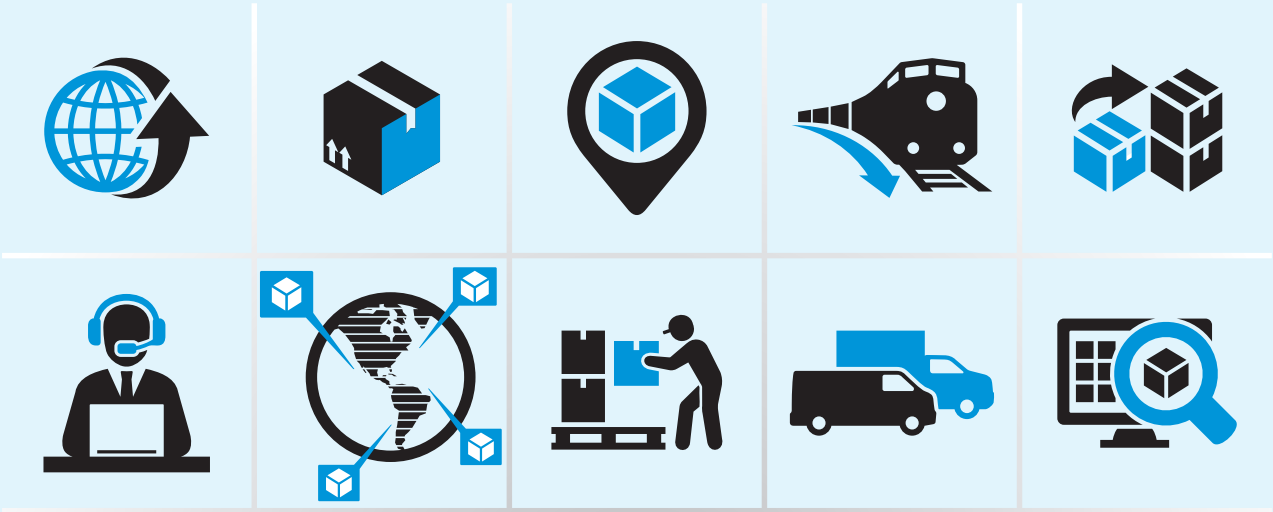
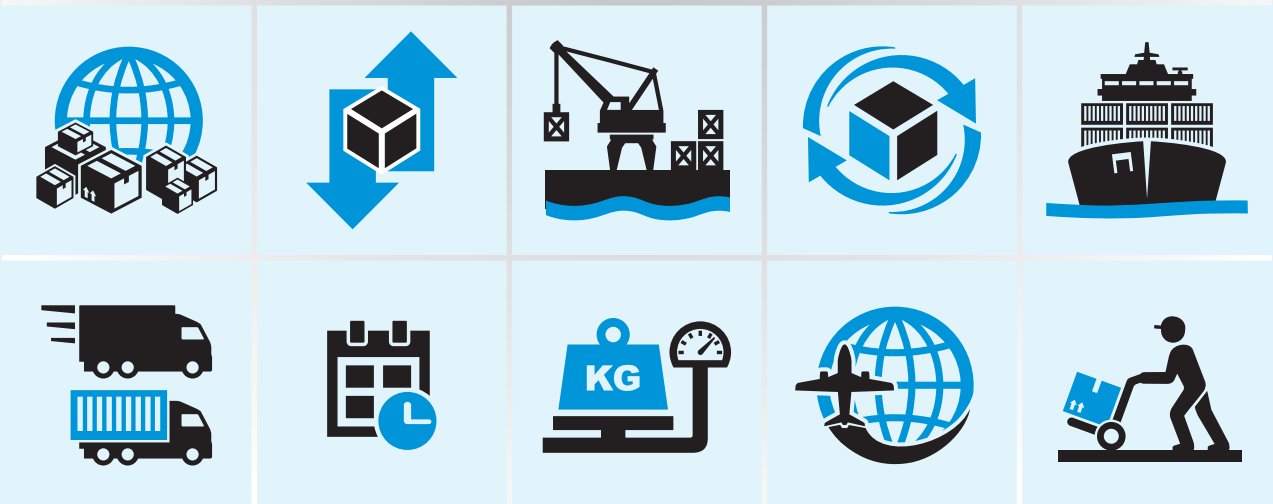


SPECIAL REPORT



SUPPLY CHAINS



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Welcome to the New World

How Capgemini is solving supply chain challenges

BY DARREN WHILE, Capgemini senior SAP transformation programme advisor



Before the global pandemic, public awareness of supply chains and the dependency on these to move goods around the world was taken for granted. Customers simply expected products to be available on the shelf to purchase, or ready for delivery via their online shopping basket. Any minor disruptions were managed in the background with minimal fuss for the customer.

Supply chains often span across continents with the sole intention of moving goods to the right place at the right time, in the most cost-efficient manner. This by and large has worked for many years, enabling a wide selection of products.

That was the Old World. Over the last few years, the status quo has changed significantly with events such as the global pandemic, Brexit, environmental disasters, social unrest and, more recently, the situation in Ukraine. These events have had a significant impact on how we live our lives and will continue to do so for many years.

The disruption has resulted in increasing nationalism and protectionism, which has made it more difficult to move goods across borders, resulting in delays in goods arriving or being shipped. A key reason why supply chains remained robust for so long was the relative stability of trade and the movement of products across borders with little friction. This increased global trade and deepened dependencies between countries.

