masonadvisory

Technology transformation in supply chains: harnessing the power of digital to solve business-critical challenges

In this series of insight articles, covering Sustainability, Artificial Intelligence and Cyber Security, we take a deep dive into the specific challenges impacting these industries, and how to solve them.

Content

INTRODUCTION

Across Supply Chain industries such as Retail, FMCG, Logistics and Distribution, the challenge of becoming more ethical and sustainable whilst meeting ever-demanding consumer expectations continues to grow in scale and complexity. Technologies, data, and their effective use have made ground-breaking improvements to the customer and colleague experience, but ensuring effective cyber security operations and remaining competitive are more strategically imperative than ever before.

At Mason Advisory, we draw on our direct experience across these industries to help our clients adopt intelligent transformation strategies across their digital ecosystems, tackle the issues head-on, and drive success for their organisations.

In this series of insight articles covering Sustainability, Artificial Intelligence and Cyber Security, we take a deep dive into the specific challenges impacting these industries, and how to solve them.

masonadvisory

Part 1 of 3 - Sustainability in supply chains: trends, impacts, and collaborative solutions

In the first of this three-part series, we explore key sustainability trends in Retail and FMCG supply chains, focusing on the need to drive resilient, eco-friendly operations to remain competitive and deliver long term value.

Industry

Logistics & Distribution

Retail & FMCG

Services

Architecture

Cyber

Operatng Model & Organisational Design

Service Management

Sourcing

Sustainability in supply chains: trends, impacts, and collaborative solutions

It is almost four decades since the concept of more sustainable approaches to business operations entered the global consciousness. Initially, sustainability primarily focused on environmental conservation and protection.

However, as awareness and understanding has evolved, the focus is now on commitment and action. Retailers understand that sustainability has more currency than ever before when it comes to consumer values and their influence on trends and loyalty. Industries that centre on supply chains have fundamental role to play in harnessing these opportunities.

Traditionally, supply chains create a substantial environmental footprint, encompassing transportation, manufacturing, packaging, and disposal. But, by adopting sustainable practices, such as reducing greenhouse gas emissions, minimising waste generation, and promoting renewable energy sources, businesses can significantly mitigate their ecological impact.

In the UK, there are a number of key sustainability trends driving the change. These include:

Increasing regulatory changes and improving transparency

Over the past few years, environmental, social and governance (ESG) legislation has increased. Regulatory bodies, industry and consumers are moving beyond simply acknowledging the need to reduce environmental impact. Today, the focus is on organisations to be transparent and actually evidence their commitment and contribution.

Modern UK and European regulations target a comprehensive list of environmentally detrimental factors. These range from pollution and conservation aspects of the Environmental Act through to the Extended Producer Responsibility (EPR) policy framework, developing

changes like the deposit return scheme for containers, which reportedly costs producers around 1.7bn a year.

There are some key ways in which businesses can prepare to handle shifting and stricter regulatory policies:

- Communicate expectations around environmental and sustainable practices with suppliers and integrate these into vendor selection.
- Ensure cohesive data management practices and tools that enable reporting on key metrics and provide analytics that can help to drive the right objectives.

Closing the loop with the circular economy

Consumers and organisations alike now face a reckoning between the convenience-driven comforts of an enhanced consumer experience, (part of the 'Amazon effect'), and the desire to protect our planet. One way to address this is by moving towards a **circular economy**, encompassing **closed loop systems**.

A circular economy is a system that aims to minimise waste, maximise resource efficiency, and promote sustainable consumption and production. It is a departure from the traditional linear 'take-make-dispose' model, where resources are extracted and eventually discarded as waste.

In a circular economy, the focus is on keeping products, materials, and resources in use for as long as possible through strategies such as recycling, reusing, repairing, and remanufacturing. The goal is to create closed-loop systems where materials and products continuously circulate within the economy.

The fashion and retail industry has provided fertile ground for conversations surrounding this, with initiatives like the Circular Fashion Ecosystem Project (CFE) launched by the British Fashion Council (BFC).

