Infosys® | CONSULTING

Revamping your Supply Chain:

7 Areas to Bridge the AI Gap

An Infosys Consulting Perspective

By John Gikopoulos, Saibal Samaddar, Shatam Bhattacharyya, Naveen Sundara Balaji S.

Consulting@Infosys.com | InfosysConsultingInsights.com

A Changing Landscape

There have been promising advantages in the deployment of AI in supply chains. The Covid-19 era has only reiterated the agile requirements in organizations.

In today's world, supply chains are becoming increasingly complex. The Covid-19 pandemic has proved that complex supply chains must also be agile to handle the shocks in both supply and demand. There is also a growing need for integrating environmentally friendly and sustainable practices into supply chain management. A sustainable, lean, and agile supply chain provides value creation opportunities and offers significant competitive advantages for early adopters and innovators and improves their bottom line.

Our findings show that 79% of supply chain leaders (organizations in top 25 with superior supply chain capabilities) achieve revenue growth 8% above their peers, and 69% of supply chain leaders have an EBIT margin that is 9% above their peers. A data and AI driven approach to supply chain management is a must to make a supply chain more agile and sustainable. It provides better visibility and efficiency improvement from end to end. This includes monitoring the flow of information, services, and goods from procurement to manufacturing and delivery to the end consumer.

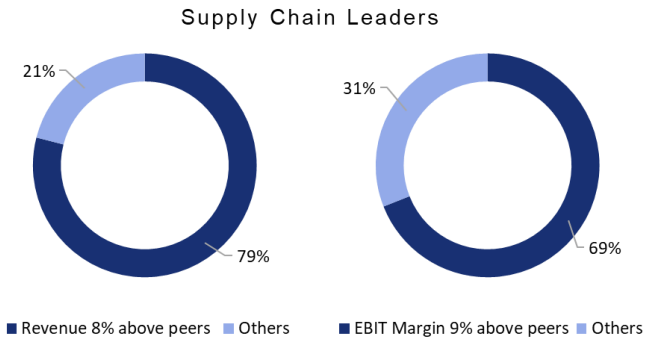

Exhibit 1: Supply chain leaders stay ahead of their competitors

For supply chain leaders, technology has become the core of their digital operating models. 96% of supply chain leaders identify technology and innovation as "extremely important" to deliver better products, increase customer satisfaction, and drive more value from their partner ecosystem.

Supply chains have become increasingly complex and competent to deliver the resilience required in current times. The need for improved efficiencies and visibility between suppliers and business partners accentuates the need to leverage the Artificial Intelligence prowess in supply chains and logistics. The same is being adopted by many prominent players and showing remarkable efficiencies

One of the larger global paint manufacturing companies has made innovation in the supply chain the fundamental driver for constantly optimizing cost and becoming more agile. It serves more than 65,000 of its dealers directly from its depots with the promise to deliver the same day in tier 1 cities. AI and analytics have been the core of the company's operations. It uses IoT devices, sensors and visibility systems that provide complete tracking of the products from the factories to the dealers' shops. Supply and demand planning is done using an AI enabled forecasting engine. It uses AI to combine production data from hundreds of assets, including robotic packing machines and other automatic processing equipment, to optimize each of the shop floor processes.

One of our FMCG clients is counted amongst the global supply chain leaders because of its modern and advanced supply chain, also keeping in mind the commitment to sustainability.

79% cent of organizations with superior supply chain capabilities ("supply chain leaders") achieve revenue growth 8% above their peers, and 69% of supply chain leaders have an EBIT margin that is 9% above their peers.

We have advised organizations in the supply chain, helping them deliver powerful optimization capabilities. This has resulted in more accurate demand planning, improved productivity, high quality, lower costs, and superior quality output while fostering sustainability, agility, and safer working conditions through AI transformation. AI has a significant impact on supply chain management, especially in planning and scheduling, forecasting, spending analytics, quality control, and logistics network optimization.