Additionally, as economies have opened again, post-pandemic lockdowns have accelerated the demand for goods. This has resulted in product shortages, which in turn have pushed up prices and led to inflationary pressures. Changing buying habits has made things even more difficult. Customer expectations have become increasingly demanding with the expectation of accessing products through various channels of convenience, whether via mobile applications, local collection points or same day deliveries. These trends are set to continue in the future.

Labour and skill shortages have been evident too, making the movement of goods even more challenging. That is without the increased pressure and expectation on organisations to meet carbon emission reduction aims and shift towards a circular economy.

We are clearly living in an era of significant change and unpredictability. So, the question is how does an organisation bring predictability and stability to its supply chain in an uncertain world?

The reality is that there is no single answer, nor a one-size-fits-all solution. However, we at Capgemini are working with our clients, bringing our industry experience and know-how to help build resilient processes and systems to not only face the challenges of today but also those of tomorrow.

In many cases, the challenges our clients are facing are twofold: not only the external pressures described above but, also, trying to manage the supply chain using legacy processes and systems built for more stable times. Today, many system architecture and processes are simply not flexible enough to support New World requirements.

For businesses now, there must be the ability to continually adapt and predict supply chain movements to ensure disruption is avoided and opportunities can be seized.

We do this with our clients by building architectures, processes and integrated solutions that support agile 'composable' architecture, which will adapt and evolve as business needs change. These are solutions fit for both now and the future.

Having the right architecture and applications enables organisations to adopt technologies such as artificial intelligence. These support processes like what-if scenario planning, risk reduction by evaluating how inventory should be held, as well as sharing of information across the supply chain in an accurate and timely manner, managing risk through inventory track and trace capabilities and use of blockchain technology.

Applications such as **SAP** Integrated Business Planning (IBP) linked to SAP Analytics Cloud (SAC) provide the capability to perform what-if exploration from both a material and financial perspective. Moreover, connecting with partners using the Ariba Network via Ariba Supply Chain Collaboration (Ariba SCC) provides functionality to share production demand schedules and for the supplier to commit to the supply plan.

Logistics Business Network, meanwhile, enables track and trace data to be shared with external logistics service providers alongside products such as SAP Transportation Management to enable effective freight management.

If you feel that Capgemini can support your organisation in building a resilient supply chain that is fit for today and tomorrow then please reach out. We'd be happy to help you bravely traverse today's new world, shedding the shackles of yesterday.



We are living in an era of significant change and unpredictability. So how does an organisation bring predictability and stability to its supply chain?

How can technology provide the tools

to meet the future demands of sustainable supply chains?

What is Big Tech doing to ensure its customers are equipped with the tools and technologies to ensure that supply chains are optimised and sustainable?

BY CHRISTINE HORTON

In a world of increasing government regulation, changing customer sentiment, and growing stakeholder demands, the need to ensure today's supply chains combine agility and efficiency with sustainability has never been greater.

Recent research by IBM reveals that two thirds (66%) of chief supply chain officers (CSCOs) believe sustainability is a core element of overall business value. However, changing consumer preferences and rising costs can bring new challenges. While consumers are increasingly likely to demand sustainable products and services, they can be expensive to fulfil and the challenges posed by COVID-19 have increased pressures on supply chains to be more agile, reliable and stable.

Technology invariably has a key role to play in this harmonisation – but what are the big technology companies doing to ensure their clients have the right tools and techniques to overcome these challenges?

MACHINE LEARNING, PROCESS MINING AND BLOCKCHAIN

Capgemini has worked with a leading fast-moving consumer goods company to implement a machine learning demand forecasting solution to predict changes and fluctuations more accurately in consumer demand. This tool helped drive down waste and realise both cost savings and sustainability benefits.

Elsewhere, the company has been using process mining at a global discount grocery retailer to further optimise the efficiency of its operations.

"We integrated **Celonis** into their SAP landscape to allow them to drill down into the detail of their process flows and identify opportunities to reduce wastage in each process step," explains Chris Long, director, supply chain transformation, Capgemini. "We were able to identify where the retailer was raising multiple separate purchase orders with the same supplier, which could then be grouped by the user into one consolidated order to reduce the number of supplier delivery trips."

The company also identifies blockchain as having the potential to improve supply chain traceability and visibility.

"Adopting blockchain technology can help drive supply chain visibility



Blockchain tech can help drive supply chain visibility by allowing the monitoring of all stock positions

CHRIS LONG / CAPGEMINI

by allowing the monitoring of all stock positions in the supply chain at any point in time and traceability through E2E mapping of product lifecycle from source material to sale and return (including recycling)," says Long.