According to the BFC, "E-commerce, for all the opportunities it brings to the fashion industry, has also resulted in a growing wave of fashion returns, which is an issue that affects the online channel far more than bricks-and-mortar retail. The UK fashion industry is estimated to lose at least £7 billion

in 2022 due to returns. However, what is most concerning about returns in the long run is their environmental impact. UK returns are estimated to generate about 750,000 tonnes of CO_2 emissions in 2022, out of which 350,000 tonnes come from reverse logistics processes."

Numerous companies have placed this at the front and centre of their operations, harnessing digital tools at every turn to incorporate circular economy principles, from Patagonia's reuse and repair promotion through to Nestle piloting blockchain technology to trace the entirety of the product lifecycle.

Maintaining sustainability through disruption

Supply chain disruptions can be far reaching and significantly contribute to sustainability challenges. They often lead to inefficiencies, delays, and increased handling of goods. This, in turn, causes additional fuel consumption, emissions, energy usage and, ultimately, a higher carbon footprint. Disruptions can also lead to product spoilage, expiration, or damage, resulting in increased waste generation, a common pain point for many FMCG organisations.

When supply chain disruptions occur, organisations may also need to find alternative sources or suppliers for materials, increasing resource extraction and depletion. Often, organisations must quickly switch suppliers or sourcing regions, potentially leading to longer transportation routes and increased energy consumption. This can impact the organisation's overall sustainability goals, hindering efforts to reduce emissions and environmental impact

Being able to navigate these sometimes inevitable disruptions successfully requires taking proactive steps, rather than being reactive and embedding certain strategies, such as:

- Making sure you work with and diversify your supplier network, ensuring potential weaknesses are addressed and that suppliers share the same sustainable aspirations.
- Embrace a culture of continuous improvement and innovation. Seek opportunities to implement new sustainable practices and technologies that can strengthen your supply chain's resilience.

Voluntary and wanted collaboration

During the 2023 Retail Technology Show (RTS) held annually in the UK, there was a resounding message across different industry leaders: **collaboration is key**. No single organisation can address these challenges alone; they are complex and interconnected. Pooling resources, expertise, and influence is a powerful strategy to drive meaningful change and increase collective impact at a larger scale. Transparency and collaboration can strengthen support for sustainability initiatives during challenging times. This collaboration mindset encourages innovation within industry and supply chain practices. It facilitates knowledge sharing, technology adoption, and best of breed implementation. After all, sustainability is a shared responsibility extending beyond individual organisations.

As Retail and FMCG industries evolve their understanding of environmental impacts, there is a new sense of urgency to embrace future proofed, sustainable solutions as a strategic imperative in supply chain operations. Mason Advisory's experience across the technology ecosystem and with our client-base confirms that the changes cannot be achieved without digital alignment.

The effective use of bleeding-edge, proven and adaptable technologies generates sustainability benefits at pace. Mason Advisory's clients are already achieving significant

environmental impact from these technology-driven strategies. technology-driven strategies. It is the beginning of a future where retail, supply and sustainability seamlessly co-exist within the same, commercially viable ecosystem.

Part 2 of 3 - Artificial Intelligence in action: revolutionising supply chain business processes

In second of this three-part series, we examine how Artificial Intelligence (AI) is truly reshaping supply chains. We explore emerging applications and learning from industry leaders who are championing this transformative technology.

Industry

- Logistics & Distribution
- Retail & FMCG

Services

- Architecture
- Cyber
- Operatng Model & Organisational Design
- Service Management
- Sourcing

Artificial Intelligence in action: revolutionising supply chain business processes

Smart, efficient, and robust processes are the beating heart of any supply chain. AI's growth is already changing the game. It has the potential to revolutionise the future supply chain model by improving efficiency, accuracy and profitability, driven by factors including increasing data availability and insights, ever more powerful computing platforms, and the industry's recognition of AI's potential benefits.