Exhibit 2 shows how we've helped clients to reimagine supply chain operations to impact the bottom line.

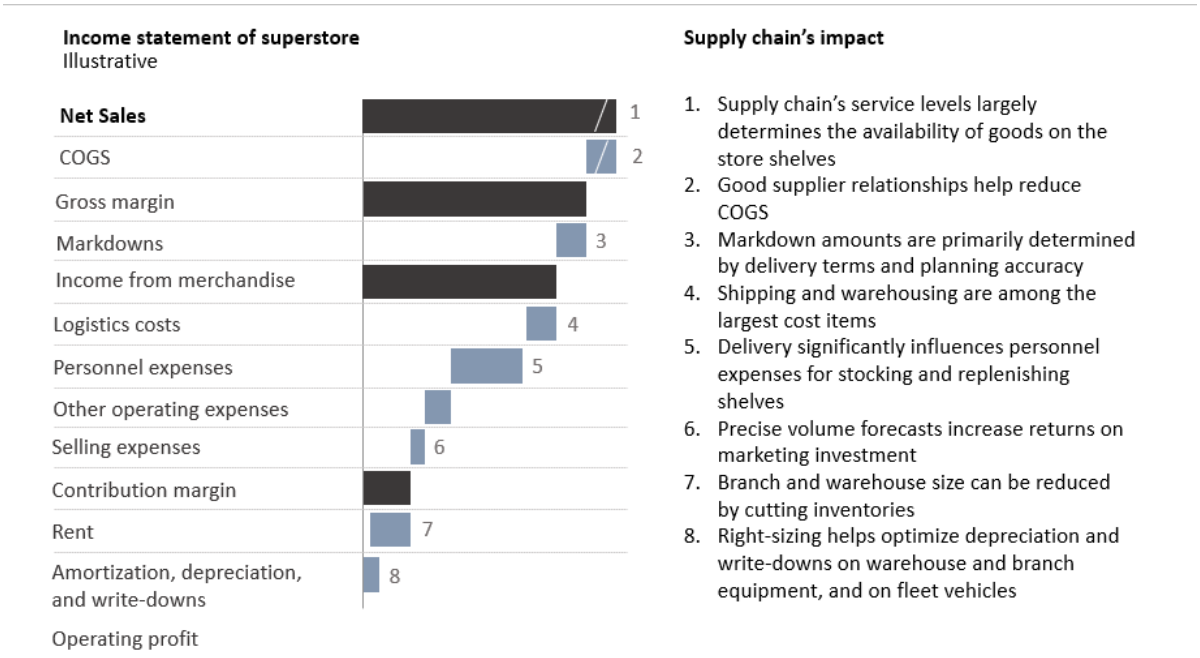

Exhibit 2: How supply chain efficiencies impact the income statement

Supply Chain Performance: Automotive Industry

The performance gap between a supply chain leader and a laggard is significant, and AI can help organizations bridge the gap. As our research Maturing AI in the Organization testifies, the correlation between AI maturity and financial performance is not arbitrary, increasing operating margin by as much as 6% in some industries.

