implemented policies incentivizing local production.^[6]

However, full localization is challenging due to the significant capital investments required and potential inefficiencies from disaggregating production volumes. The future may involve a hybrid model with some manufacturing localized regionally, while leveraging continued globalization for cost-effective sourcing of materials. Greater supply chain visibility, supplier diversification, inventory stockpiling, and regulatory harmonization could also enhance resilience.

Reshoring Opportunities

The cost of offshoring key facilities in countries like China which has a volatile geo-political status with the western nations was exposed in the trade war with the United States. The Covid pandemic and the Ukraine-Russia war has increased the necessity of reshoring or friend-shoring key facilities.

Reasons to Reshore

Underestimation of the costs of offshoring:

Offshoring can be unprofitable due to high management, logistical, and operational costs. The expense of organizing, monitoring, and communicating between parent firms and remote affiliates may be more than anticipated. Early in the offshore wave, corporations mimicked the conduct of their competitors, focusing largely of the "out of factory costs" rather than the total cost of production. [7]

Closer to the target market:

Moving closer to markets has the advantage of promoting shorter lead times and a speedier time to market, particularly for items that require customization or rapid response to changing demand. Pharma manufacturing organizations face an unprecedented demand for products that allow for higher levels of customization and production procedures that enable a shorter time to market.

Increased costs in developing countries:

Offshored activities in low-cost developing countries now have much higher production costs. Wages, energy expenses, and building costs have all increased considerably. Companies embraced offshore to take advantage of low labour costs, a business-friendly regulatory framework, and easy access to raw commodities. However, over the last several years, wages in nations such as China and India have climbed by 10-20% each year. Reshoring decisions were most likely influenced by rising labour costs in China, as well as the Yuan's appreciation against the dollar. Firms that establish new plants in Asia are more likely to reshore than those in other locations like Eastern Europe or Mexico.

Government Incentives:

The European Union has promised incentives for reshoring the production of pharmaceutical manufacturing in Europe, some of these incentives are [8],

Incentivizing in the Supply chain

- Investment cost subsidies for production facilities
- Grants to ensure supply security within the framework of pricing restrictions,
- Amendment and modernization of public procurement law at the EU and state levels.
- Active role in the drafting of the EU Critical Medicines Act.

Regulation for competitiveness

- EU pharmaceutical package aims to strengthen regulatory innovation and competitiveness.
- The EU patent package ensures the preservation of patent rights.

Strengthening regulatory authorities

- Restructuring the competencies of the government agency.
- Harmonizing manufacturing authorizations, procedures, and regulatory interpretations for specific medical product classes.

Technology Advancement in the Pharma Industry in Europe [9]:

Digital simulations: 90% of clinical trials fail, but this figure improves when researchers introduce more chemicals into the trial phase. However, this necessitates data collecting, experimentation with various variables, and comparison of the novel medicine to existing therapies, and virtual simulations are extremely useful in this endeavour.

Gene editing: It is critical for pharmaceutical development; technology allows for gene editing that uses RNA to direct an endonuclease to a specific sequence to be modified. This makes the process of removing, adding, or altering genes more simpler. It is a scalable strategy, which allows researchers to examine a large number of genes quickly. This translates into several advantages in direct repair (as opposed to conventional gene therapies that require more gene copies), resulting in faster medication discovery.

Current Reshoring/Friend-shoring activities in Bayer AG:

Bayer Friend-Shoring from Beijing to Berkeley, CA [10] :

In the year 2019, the Bayer Corporation planned to invest in a new \$150 million plant in Berkeley, CA. The plant will focus on a new cell manufacturing plant, this plant would focus on the R&D department of Bayer AG. This would also begin the slow end of manufacturing in Asian Countries. Currently, the project has been delayed due to the pandemic but the plans have not been called off.

Competitive Analysis

Competitors strategy

The pharmaceutical industry faces a complex and dynamic landscape, necessitating strategic supply chain management to maintain competitiveness. Competitors prioritize new product development and process capabilities, responding swiftly to market demands and technological advancements. Effective capacity planning and plant design are essential, addressing uncertainties in clinical trials and manufacturing. Inventory management is critical due to the sensitive nature of pharmaceutical products, while outsourcing logistics and production to third-party providers helps companies focus on their core competencies and reduce costs.

Reverse logistics management is a key concern for handling expired or unused medications, and lean manufacturing principles are increasingly adopted to minimize waste and optimize processes. Quality assurance remains paramount, with firms adhering to stringent standards to ensure product efficacy and safety. Additionally, there is a growing emphasis on green supply chain practices to mitigate environmental impact. The integration of e-business and IT solutions enhances coordination, data management, and decision-making, highlighting the sector's shift towards digital transformation.

In the global arena, pharmaceutical companies must navigate regulatory complexities and adapt to various market conditions, making flexibility and strategic planning essential. Performance management is an ongoing focus, with companies striving to improve cost-efficiency, quality, and delivery to sustain growth and market share. The sector's competitive edge hinges on its ability to innovate, manage risks, and streamline operations, underscoring the importance of strategic supply chain management in the pharmaceutical industry.

Effects of Reshoring on Bayer [11]

The global pharmaceutical supply chain landscape is undergoing a transformational shift, with localization and reshoring of manufacturing emerging as a key strategic priority for major governments and trading blocs. In the markets where Bayer has a substantial presence - the US, EU, and China - a raft of new policies and incentives are being implemented with the explicit aim of encouraging domestic production capacities for essential medicines. Reducing over-reliance on

overseas supply sources is increasingly viewed through the lens of economic sovereignty and national security.

For Bayer, proactively executing an optimized localization or regionalization strategy that pragmatically aligns with these evolving policy directions could significantly influence the company's future competitiveness in these critical markets. Investing in localized manufacturing can be advantageous in the terms of:

- Supply chain resilience and ability to rapidly respond to local demand shifts.
- Preferential market access by fulfilling domestic production criteria.
- Access to Location incentives like tax credits, subsidies etc.

However, extensive reshoring also carries inherent downsides. Duplicating production capacities across multiple locations necessitates significant capital expenditure and runs counter to the economies of scale Bayer currently leverages through its globally optimized supply chain footprint. There are efficiency trade-offs in the form of higher operating costs that require rigorous evaluation.

Timing factors may prove crucial. Early movers establishing resilient local/regional supply chain capabilities aligned with government reshoring priorities could secure a vital competitive edge over slower rivals in securing available Location incentives and preferential market entry.

Our recommendation is for Bayer to pursue an optimized hybrid model - combining localization numerically calibrated to policy obligations while preserving globalization in areas where cost efficiencies can still be harnessed. Strategically investing in this balanced footprint realignment will be vital for enhancing Bayer's long-term competitiveness as pharmaceutical supply chains continue their transformation in the years ahead.

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