From predictive analytics to robotic automation, AI encompasses various applications, each with its own unique contributions to make in the commercial world. Machine learning algorithms enable intelligent data analysis and forecasting, while natural language processing facilitates efficient communication and interaction. Computer vision technology empowers visual recognition and object detection, while robotic process automation streamlines repetitive tasks.

By harnessing these AI technologies, businesses can unlock new levels of productivity, agility, and competitiveness in their supply chain operations. Core areas and processes are being re-imagined, as we see in the following areas:

Innovation, new product development (NPD) and route to market strategy

Innovation and strategy are evolving through increasingly rapid and informed decision-making processes. Production is being streamlined with the integration of advanced technologies and automation, offering new and exciting ways to approach all manner of retail tactics, from personalisation and tailoring to rapid prototyping and market insights. Proctor & Gamble (P&G), for example, are using generative AI to create new products, reduce development time through modelling and simulation and tailor brand messaging.

This is game-changing for the industry.

By accelerating product development and route to market, competition will be fiercer than ever before amongst brands that are applying creative, effect use cases.

Demand planning and forecasting

A crucial part of efficient supply chains is demand management. Loss of sales through stock shortages is a perennial issue for retailers globally. Forecasting and demand management traverses many different challenges, can be heavily impacted by unforeseen disruption, and requires the evaluation of many different and complex scenarios.

Relying on stock piling has long been a key response to protection against the pitfalls of various siloed data sources for forecasting and the struggle to properly plan for demand spikes. The use of AI in these spaces provides more accurate predictions, accelerates order fulfilment through integrated systems and technology-driven solutions, and ultimately reduces burden, cost, and wastage. In short, AI provides opportunities for substantial demand management wins.

A great example of successful implementation can be seen at Walmart. They implemented an AI-powered demand planning system that helped the company to reduce out-of-stock rate through key events including Black Friday, ensuring that inventory levels were balanced across their distribution network. This and other high profile use cases demonstrate the power of AI to revolutionise a fundamental industry process that, until now, has depended on costly manual intervention.

Production and manufacturing

As expected, AI is being used to transform production and manufacturing cycles through optimisation, predictive maintenance, and quality control. AI can analyse production data, identify bottlenecks,

and ensure consistent productivity. By monitoring real-time data from sensors and machines, AI algorithms can recommend – and even adjust - parameters such as machine settings, production schedules, and workflow layouts.

AI-powered robots and automated systems can perform repetitive and labour-intensive manufacturing tasks, increase efficiency, reduce human error and free human workers to focus on more complex strategic activities. Siemens, for example, is using AI to adjust the production of wind turbines, helping them to increase efficiency by 10% and the bottom-line by 20%.

AI can also monitor equipment performance and historical maintenance records, detecting potential failures and scheduling maintenance activities. This reduces unplanned downtime, optimises maintenance schedules, and extends the lifespan of equipment. AI enhances quality control by automatically inspecting products using computer vision and machine learning algorithms – ensuring consistency and safeguarding quality standards.

An exciting example is GE Aviation's application. By using AI to predict when aircraft parts will fail, the company can proactively replace parts before failure, mitigating business-critical risks and driving valuable cost savings. Moving forwards, this level of insight across the product life-cycle will be paramount to continued brand advantage through longevity and trust.

Warehousing, logistics and distribution

Across industry, AI's greatest power is through analysis – of historical data, demand forecasts, and real-time sales data to manage inventory levels. Using AI to improve accuracy and reduce costs can, and will, generate huge market shifts. Having the right inventory levels in the right place at

the right time is central to supply chain success. Any imbalance in this stream will quickly drive-up receipt, handling and despatch (RH&D) fees and transportation costs, working against driving savings and also sustainability targets. Not to mention the risk of increased service failure when operations are forced to shift beyond their usual sphere of delivery. Repeated and sustained instances like this will inevitably harm key performance metrics and negatively impact customer satisfaction.