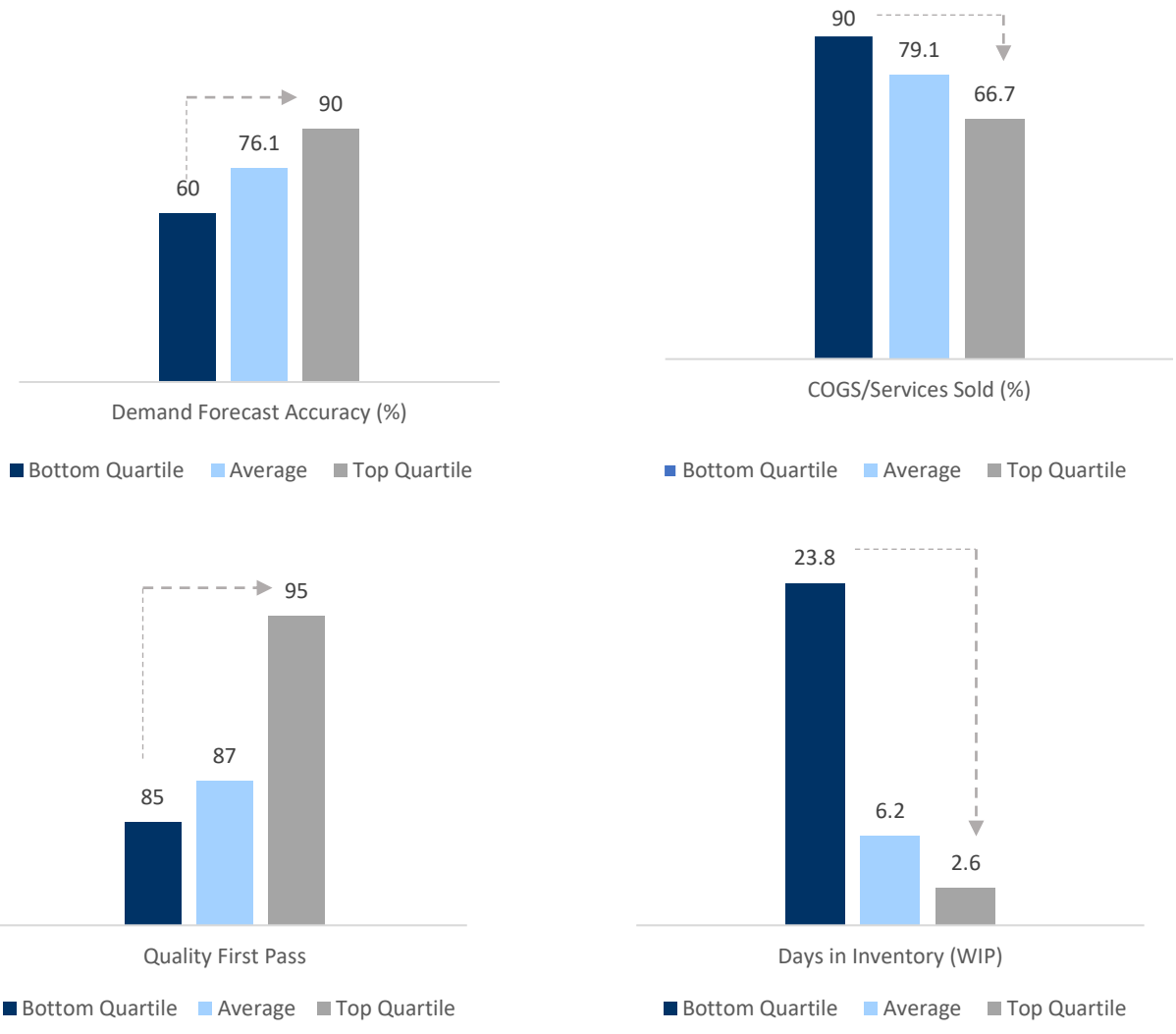

Exhibit 3: Gaps between the high performers and bottom performers

7 Imperatives to Bridge this Gap

1

END TO END VISIBILITY AND AUGUMENTED REALITY

In the globalizing supply chain world, AI helps achieve a single view of the entire supply chain. AR and VR, on top of end to end visibility, help in identifying mistakes that could lead to potential disruptions in production lines.

2

DEMAND AND INVENTORY MANAGEMENT

AI & ML in demand planning creates highly accurate predictions of future demand. They can help organizations see unforeseen variations in demands by generating insights.

3

AGILE MANUFACTURING WITH AI AND 5G

The ability of 5G and AI to process massive amounts of sensor data has provided companies with an unprecedented chance to improve their existing manufacturing process and maintenance operations.

4

ENHANCED SAFETY AND IOT

Cognitive AI can analyze workplace safety data. It can use feedback loops for monitoring personnel movements and ensure that organizations are secure and compliant with safety standards.