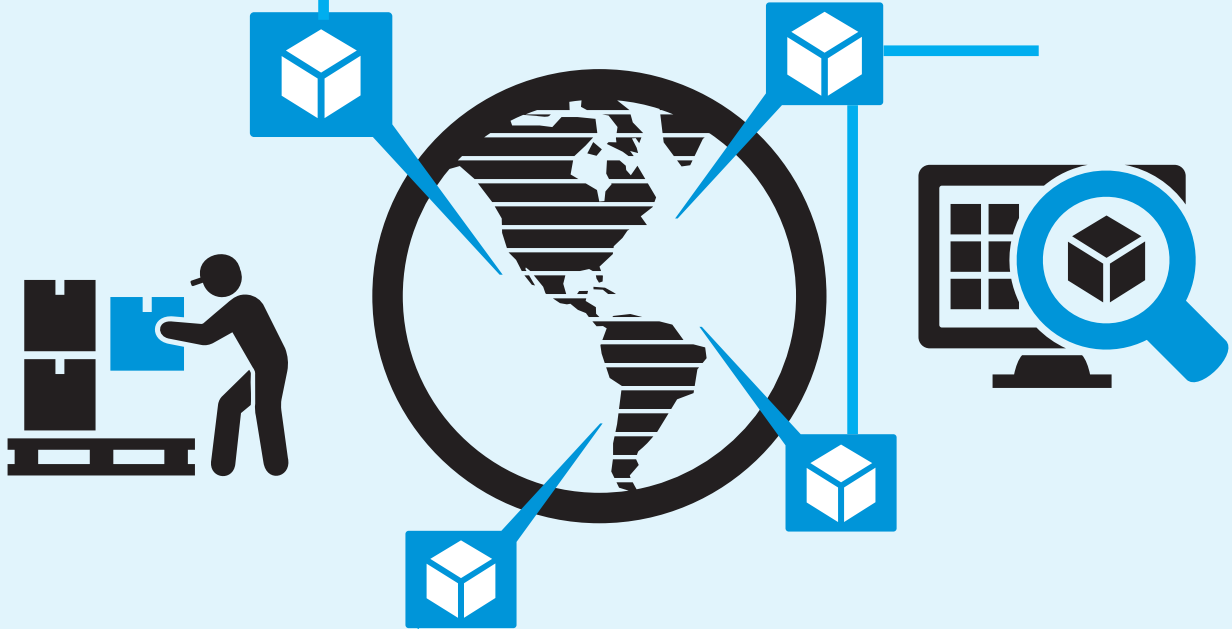
A HOLISTIC VIEW OF THE SUPPLY CHAIN

Despite using technology to ensure greater sustainability in the supply chain, it appears there is still some way to go among UK organisations. Recent academic research from

Microsoft reveals that just 37 percent of UK leaders monitor their supply chain to ensure it is environmentally sustainable, and the same low number apply environmental standards outside their own business. Meanwhile, only 36 percent are using new technologies to green their supply chain.

"Gaining a holistic view of the supply chain can be a challenge but is essential in achieving a sustainable one," says Rob Smithson, Dynamics 365 business group lead, Microsoft UK. "Organisations need to be continuously looking for ways to streamline and integrate their processes, not only by investing in advanced carbon measurement technologies and management tools throughout the supply chain, but also understanding the need for greater connectivity with other





areas of the business to mitigate risk.”

Smithson says organisations can achieve a holistic view of their supply chain by adopting tools such as predictive technologies, AI, RPA, and smart sensors. These solutions can help build programmes and initiatives to help enterprises achieve their sustainability goals.

Louisa Loran, director, supply chain and logistics industry solutions at **Google Cloud** EMEA, agrees that the biggest inhibitor of making sustainable decisions for the supply chain is lack of visibility. Organisations need technology to help them surface data which gives the oversight of their own operations, across their community – customers, partners, suppliers – and relevant public contextual information.

“This way of building a digital twin of the end-to-end supply chain can enable both greater collaboration across functional silos and even more across the value chain. Furthermore, it provides access to tier 2 and tier 3 information which formerly seemed invisible,” she says.

“By creating an open digital platform with energy company **Eni**, we are helping customers gain awareness of their strengths and areas for improvement across industrial supply chains. Enabling data-driven sustainability sourcing is another way the power of cloud computing, in particular, is impacting

the value chain in an environmentally positive way.

“Combining operations research with AI and ML is also an effective way of combining ambitious environmental goals with financial delivery, for example last-mile fleet routing enables customers to optimise for reduced fuel consumption.”

SORTING OUT SCOPE 3 EMISSIONS

Tackling Scope 3 emissions, which include all indirect emissions that occur in a company’s value

chain, can be one of the biggest challenges for any organisation. Anita Varshney, global VP, strategy SAP S/4HANA sustainability, says customers increasingly want to collaborate on bringing greater transparency to Scope 3 greenhouse gas (GHG) emissions.

“Our goal is to support our customers’ climate ambitions by looking at data availability and quality, allowing them to share and exchange this data in a trusted way with their ecosystem, across their value chains.

“We are progressively shaping our Carbon Data



A digital twin of the end-to-end supply chain can enable greater collaboration across functional silos

LOUISA LORAN / GOOGLE

Networks strategy, bringing together programmes which aim to harmonise emissions requirements across a range of bodies and groups, including the automotive alliance **Catena-X**, **WBCSD**, **GBA**, the **CEO Alliance** and more, to align strategic directions, collaborate on industry best practice, and provide guidance to drive a joint approach to define and share data.”

TRUST IN DATA

Underpinning all the tools and technologies – and key to ensuring an optimised and sustainable

supply chain – remains clean and reliable data. This means deploying an end-to-end ERP system is crucial.

Additionally, an ERP system can reduce the data footprint of a supply chain, driving sustainability benefits from both a risk and energy consumption perspective due to reduced carbon emissions from running servers.

But perhaps the most crucial factor in optimising supply chains is to foster a culture that places trust in data, both for use internally and for sharing upstream and downstream, says Capgemini’s Long.

“Without the adoption of a data-driven culture,” he notes, “organisations will never be able to fully realise the operational efficiencies and benefits of the advanced technologies that are available to them.”