What's more, AI-powered systems can streamline order picking routes and strategies. By considering factors including order priorities, item locations, and pick density, AI algorithms can generate improved pick lists and route instructions for staff or robots alike. By considering factors including traffic conditions, delivery time windows, and vehicle capacities, AI algorithms can generate optimal delivery routes – reducing fuel consumption, improving delivery efficiency, and lowering costs.

Trustworthy, reliable, and real-time tracking has long been the key to unlocking operational efficiency and service excellence in any supply chain. AI-powered tracking systems and digital twins can combine and analyse large volumes of data from various sources – GPS trackers, RFID tags, sensors, and connected devices, to name a few. By consolidating and interpreting this data in real-time, AI enables logistics companies to gain accurate and up-to-date visibility into the location, condition, and status of shipments.

Reducing the need for returns

Having a robust returns management policy and underlying process has become a critical issue for many companies. Today's consumers can return products with unprecedented ease. That's great for customer experience and loyalty, but can have concerning impacts for retailers, not only for the environment (as we discussed in our first article), but also financially.

According to a study conducted by Klarna, 78% of UK consumers are more likely to purchase from an

organisation offering free returns policies. Fashion giant Asos has reported profitability impacts as a result of increased return rates to pre-pandemic levels. Although industry has significantly improved the returns life cycle for customers, has this swung too far? Or are retailers at risk of unacceptable cost and sustainability impact if they continue down this road?

AI can help to mitigate such risk, particularly within fashion, by reducing the need for returns in the first instance by ensuring the right selection of products, as well as optimising the sub-processes involved in returns. Inbound Logistics Magazine highlights the role of AI in powering virtual fitting rooms, customer profiles and preferences, as well as intelligent chatbots, which use purchase data and questions to direct the customer to the right product the first time.

Preventing online fraud activity

For today's retailers, online fraud poses more significant challenges than were ever possible in bricks and mortar operations. It causes financial loss, serious reputational damage, and regulatory and compliance risk – and this landscape will only become more complex.

According to Amazon's Brand Protection Report, continued investment in machine learning and AI algorithms has enabled the retail giant to analyse vast amounts of data to identify patterns, detect suspicious behaviours, and prevent fraud across various aspects of its platform, including transactions, customer accounts, and seller activities. With the right, targeted AI transformation strategy and roadmap, there is no reason why even smaller retailers cannot follow suit.

The integration of AI technologies is paving the way for smarter, more agile, and increasingly competitive supply chains but, to truly unlock its power, we must first focus on securing the underlying technology pillars of data quality, security, and human collaboration.

That focus should be urgent. Advances that seemed unimaginable

in the not-so-distant past are already becoming embedded in the retail ecosystem. In the same way, emerging innovations like virtual and augmented reality will quickly become the norm. In an industry as fast-moving and competitive as retail, the reality is that not keeping up is simply not an option.

mason**advisory**

Part 3 of 3 - Safeguarding supply chains: the imperative of cybersecurity

In the last of this three-part article series, we look at how today's rapidly changing digital landscape, with its increased spotlight on global supply chains, has ushered in a new surge of cyber-attacks. We delve into the key cybersecurity concerns facing supply chains and outline effective strategies to address them.

Industry

Logistics & Distribution

Retail & FMCG

Services

Cyber

Service Management

Safeguarding supply chains: the imperative of cybersecurity

Recent events from Brexit, the COVID-19 pandemic, semiconductor shortage, the Suez Canal blockage and extreme geopolitical tensions have dominated news cycles. Unsurprisingly, this volatile landscape is keeping industry professionals awake at night. At the core of all these events has been the growing realisation of the importance of, and our dependence on, supply chains and the vulnerabilities within them that can be exploited. This intensified focus has seen cyber-attacks soar, with malicious actors specifically targeting various parts of the supply chains that are so crucial to all manner of industries and organisations – from port operations to software supply chains, transportation networks, and manufacturing facilities.