5

WAREHOUSE EFFICIENCY WITH 3D VISUALIZATION

The use of intelligent routing for packing optimization can save a significant amount of time in order processing. AI interventions can thus accelerate traditional warehouse procedures along the value chain.

6

FLEET MANAGEMENT USING QUANTUM COMPUTING

Sensors, IoT and AI in delivery fleet help in gathering a vast amount of data regarding vehicle performance and traffic patterns.

7

SUSTAINABLE SUPPLY CHAIN OPERATIONS

Artificial intelligence can solve various issues that are critical for sustainable manufacturing and sustainable future, using algorithms that provide precise recommendations that will strike a balance in energy and material use.

1 END TO END VISIBILITY AND AUGMENTED REALITY

- There's a high requirement for complete visibility of the entire value chain in the complex network of globalized supply chains.
- A cognitive AI driven platform offers a single view of the supply chain. It helps eliminate bottlenecks in operations, identify opportunities for improvement, and simplify scheduling optimal alternatives using real time data.
- Augmented reality and virtual reality, on top of end-to-end visibility, help in identifying mistakes that could lead to potential disruptions in production lines and equipment, by simulating key processes and performing virtual tests.
- With a completed visibility of end-to-end processes, AR and VR have great potential in mitigating the cost of breakdowns extra components, material, labor, and buffers and reduce production downtime. They detect operational inefficiencies such as imperfect maintenance planning and failure diagnostics.
- Using VR to instruct employees also saves a lot of time training the employees VR is capable of delivering knowledge and expertise directly to workers' iPads or headsets in real time and helps avoid downtime caused by unexpected illness or absence of an experienced worker.

2 DEMAND AND INVENTORY MANAGEMENT

- Demand forecast provides a strong foundation for an effective growth strategy, leading to positive downstream effects on metrics and bottom-line income.
- Due to the ever-increasing globalization, expanding product portfolios, and fluctuating customer demand, supply chain planners find it difficult to forecast demands and inventory needs accurately.
- AI and ML in demand planning create highly accurate predictions of future demand.
- They can help organizations account for unforeseen variations in demands by gathering data from multiple internal and external sources, predicting new consumer habits, and forecasting seasonal demand more accurately.
- They can also help in accurately forecasting the decline and end of life of a product on a sales channel along with the growth of a newly introduced product in various channels.

3 AGILE MANUFACTURING WITH AI AND 5G

- AI and 5G are changing the technologies that are used to run manufacturing and processing facilities.
- Ample amount of data, high speeds and large bandwidth of 5G enable the creation of smaller, cheaper and untethered robots, which are more agile and make faster decisions and quickly adjust to changes or requirements in near real time.
- A leading bearing manufacturing company in Europe has 5G enabled manufacturing for simultaneous product customization and maximization of production output along with flexibility, traceability, sustainability and safety. The organization has achieved it by creating a network of connected machines that collect, analyze, and distribute data in real time, using 5G enabled edge computing.
- The ability of AI and ML to process massive amounts of sensor data has also provided companies with an unprecedented chance to improve their existing maintenance operations with predictive maintenance. Predictive maintenance uses data from various sources, such as historical maintenance records, sensor data from machines, and weather data, to determine the performance level of the machine and its need to be serviced.
- The use of sensors and intelligent cameras, and deep learning enabled quality control software, is helping manufacturers achieve improved quality inspections at lower costs.
- Advanced AI based quality control software uses a small set of images of suitable valves to learn a set of rules of what a suitable valve is. This makes it convenient for manufacturers to quickly deploy the new quality standards by reconfiguring the system with a very set of prototypical images when production changes.