Our Carbon Data Networks strategy aims to harmonise emissions requirements across a range of bodies and groups

ANITA VARSHNEY / SAP

Navigating global supply chain disruption

It has never been more important to ensure supply chains are both resilient and sustainable. So how can organisations develop both short and long-term strategies to cope with global disruption?

BY CHRISTINE HORTON

Organisations today face a multitude of supply chain problems: the situation in Ukraine, political manoeuvring, recruitment challenges and chip shortages, as well as general market disruption in the wake of the COVID-19 pandemic.

This perfect storm of challenges has, in many cases, left organisations with insufficient goods to continue business in a usual manner, ultimately hitting both their bottom-line earnings and reputation. Indeed, research from **Blue Yonder** found that only three per cent of organisations escaped supply chain disruption in the last 12 months.

It has therefore never been more important to ensure supply chains are both resilient and sustainable. So how can organisations develop both short and long-term strategies to cope with global disruption?

The first thing to recognise is that the technologies and applications organisations have relied upon for the last decade – in what was previously a relatively stable period – are no longer fit for purpose. The relatively rigid processes and lack of agility of these legacy tools are limiting organisations' ability to respond to 'black swan' events in a timely manner, says Darren While, senior **SAP** transformation programme advisor, **Capgemini**.

"There are many stories about organisations that have historically been successful but have failed to adapt and evolve at pace

to stay relevant. Therefore, a combination of having access to relevant intelligence, understanding the marketplace and change drivers, along with applications that can leverage often large volumes of complex data, is key to both survival and growth prospects," he explains.

MYRIAD OF TOOLS

The good news is that there's no shortage of new and innovative technology for supply chains today, and organisations have a myriad of tools at their disposal – including AI, predictive analytics, IoT sensors and crowdsourcing platforms.

For example, there is a growing number of organisations putting their faith in AI solutions to help predict optimum inventory decisions – primarily for the avoidance of excess waste or running out of stock, says Wayne Snyder, VP retail industry strategy, EMEA at Blue Yonder.

"Data science has become a staple in many businesses' operations and future-planning strategies, helping to increase visibility and efficiency," he says.

"**Morrisons**, for example,

was able to increase the shelf availability of 29,000 stock keeping units (SKUs) across 130 categories at its almost 500 stores by leveraging an AI-infused planning system. This enabled accurate forecasts to be created and optimised the inventory aligning it to customer demand.

"Additionally, **Heineken** utilised new Blue Yonder scenario planning capabilities which allowed them to make trade-offs on costs, margins and capacity. Since deploying this strategy across Europe, Heineken has seen an increase in forecast accuracy, reduction in stockouts and improved inventory turns and productivity."

GAINING A TRUE PICTURE OF RISK EXPOSURE

However, while many companies are deploying tools like AI and analytics to help them better plan and forecast demand, optimise production, source more sustainably, and track performance of suppliers, they're not using them at the same rate for risk management, says Alla Valente, senior analyst at **Forrester**. Doing so could help them identify, evaluate, and ideally to mitigate supply chain risk.

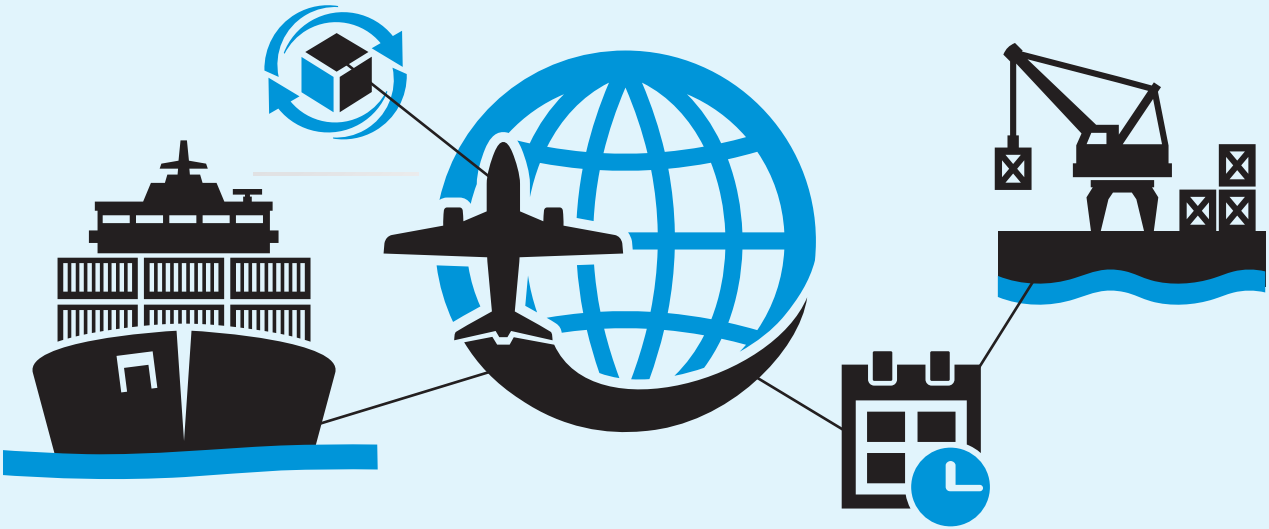
"The supply chain crisis we're seeing now is in part due to how and where



Heineken utilised Blue Yonder scenario planning to make trade-offs on costs, margins and capacity

WAYNE SNYDER
/ BLUE YONDER





they're using these tools," she explains.

