Supply Chain Tech
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Supply Chains & COVID: The Before, During and After

Supply chains have become increasingly global and complex – when COVID hit their fragility was exposed

- **<u>Before</u>**: businesses optimized for growth, margins, and efficiency at the cost of resilience
  - Resulted in underdeveloped supplier and vendor networks, lean inventory stockpiles and just-in-time fulfilment

- **<u>During</u>**: supply chains stopped operating as planned, lean inventory stockpiles evaporated and many were left scrambling
  - COVID was an unprecedented disruption, and without a resilient network of vendors and suppliers or adequate inventory for low volume inputs, most were ill-equipped to effectively react

- **<u>After</u>**: planning for perfection has been replaced by planning for disruption – specifically, how to react quickly and effectively
  - Tangible changes include diversifying sourcing methods and engaging with multiple up-stream and downstream partners, removing any single points of failure

Inventory-to-Sales Ratio (Days of Sales in Inventory)[1]
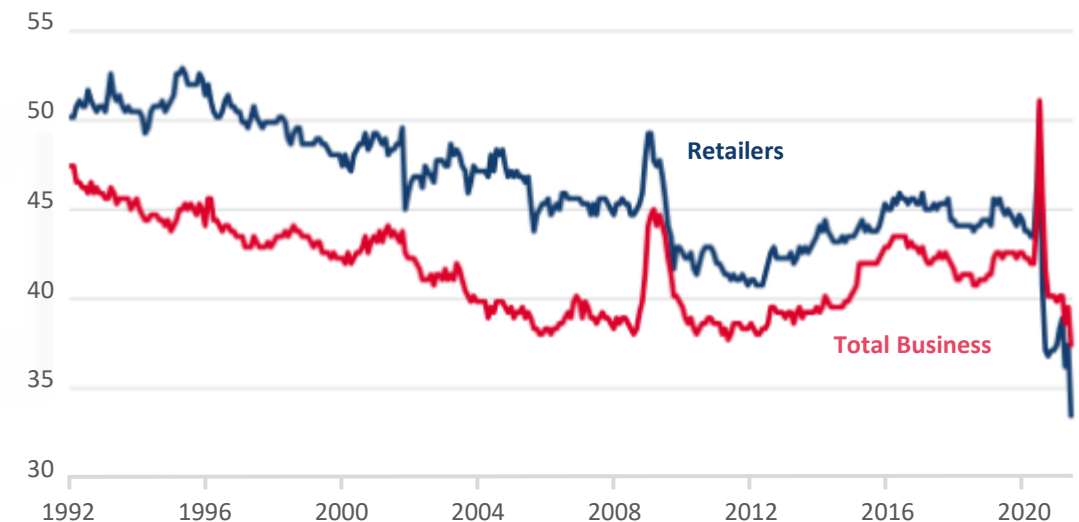
Looking Ahead: diversification and resilience are key components of hardened supply chains, but they also breed complexity – technology will address this complexity by connecting disparate parts of the supply chain, offering greater visibility and, in turn, more powerful scenario planning and automation so that businesses can prepare for and react to disruptions like COVID more quickly and effectively

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State of the Market

Global supply chains are just getting back on solid footing after COVID's unprecedented disruption ground them to a halt – now that they've normalized, this is an opportune time harden supply chains through investments in digitization

- The focus of 2022 & early 2023 was getting supply chains back in sync – dubbed "the great reset" – now it is on adopting a new level of resilience to avoid reliving the challenges faced in 2020 & 2021

- Many trends covered in our 2021 report have persisted, but there has been an even greater emphasis on supply chain resilience and visibility in response to COVID's unprecedented effect on global supply chains

- We have a few core beliefs as it pertains to the future of supply chains:

  o **Complexities will increase**, and disruptions will be amplified if these complexities are not counterbalanced by the adoption and integration of technology

  o Preparing for inevitable disruptions will require disparate systems and applications to **communicate with one another in a common data model, offering greater visibility** throughout the supply chain

  o The volume of data generated will require **automation** to optimize supply chain operations via scenario planning and exception handling