Successful cyber-attacks can have devastating consequences for organisations and the global economy. Addressing technology vulnerabilities and implementing heightened security measures are imperative to ensure the resilience of supply chains. We only have to consider a few high-profile examples to appreciate how devastating the consequences of such attacks can be:

- In 2022, Toyota was forced to close down 14 plants after a cyber-attack on one of its suppliers prevented the firm from procuring necessary production parts.
- The now notorious 2021 Colonial Pipeline attack infiltrated computer systems, encrypted their data, and rendered it inaccessible, causing widespread fuel shortages and panic buying.
- The 2021 SolarWinds attack, targeted the software supply chain, compromising updates and leading to unauthorised access to numerous networks, including government agencies and major corporations.
- In 2017, shipping giant Maersk experienced a crippling attack resulting from a compromised software update. Financial losses were reported as around $300 million. Chaotic scenes ensued, with reports of thousands of trucks turned away from terminals across the globe.

Such incidents are stark reminders of the vulnerabilities present in today's supply chain ecosystem. In Mason Advisory's experience, it is imperative for any business involved in, or dependent on, supply chains to act now to build their cyber resilience.

Did you know that, in response to heightened national cyber security concerns, an Executive Order issued in 2021 mandated the National Institute for Standards and Technology (NIST) in the USA to publish specific guidance on software supply chain security? The National Cyber Security Centre (NCSC) in the UK has also published guidance on effectively securing supply chains in response to the increased level of attacks. What's more, according to a Business Continuity Institute (BCI) report, cyber attacks and data breaches are perceived as the top threat to supply chains over the next five years.

So, what are the key trends organisations should be aware of?

Third-party and supplier risk

An alarming trend revealed by recent research, including The European Union Agency for Cybersecurity (ENISA), shows that attackers increasingly target under-resourced suppliers with weaker defences, exploiting these factors to then compromise larger organisations within the supply chain. They use suppliers to gain unauthorised access to the broader network and critical systems, leading to sensitive data breaches or significant service disruption to customers.

Meanwhile, as organisations embrace advanced technologies like AI and external cloud-based composable applications, they expand their 'digital' supply chain. However, with this comes additional partners and increasingly complex security risks.

Data breaches and theft

The exchange of sensitive data and intellectual property (IP) among stakeholders is crucial for efficiency across any supply chain. Cyber-attacks

can target these valuable assets, aiming to steal confidential information or disrupt operations. Research by cybersecurity company BlueVoyant surveyed more than 2000 C-Suite leaders, finding that 82% of organisations suffered a data breach in the past 12 months due to cybersecurity weaknesses in the supply chain.

According to Computer Weekly, a cyber-attack on the systems of airline IT services specialist Sita, first reported in 2021, impacted Air India by exposing the personal data of 4.5 million people who flew on the airline.

More recently, in 2023, BA, Boots and the BBC were just some of the companies affected by the MOVEit attack. The software is used by Zellis, a payroll provider, and Microsoft has linked the attack to a known extortion group.

These attacks are not uncommon, although the size and scale of the impacts fluctuate from smaller repercussions to entire organisational failures. Organisations must ask themselves: "Do we have the cyber resilience in place to survive a malicious attack on our data?" If the answer is "no", then this is a business-critical vulnerability that must be addressed now.

Risks associated with Internet of Things (IoT)

IoT devices significantly expand vulnerabilities within the supply chain ecosystem. According to the EC Council, advanced manufacturing systems in factories may lack adequate security protections, and security may not be built into IoT architectures by design. Moreover, as automation continues to play an important role in improving IoT services, threat actors can leverage automation capabilities to launch more sophisticated attacks on IoT devices.

In 2020, Ripple20 flaws were discovered in a widely used IoT software library called Treck, allowing attackers to remotely execute code, gain unauthorised access, and

potentially take control of un-secured IoT devices, including medical equipment, industrial systems, and more.

To mitigate and combat the adverse effects of this evolving threat landscape, organisations must proactively adopt technology-driven security measures to safeguard their enterprises and external supply chains.