"In the short term, this requires supply chain mapping beyond just the tier 1 suppliers. In fact, to get a true picture of risk exposure and potential disruptive events, organisations will need to map tier 2 and tier 3 as well. This will help them understand their global sites and subcontractors, as well as which parts pass through those sites. Longer-term strategies should include risk evaluation from multiple angles.

"For example, it's not enough to assess suppliers for financial and operational risk. You'll need to



To get a true picture of risk exposure and disruptive events, organisations will need to also map tier 2 and tier 3

ALLA VALENTE / FORRESTER

LONG-TERM PLANNING

Organisations can get ahead of the competition and react first to changes in circumstances by ensuring they have contingency plans readily available for their business-critical processes, says Chris Long, director, supply chain transformation at Capgemini.

He adds that key to resisting supply chain disruption is long-term preparation. "Improving supply chain transparency through the use of control

towers, along with having first-class forecasting and replenishment processes that are able to react to fluctuations in demand, are cornerstones of any successful mitigation strategy against supply chain disruption.

"Supplier and procurement strategy is another key facet of supply chain risk mitigation. Upstream mapping of suppliers gives the ability to mitigate and plan for risks. Equally, having a multi-supplier strategy gives not only the security of a reduced chance of losing business through product unavailability, but also gives the

ability to flex up or down on suppliers and create competition.

"In addition to technology-based strategies for supply chain risk mitigation, operating model is a major consideration when trying to build supply chain resilience. Shortening supply chains reduces their risk through lowering their potential exposure to disruptive events and introducing strategic buffer stocks can allow organisations to better cope with stock shortages. Finally, improving back-office processes and minimising admin can also support large-scale investment decisions."

COMBINING TECH WITH PROCESS AND PEOPLE

Ultimately, to be effective, technology needs to be complemented with appropriate processes and people, which includes partners across the supply chain.

"Not only should there be common data exchange formats and APIs, but also a level of cooperation and motivation between companies to achieve the shared goal," says Ishu Verma, emerging technologies evangelist, Red Hat. "Open source is crucial to the development of common, industry-wide standards that enable companies to future-proof their solution.

"A solution built with these shared principles will enable a multiplier effect benefiting the entire supply chain ecosystem comprising raw material providers, manufacturers, shipping and logistics, ports, local governments and retailers. By adding resilience and redundancy, companies can become better equipped to navigate future supply chain issues."



Open source is crucial for common, industry-wide standards that enable companies to future-proof solutions

ISHU VERMA / RED HAT

Almost regardless of the technological solutions available, organisations that don't plan for uncertainty, or don't balance supply chain efficiency with resilience, will simply be unable to pivot quickly when the black swan event looms into view. And in today's disruptive landscape, that isn't an option.

Teksid drives ERP success in Brazil, helping their business engine tick with Capgemini and SAP S/4HANA

Optimising a world leader in automotive parts manufacturing and ironworks

Founded by the **Fiat Group** in 1978, Italian industrial manufacturer **Teksid** has accelerated to a world leader status in the ironworks industry. Specialising in the production of iron casting and aluminium parts for the automotive and industrial vehicles sector, the business creates assets for engines, suspensions, and more. Now, Teksid has seven plants worldwide. It also forms part of the seventh-largest automotive manufacturing group in the world: the **Fiat Chrysler Automobiles**.

Teksid's long-standing sector experience has gained a reputation for technological advancement and raising quality standards. In 2019, next en route for Teksid was to optimise its global manufacturing plants and systems. Looking to Brazil, the business set its sights on bringing its expanding operations up to speed, simplicity, and standardisation targets.

Keeping up with business growth demands in Brazil

Teksid's aluminium foundry in Betim,

Brazil had launched a new aluminium product line, increasing production complexity and expanding its customers in the local region.

A new ERP solution was needed to maintain Teksid's high compliance standards, keeping asset production and general operations ticking cohesively. For its Brazilian footprint, Teksid wished to clean up plant data while simplifying and standardising processes for better industry compliance all round.

The right system to keep Teksid's growth on track – SAP S/4HANA and Capgemini

Teksid chose the **SAP S/4HANA** ERP platform with Capgemini as their ideal solution. With ambitious timelines and objectives to launch, the technical and industry expertise offered by partnering with the Capgemini team offered Teksid a much more feasible way to achieve their project goals. With far-reaching implications, the SAP S/4HANA system go-live needed to be as smooth as possible, setting the standard for Teksid's soon-to-be-simplified processes.

Showing their 'metal' – business benefits for Teksid as the parts came together

Simplifying the useability of Teksid's software landscape and renewing their custom and legacy applications, the business is now equipped to operate with industry standardisation and best practice across the board. By eliminating redundant data duplications and structures, Teksid has gained a clear and fast view of the everyday information required at the plant.

The more efficient processes have reduced error rates and improved product quality. Meanwhile, the clearer view of accurate data has enabled key decision makers to enact informed decisions faster, leading to reduced time-to-market goods.

The roadmap developed with their Capgemini partnership for SAP S/4HANA, has given Teksid an easily replicated approach. As a result of this project's success, Teksid and Capgemini are continuing their collaboration to roll out new SAP S/4HANA applications across the global business.



Leading Japanese life sciences company goes global with Capgemini and SAP S/4HANA



Japanese life sciences business decentralises for a global audience

A leading Japanese manufacturer had begun its global expansion in the healthcare and life sciences sector. To support this success, the company was looking to decentralise its Japan-centric business model to enable easier adoption by medical institutes and patients on a global scale.