Global Supply Chain Pressure Index (GSCPI)[1] (2012-2023)
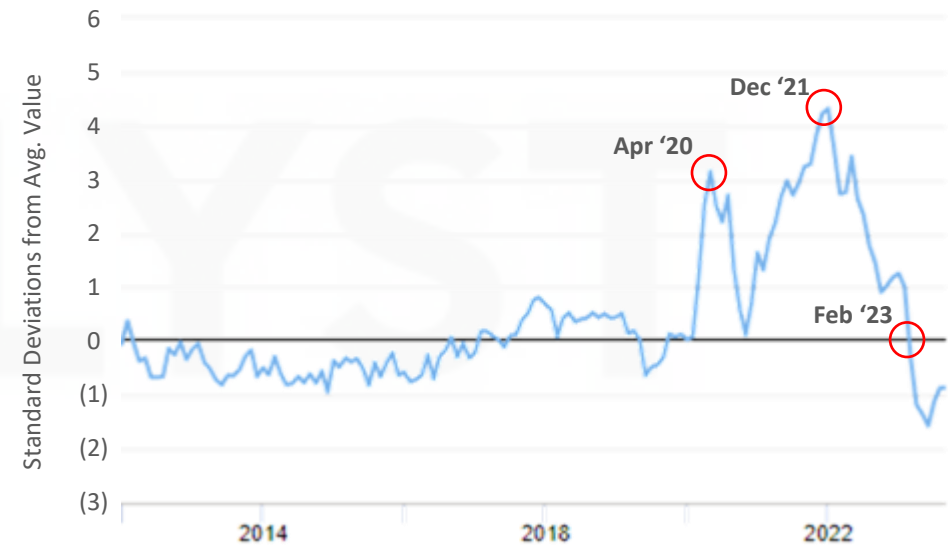
Focus: this piece will explore the trends and companies enabling the digitization of global supply chains with the goal of achieving greater end-to-end visibility and, as a result, resilience through scenario planning and automation

The Data Problem

End-to-end visibility is the holy grail of supply chain management, but the supply chain is suffering from a digital gap – many physical assets and processes are not appropriately captured in digital models, making it impossible to achieve complete visibility

- An estimated 80% of physical supply chains aren't accounted for in digital decision models[1] and only 31% of procurement professionals are satisfied with their current level of supply chain visibility[2]
- Achieving supply chain visibility requires data, which begins with participation from all stakeholders – suppliers, vendors, distributors, etc.
- Data accessibility and quality are the biggest hurdles to achieving visibility – more than 81% of procurement professionals view them as moderate or severe challenges[2]
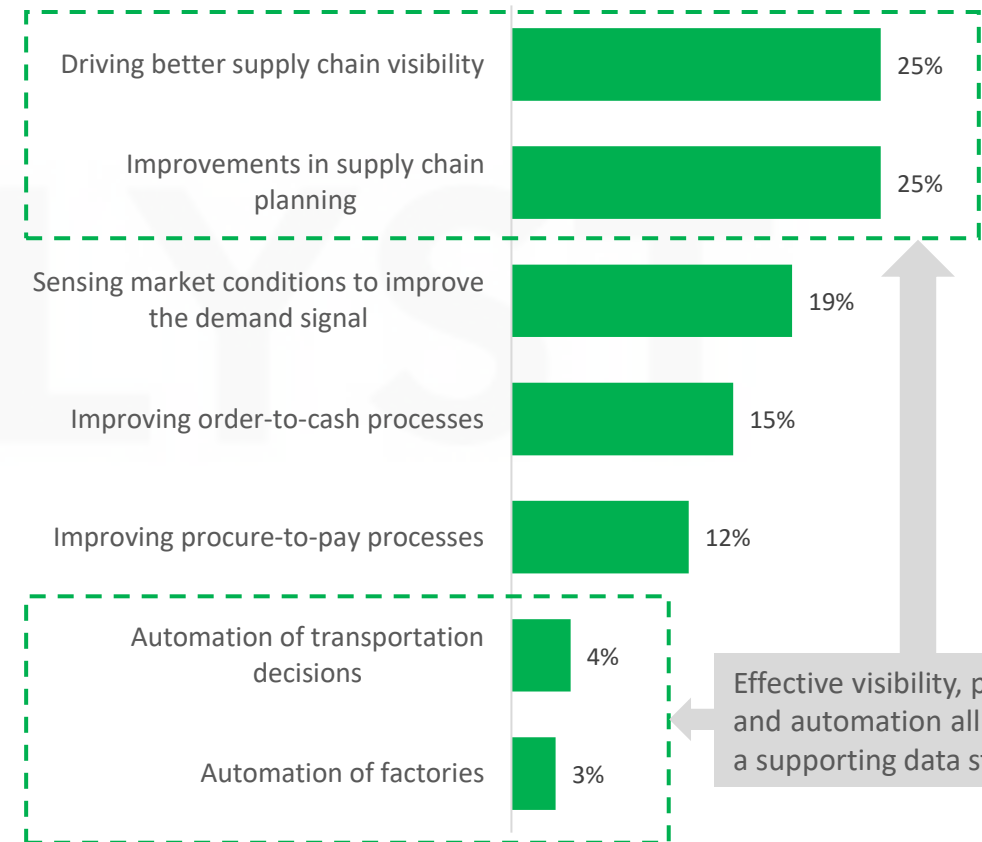
The Problem:
- Data from stakeholders is often unavailable, incomplete or incompatible
- Businesses must cater to the lowest common denominator – decades old tools with limited innovation and interoperability are inhibiting innovation
- Enterprise data architecture adds latency to data gathering and analysis, preventing organizations from gaining real-time supply chain visibility