4 ENHANCED SAFETY WITH IOT

- According to the US Department of Labor, 20-30% of workplace accidents cause moderate to severe injuries, such as broken bones, head injuries, and concussions.
- AI, ML and IoT offer significant opportunities to improve the health and safety of the workforce.
- Cognitive AI systems can analyze workplace safety data gathered from sensors in real time and notify employees about any possible risks.
- It can use feedback loops to monitor personnel movements and analyze machine performance to ensure that organizations react swiftly and decisively to keep shop floors and warehouses secure and compliant with safety standards.

According to the US Department of Labor, 20-30% of workplace accidents cause moderate to severe injuries, such as broken bones, head injuries, and concussions. AI, ML and IoT offer significant opportunities to improve the health and safety of the workforce. Gartner has predicted that, by 2021, AI augmentation will help recover 6.2 billion hours of worker productivity by improving workplace safety.

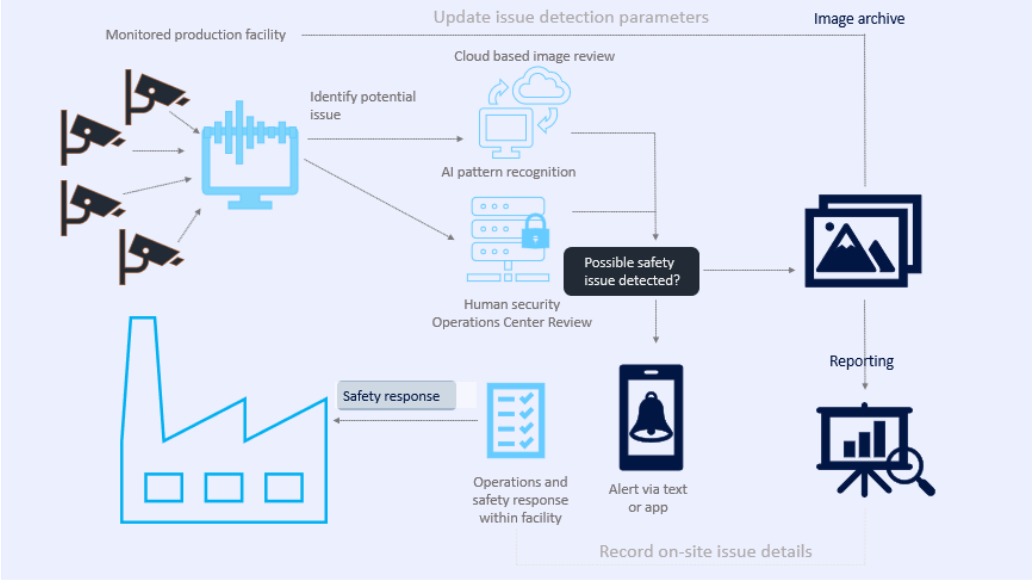

Exhibit 4: AI and ML help enhance safety and security in supply chain processes

5 WAREHOUSE EFFICIENCY AND 3D VISUALIZATION

- An efficient warehouse is an integral part of the supply chain, and AI driven automation efforts can significantly reduce errors and inefficiencies in warehouse operations.
- Automation assists in retrieving the correct item from a warehouse, ensuring the on-time delivery to the customer.
- The use of intelligent routing inside the yard and packing optimization using 3D visualization can save a significant amount of time processing.
- Automated systems and AI interventions can thus accelerate traditional warehouse procedures and remove operational bottlenecks along the value chain.

6 FLEET MANAGEMENT USING QUANTUM COMPUTING

- Sensors, IoT and AI in supply chain and logistics provide real time tracking capabilities and recommend optimal times to deliver the products.
- Sensors in the delivery fleet help gather a vast amount of data regarding vehicle performance and traffic patterns.
- With the help of quantum computing, such vast volumes of data could accelerate decision making and enhance risk management by reducing unplanned fleet downtime, optimizing fuel efficiencies, and detecting and avoiding bottlenecks. This provides timely support to fleet managers for tackling the issues that occur on a day-to-day basis.
- In case of route planning for large volume of shipments using a large number of vehicles across multiple possible routes, classical computers can become overwhelmed with the quintillions of options. Quantum's ability can help logistics planners quickly determine the best routes using less energy and in a shorter time frame.