Determining the right tools for best practice worldwide

The manufacturer wished to create a standardised and sustainable business platform, capable of growing with their ongoing globalisation pursuits. However, with many opposing data sets to consider, the company's regional leaders initially held conflicting expectations for the project. Determining the right guiding principles to connect their disparate processes, manage master data records, and detail a

standardised organisational structure was difficult to collectively diagnose.

Diagnosing the best solution with Capgemini ASE and SAP S/4HANA

For some businesses, it can be better to put technology transformations on hold, rather than push forward with unclear goals or an ill-fitting solution. However, for this manufacturer, partnering with Capgemini enabled them to cut through the confusion, preventing project delays. To figure out the best ways to leverage ERP technology, they began to utilise a proprietary Capgemini tool called ASE (Accelerated Solutions Environment). Clarifying the way forward, the

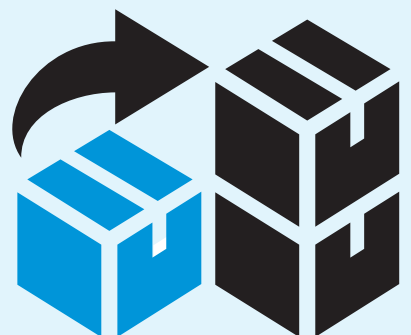
Company managers could analyse non-standard processes in different regions and easily decide what should be a part of the future global standard process

business leaders could agree on a common understanding for their global pursuits. Capgemini then redesigned the manufacturer's global business platform to the new specifications, based on the SAP S/4HANA solution. The software focus was on standardising business processes, IT architecture, and master data management. SAP

CPI Cloud Platform Integration was used to connect with their IT assets, including SAP, non-SAP, cloud, and on-premise software. As of 2021, the company and Capgemini shifted to a global rollout of this solution.

Business benefits: just what the manufacturer ordered

With Capgemini ASE, this life sciences company gained a toolkit that contains simple determining rules and allows them to quickly share and align the business' strategic goals and challenges with all key members involved in the project. As a result, the company's managers could analyse non-standard processes in different regions and easily decide what should be a part of the future global standard process to best align with its common strategy. With the global standard processes defined and then designed into the SAP S/4HANA solution by the Capgemini partnership, a common set of KPIs can be rapidly measured and reported, improving the speed of a standardised product and service delivery across every region of operation ongoing. Offering greater agility, the business can balance global demand and more effectively manufacture, qualify, and deliver goods to medical institutes and patients on a worldwide scale.



Supply chain skills



A battle for talent or a race to automation?

BY MARC AMBASNA-JONES

It wasn't so long ago that terms such as 'supply chain' and 'product shortages' were never really mentioned in daily news bulletins. Since the pandemic though, it's almost become a daily occurrence, the latest problem being disruption to food supplies thanks to Russia's attack on Ukraine. Global supply chains have never been so fragile.

The situation is so dire, in fact, that it recently led Verity Davidge, director of policy at **Make UK**, to suggest the era of globalisation is "passing its peak," adding that disruption and volatility for global trade is fast becoming normal. "For many companies this will mean leaving 'just in time' behind and embracing 'just in case,'" she says, referring to the manufacturing mantra of the past three decades.

However, with the rules of supply chains being redrawn, what does the current situation actually mean for the workforce? Are supply chain functions also changing, and are there enough skilled workers to go around? Or should organisations be looking more towards data-driven automation, to not just deal with skills shortages but also optimise existing supply chain operations?

We are clearly in a transition, but the pandemic has illustrated the need for urgency. Resiliency is now the watchword amongst business, but the problem is that no matter where you look, there seems to be a severe shortage of skills. This is both undermining any attempts at transformation and the ability of supply chains to deal with disruptions. The big problem is that we are in a perfect storm of change with the so-called 'grey resignation', whereby baby boomers are reaching retirement age at a point when global supply chain issues are starting to bite.

"There are 72,000 fewer HGV drivers in 2021, compared to 2019," says Philip van der Wilt, VP EMEA at IoT and fleet management company **Samsara**. "Warehousing operatives, back-office staff and other critical roles within the supply chain are also in decline."

"Making matters worse is companies relying on employees to put in overtime to make up for it, leading to increased stress and burnout. In fact, company demands for extra time are one of the biggest factors that contribute to employees quitting."

It's a situation ripe for change. According to Emile Naus, partner at independent management consulting firm **BearingPoint**, the current business and sociopolitical conditions are forcing a rapid shift in recruitment. Supply chain teams will need to evolve

quickly and embrace a diverse blend of skills and people.

"Employees need to have a mixture of supply chain, industry, data and analytics hard skills, combined with the soft skills to be able to implement the changes across functional areas," says Naus. "The future workforce will need to be able to consider different ways of solving problems, taking a balanced view across costs, service, risk and environmental impacts. It will be more important than ever to

build diverse teams that can consider all these elements and balance them appropriately."

The problem for supply chain management is that this pretty much reflects the recruitment descriptions for so many other departments and industries. In theory the potential pool of talent is widened, but that also means increased competition. Nevertheless, Naus suggests it's imperative that organisations spread their recruitment

nets wider, adding that they need to be looking at top tech universities for graduates, balanced against experienced supply chain operators, and financial knowledge skills measured against environmental engineering skills.