The Solution:
- Adopt a common data model that allows for interoperability across disparate systems and applications with minimal latency
- Leverage third-party applications with open APIs and pre-built integrations, reducing barriers to adopt a common data model while increasing data sharing and communication among stakeholders

The Focus of Digital Transformation Programs[3]

Focus Area	%
Driving better supply chain visibility	25%
Improvements in supply chain planning	25%
Sensing market conditions to improve the demand signal	19%
Improving order-to-cash processes	15%
Improving procure-to-pay processes	12%
Automation of transportation decisions	4%
Automation of factories	3%

Effective visibility, planning and automation all require a supporting data strategy

Sources: (1) Gartner, *Guide to Create an Effective Digital Supply Chain Roadmap*, 2023; (2) Procurement Leaders, *Data-Enabled Supply Chain Transparency*, 2022; (3) Supply Chain Insights, *The Need for a Supply Chain Reset*, 2023; Accenture, *"The Benefits of Supply Chain Visibility"*, 2023; GLG expert calls
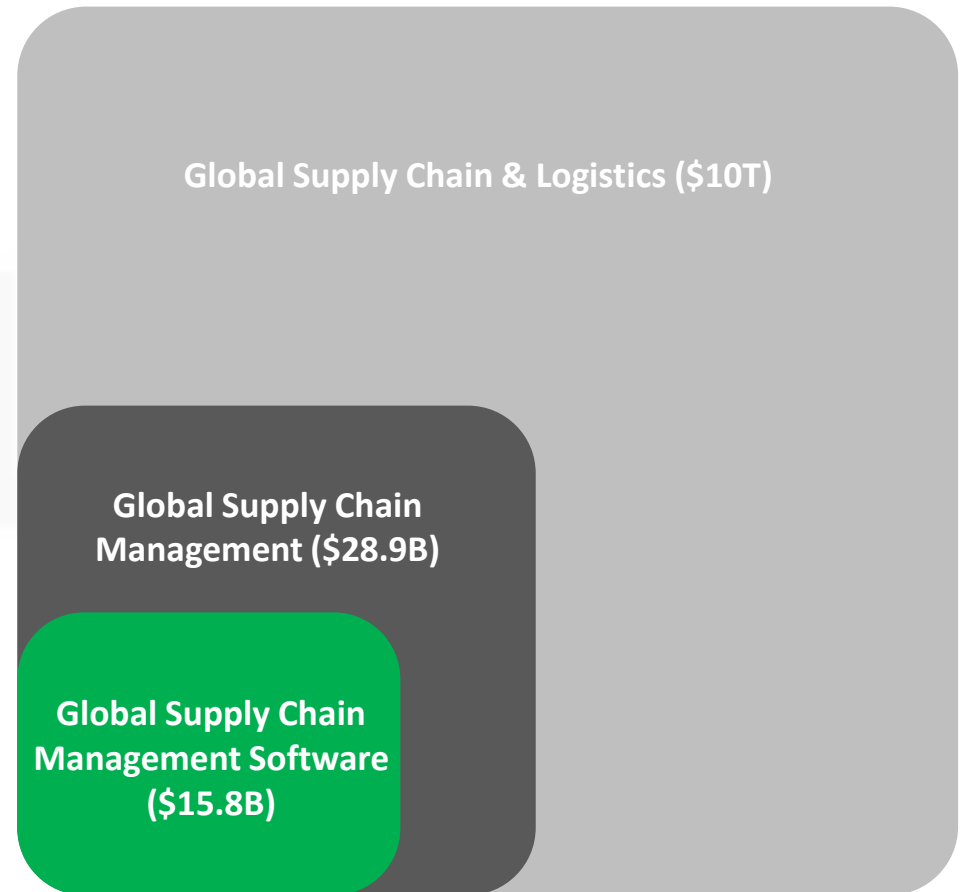
What's at Stake