7 SUSTAINABLE SUPPLY CHAIN OPERATIONS

- Microsoft revealed in a report that 60% of world's biodiversity has been lost since 1970, 91% of people don't live in standard air quality-controlled areas, and greenhouse gases are at their highest levels in 3 million years. According to the International Energy Agency, manufacturing and logistics are responsible for a significant part of the carbon footprints and worldwide energy consumption.
- Hence, multiple organizations have plans to shrink their carbon footprints to "net zero" over the next few decades, between 2030 and 2050.
- Artificial Intelligence can help in reducing carbon footprints, getting ahead of the challenges to benefit environmental sustainability and pave way for a more eco-friendly and energy efficient manufacturing sector. It can solve various issues that are critical for sustainable manufacturing and sustainable future.
- AI can track emissions from every part of an organization's value chain, including materials and components suppliers, their manufacturing facilities, warehouse operations, transporters, and even downstream users of their products. AI can also exploit data from new sources such as satellites.
- AI has the capability to analyze vast amount of data and provide precise recommendations that will strike a balance in energy use, optimize use of certain materials, reuse production scrap waste, improve supply chain and logistics management, and enable proper distribution of energy resources.
- It can also forecast future emissions across a company's carbon footprint, in relation to current reduction efforts and new carbon reduction methodologies. This helps organizations to set, adjust, and achieve emission reduction or net zero emission targets more accurately.

NEED FOR AI IN SUPPLY CHAIN

Our article on Maturing AI in the Organization states that those firms that use AI can increase enterprise profit by 38% and help deliver $14 trillion of gross added value to corporations by 2035.

With supply chain companies shifting their focus from products to outcomes, there is a massive threat for the supply chain laggards. Competitive pressures force organizations to improve agility and precision in the supply chain and cost efficiencies in every stage of their operations. The appropriate way to remain relevant in the highly competitive era is to move from reactive intelligence to predictive, adaptive, and continuous learning systems that drive better decisions using ML and AI in the supply chain.

Way Forward
Before investing in new technologies, a self- assessment test of any organization's current state of supply chain becomes necessary to judge the digital readiness and to understand the benefits to be gained. Examining advantages, limitations, and interoperability capability provides an overview of how efficiently the supply chain process and technologies are working together. This can then help track the KPIs for measuring the impact of injecting AI in the supply chain. When the KPIs are closer to the supply chain goals of the organization, they can help understand the contribution of AI and automation.

To ensure that the ROI expectations are clear and beneficial to the organization, it becomes essential to quantify the short and long-term expectations and weigh them against the implementation costs. The next step would be to focus on the implementation timeline and the roadmap with a long term focus on efficiency gains rather than immediate fixes.

MEET THE EXPERTS

John Gikopoulos

Partner | Global Head AI & Automation

John.Gikopoulos@infosysconsulting.com

Saibal Samaddar

Senior Principal – AI&A Practice

saibal.samaddar@infosys.com

Shatam Bhattacharyya

Principal – AI&A Practice

shatam.b@infosys.com

NaveenSundara SenthamaraiKannan

Consultant – AI&A Practice

naveensundara.s@infosys.com

Infosys® | CONSULTING

consulting@Infosys.com
InfosysConsultingInsights.com

LinkedIn: /company/infosysconsulting
Twitter: @infosysconsltng

About Infosys Consulting

Infosys Consulting is a global management consulting firm helping some of the world's most recognizable brands transform and innovate. Our consultants are industry experts that lead complex change agendas driven by disruptive technology. With offices in 20 countries and backed by the power of the global Infosys brand, our teams help the C-suite navigate today's digital landscape to win market share and create shareholder value for lasting competitive advantage. To see our ideas in action, or to join a new type of consulting firm, visit us at www.InfosysConsultingInsights.com.

For more information, contact consulting@infosys.com