It's the kind of scenario painted by Dan Bieler, principal analyst at **Forrester** in a recent blog, one relevant to many industries. In it, Bieler writes that "European governments, businesses, and societies need to prepare for a fundamental transformation of their skills base to survive and thrive."

"To drive sustainable growth and innovation and to prepare for the future of work, European businesses depend on a blend of digital and technology-related skills as well as critical thinking, problem solving, resilience, active learning, interpersonal, leadership, and communication skills."

What this means for supply chain management is that to compete for the skills required to get over current disruption humps whilst also building a robust structure for future resiliency, companies will need to up their game. Attracting talent will become one of the biggest challenges of the next 18 months but, as Bieler adds, other factors, such as geography, can also have a significant influence.

As supply chain teams look towards digital transformation and a corresponding increase in the number of data and digital literate employees, where organisations are physically based has a bearing on matters. Across Europe, tech skills clusters have been evolving, mainly around university towns. The worrying sign for UK-based organisations is that, according to Forrester's report *Navigating The Leading Skill Clusters Across Europe*, Brexit is having an impact. UK cities are consistently falling down the list of leading tech skill clusters for recruitment.

To a certain extent, remote working can help with this. As Henrik Smedberg, head of intelligent spend management UKI, **SAP** says, the future of



Businesses need to prepare for a fundamental transformation

DAN BIELER

the supply chain workforce could be more liquid and flexible than ever.

“We are hearing and seeing trends of hiring in multiple geographies and with more remote work than ever before,” says Smedberg. “This is great from a flexibility perspective for both employees and employers. It allows skills to be accessed from various places, faster, and in variable quantities.

“Getting visibility to the talent and keeping a talent pool engaged is a challenge many of our customers face, but this is where technology is crucial. Building teams and culture remotely is the hardest part, and strategies to maintain and grow culture need to be carefully evaluated with more hybrid workspaces.”

THE ROBOTS ARE COMING

Smedberg makes a good point. The mindset of work and location is undoubtedly changing. To some degree, remote work could counter the geographical problem, but again that puts any supply chain department or logistics business into the skills bun fight with other industries, and, in theory, other countries.

How organisations attract skills will be key. It’s a seller’s market, as far as skills are concerned, so supply chain organisations will have to re-evaluate their employment packages. Are they attractive enough to compete?

The type and breadth of work is also evolving. One of the building blocks for supply chain resiliency is planning. Increasingly data-driven and analytics based, supply chain planning requires digital literacy but it also demands experience in understanding supply chain challenges. It’s a mix of the old and the new, and this is where employment challenges become even more interesting.

“Organisations need insight into shipping, supply chains and connected enterprises, so that decisions can be made, or changed based on this visibility,” says Smedberg. “Networks can



Keeping a talent pool engaged is a challenge many of our customers face

HENRIK SMEDBERG

drive this visibility. If you see it early and notice the cracks, then they can be patched. If not seen then, well – that is when you have issues.”

Unsurprisingly perhaps, this is where AI and robotic process automation (RPA) solutions are leaning. As a recent **Gartner** report says, emerging and maturing supply chain technologies are a major source of competitive advantage. If supply chain businesses can get the mix right, of technology, supply chain experience and young digitally-driven skills, then they could be onto a good thing.

“We’re seeing many industrial organisations turn to AI to improve the employee experience and overall operations,” says van der Wilt at Samsara. “For example, security cameras can use AI to detect and alert managers to possible security risks, including motion in restricted areas.

“O’Neal Steel is a good example of a company that has positively impacted its workforce by leveraging AI. With a handful of smaller sites that often go unstaffed during the late hours of the night, supervisors used to spend hours every morning passively searching through security camera footage.

“By using AI-powered motion detection alerts, they saw a 92 percent reduction in time spent reviewing footage, saving 100 hours each week. AI helped save a lot of time and frustration and improved their employees’ day-to-day experience overall.”

Interestingly, Gartner makes a number of supply chain technology predictions, one of which is that “by 2026, 75 percent of large enterprises will have adopted some form of intralogistics smart robots in their warehouse

operations.” In addition to predictive analytics and IoT, robotics is seen as a key enabler.

As Dwight Klappich, VP analyst at Gartner says, “there are certain developments that drive further investments into technology, most notably labour constraints and the need for more agility.

“Given today’s volatile and disruptive environment, supply chain organisations must become more flexible, and the solution is digitalisation.”

Of course, this doesn’t mean that robots are going to take over all the jobs. Far from it. What it does mean though is that a forward-planning, more resilient supply chain operation will demand a different set of skills. We are already seeing this, as Gartner’s Supply Chain Top 25 list showcases.

This features a number of businesses, such as **Cisco** and **Colgate-Palmolive** that have transformed through the pandemic, recognising the value of digitisation and the role of a digital-savvy workforce. Interestingly, Cisco also topped Fortune Magazine’s Top 100 best places to work in 2021.

So, what is the strategy? Surely supply chains need to plan better, using data to inform real time decision making. How does this affect recruitment and training plans?

“Access to real-time data to inform decision making is critical to overcoming the supply chain skills shortage,” says van der Wilt. “For example, drivers being provided with real-time information, customised routes and digitised documents makes the life of an industrial worker simply better.

“The delays, frustration and bottom-line costs caused by pen and paper, manual unconnected processes and workflows are mind boggling.”

Is this a battle for talent or a race to automation? Ultimately it is both. As van der Wilt concludes, “it’s time for the industrial, blue-collar workers, and their management counterparts to benefit from the same digitised workflows and processes industries such as telecommunications, financial services and retail have experienced for years.”