COVID fundamentally disrupted the global supply chain & logistics industry, which represents ~10% of the world's GDP – investing in digitization will protect against another similar disruption of the global economy

- Supply chain & logistics is a $10 trillion market[1], representing 10% of the world's GDP, but remains a laggard in terms of tech adoption

- Supply chain management was estimated to be a $28.9 billion market in 2022 and is expected to grow at a 9.4% CAGR for the next five years, reaching $45.2 billion by 2027[2]

- Supply chain management software was estimated to be a $15.8 billion market in 2022 (55% of SCM market) and is expected to grow at a 12.6% CAGR, reaching $28.6 billion by 2027 (63% of SCM market)[3]

  - Pitchbook expects cloud-based systems to grow at a 14% CAGR, with visibility, inventory and product tracking solutions growing faster than the broader supply chain management market as well[4]

  - As technology investment accelerates and digitization takes hold, software will increase automation, reducing the need for human involvement, and account for a larger portion of the overall market

Bottom Line: supply chain management software represents an increasing portion of the broader supply chain & logistics market – we expect this trend to continue as investment in digitization accelerates

Global Supply Chain & Logistics ($10T)

Global Supply Chain Management ($28.9B)

Global Supply Chain Management Software ($15.8B)

Not to scale

Sources: (1) Allied Market Research, *Logistics Market,* 2023; (2) Markets & Markets, *SCM Market*, 2023; (3) IMARC, *Supply Chain Management Software Market*, 2023; (4) Pitchbook, *Emerging Tech Research: Supply Chain Tech*, 2023

Trends Shaping the Future

Visibility
Achieve greater visibility by establishing a common data model across disparate apps and systems

AI Automation
Unlock insights that anticipate disruptions and enable real-time responses to dynamic situations

Agility & Resilience
Remove single points of failure, leveraging technology to achieve flexibility and scalability

Cybersecurity
Protect valuable data as supply chains become increasingly digital and interconnected

Volatile Global Trade
Navigate increasingly complex geopolitical and regulatory environments

Reshoring
Return manufacturing to North America to mitigate risks inherent in international operations

5G-enabled IoT
Improve manufacturing output and asset tracking with IoT devices running on 5G networks
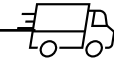
ESG
Understand where carbon emissions and high-energy use occur and reduce them

Market Landscape

Planning & Optimization

7bridges · Alloy.ai · BLUE RIDGE · board · ConverSight · Covalent · deepvu · DEMAND DRIVEN TECHNOLOGIES · FLIEBER · JOHN GALT · metrc · OMNICHAIN · shipium · SOLVOYO · THROUGHPUT INC

Procurement & Supplier Management

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Warehouse & Inventory Management

Airhouse · DEPOSCO · entrupy · FACTOR · GreyOrange · FOUNTAIN9 · FULFILLD · leafio · LOGIWA · manufactured · MATRAK · saltbox · ShipBob · ShipCalm · ShipHawk · shipmonk · shopventory · silq · VERUSEN

Transportation & Logistics

aifleet · AIRCON · alvys · BLUE CARGO · CARGOFY · e2log · easypost · EXPEDOCK · Fleetio · FleetOps · FREIGHTVERIFY · GoFreight · greenscreens.ai · nuVizz · OneRail · paccurate · PORTPRO · whip around · WISOR · ZEUS

Data & Visibility

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Supply Chain Strategy → Consumer

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