There are, however, many stories where the supply chain organisation has successfully defended itself against attacks. This is no small feat! Success is largely achieved through a true understanding of vulnerabilities, consistent improvements, and shared knowledge across industry organisations. Mason Advisory helps many clients to tackle this complex area, by focusing efforts across these key considerations:

Managing the partner ecosystem

The NCSC has emphasised how crucial it is to know **who** your suppliers are, **what** they provide and **how** they provide it, to help you anticipate and manage the cyber security risks that may threaten your organisation.

Implementing rigorous due diligence processes, conducting regular audits, and establishing clear contractual obligations are all essential tactics here. Continuous monitoring and communication are also vital to ensure compliance and address any potential vulnerabilities promptly.

Implementing the right frameworks and controls

Embedding robust technology frameworks and controls enables organisations to effectively address security challenges by promoting proactive risk management, improving incident response capabilities, and ensuring compliance with industry standards and regulations.

When considering the right frameworks and controls to put in place, it is important to:

- Understand the risks and associated impact severity in the specific context of your organisation and industry, ensuring that the highest priorities are addressed.

- Align frameworks to your business objectives and ensure that security is universally considered as a business imperative, not just a technology one.
- Regularly evaluate and update. Security threats are constantly evolving, so the organisational response must do the same.

Operational resilience and business continuity reviews

These reviews provide the necessary expertise and approaches to assess, mitigate, and respond effectively to cyber threats within supply chains. By incorporating these measures, organisations strengthen their overall cybersecurity position by:

- Identifying potential entry points, helping to prioritise and strengthen necessary preventative steps.
- Measuring impacts by identifying critical functions and processes and the multitude of dependencies that exist within operations.
- Forming response plans to ensure that steps can be rapidly activated to manage threats and accelerate recovery.

Industry and organisational knowledge sharing

The importance of understanding your organisation, customers, and threat actors cannot be underplayed. If someone is targeting your supply chain, you can be sure that you will not be the only target. There is huge potential to collectively build cyber resilience by appropriately sharing cross-industry knowledge – for example, simulation activities or cyber security investment strategies. They key to this is ensuring that the entire supply chain is enabling the minimum standard your organisation requires, and that any additional insight generates appropriate action. It is also vital to invest the time to understand the different actors here, through specialist forum insights, data-analysis and understanding the 1% variation (the most comprehensive level of insight to drive the business).

As cyber threat actors and tactics become more sophisticated, and global supply chains become increasingly complex, organisations must take a proactive approach to enhancing resilience. The integrity and

stability of the global economy depends on the end-to-end understanding of cybersecurity within internal and external supply chain partners. And, of course, business continuity depends on it too.

Start by reflecting on your ability to respond to and mitigate attacks, and by recognising that robust cybersecurity measures are an absolute necessity today, as well as tomorrow.

Remember, treating cybersecurity as a business issue, not just a technological concern, is vital in ensuring the long-term viability of your supply chain.

Author

Sammy Allanson
SME Industry Lead
contact@masonadvisory.com

Katie Stanton
SME Industry Lead
contact@masonadvisory.com

About Mason Advisory

Mason Advisory has offices in Manchester and London and employs over 100 staff, with plans to continue its expansion. We enable organisations to deliver value through digital & technology transformation, solving complex business challenges, and helping clients set strategy through the intelligent use of IT resources including architecture, cyber, operating model and organisational design, service management, and sourcing. We operate in sectors such as financial services and insurance, legal and law, government, health and social care, emergency services, retail, FMCG, logistics and distribution, transport, and not-for-profit.

Contact us

To get in touch, please email contact@masonadvisory.com or call +44 333 301 0093

www.masonadvisory.com

MANCHESTER
Landmark
St Peter's Square
1 Oxford Street
Manchester
M1 4PB

LONDON
Bush House
North West Wing
Aldwych
London
WC2B 4PJ

mason**advisory**