Access to real-time data to inform decision making is critical

PHILIP VAN DER WILT



The future workforce needs to consider different ways of solving problems

EMILE NAUS

Augmenting the butterfly's wing

New frontiers in supply chain technology

Tech can't prevent every freak incident, but, as HS2, Accenture and Boomi reveal, innovative software can help industries protect their supply chains during times of chaos.

BY GIACOMO LEE

"Something as small as the flutter of a butterfly's wing can ultimately cause a typhoon halfway around the world." This poetic phrase describing the butterfly effect is one we all know, perfectly describing a tenet of chaos theory on how one small change can have very large impacts further down the line.

A fluttering butterfly may have been behind the high winds and dust storm which saw one of the world's largest container ships obstruct the Suez Canal last year. Carrying over 18,000 containers, the Ever Given was en route from Malaysia to Rotterdam when it ran aground for six days, blocking over two hundred vessels on the key supply chain route.

While much larger than a butterfly, the saga of the Ever Given served as a reminder of the many chains spanning our world, interconnecting assets between commerce and clients. After COVID, it also intensified the need for technology to augment the butterfly's wings, as it were, in order to avoid further supply chain failings.

"Macro geopolitical events such as Ukraine and the Suez Canal crisis have led to supply chain shortfalls across the world," says Dave Food, head of supply chain at **Board International**. "Consumers and businesses alike have been left frustrated by low inventories, delayed orders, and poor planning in asset heavy industries.

"These widespread problems have revealed outdated supply chain planning practices and tools that must be replaced immediately."

As we discover, replacing those tools can mean alternatives from the new frontier of technology, mainly in the form of digital twins, artificial intelligence (AI) and the internet of things (IoT).

POWERING UP PORTS

While it's unlikely enterprise tech could prevent another freak incident on the scale of the Ever Given mishap, there are already examples in ports around the world of software and hardware working to prevent supply chain shortfalls.

Safety solutions from Silicon Valley's **Quanenergy** can be found in ports within China, South Korea and beyond. The company, which went public this February, is a provider of AI-powered sensors in light detection and ranging (LiDAR). 2D and 3D imaging created by LiDAR point clouds can provide accurate measurements to ensure safer, more efficient operations in the machinery, people and vessel-heavy environment of ports.

Case studies for ports in Shanghai and Shandong, China and Korea show how LiDAR can galvanise port automation, along with protecting the supply chain. Quanenergy points out LiDAR sensors have a longer range than cameras

or radar, and unlike cameras, can work under any weather condition.

"LiDAR (also) provides much better accuracy over computer vision in many applications," says Gerald Becker, Quanenergy's VP market development and alliances. "We have seen flow management applications in which LiDAR alone provided significantly higher accuracy compared to camera and computer vision alone. The latter is challenged in different environments with varying weather or lighting conditions."

What that means is actionable intelligence from LiDAR sensors in real-time flow management software. The result is port management and operators can react instantly to imminent safety risks as containers are moved between ships, storage, and truck beds. Such data also allows ports to better understand traffic patterns in order to create the most efficient and safe flows for assets.

Ports can also benefit from digital transformation in the back office. Mike Kiersey, director of global technology EMEA at integration platform **Boomi**, points to recent work with world-leading port agency **Inchcape Shipping Services**.

"(With Boomi) Inchcape was able to connect and integrate a multitude of different technology products to improve port logistics and better track its entire supply chain around the world," says Kiersey.

This was made possible by a single view for the agency of its data, simplifying the entire supply chain. More agile compliance also became possible, particularly from being able to view vessel sanctions before any ship arrives at the Hong Kong port.

"By automating and orchestrating



the discovery, cataloguing, preparation and integration of data from different sources, these enterprise technologies enable businesses to create a 'common' data language that better supports long-term data governance and provides a full understanding of employees, customers, and products," says the Boomi director.

"By going even further and extending the reach of this connectivity and integration to partners and suppliers as well, organisations can truly optimise and simplify their supply chains, achieving greater operational efficiency."

TO THE POWER OF TWO

Data is clearly a vital weapon in managing supply chains in real-time with agile responsiveness. But what about predicting problems coming down the line, or ensuring long-term replenishment of assets?

This is where digital twins come in; real-time representations of physical assets, systems or processes that can be built using mixed reality and IoT. Representing a new frontier in business information modelling, digital twins can be found in industries ranging across construction, energy, transport and more.

There exists a growing digital twin of High Speed 2 (HS2), a high-speed railway line under construction in the UK aiming to connect London, Birmingham, the East Midlands and North West England like never before.

Currently coming at a £98bn price tag, the endeavour is one of Europe's biggest infrastructure projects. While full operation is expected as far off as 2040, HS2 staff will very soon be using virtual reality (VR) headsets to explore an identical 3D replica of the track in order to help fix issues before they become a detriment to the project and its supply chain.

As detailed as its physical counterpart, this digital twin of the HS2 - HSSquared, perhaps? - will be fed continual data from the many sensors being built into the physical

railway track, along with bridges and overhead power lines.

As **HS2 Ltd** innovation manager Heather Donald tells ERP Today, there will also exist digital twins of stations on the line, beginning with the pivotal Old Oak Common superhub which is tentatively scheduled to open in 2026.

Also accessible by VR headsets, the Old Oak Common twin is currently being tested by select members of the public for its passenger flow management, as using a world-first combination of VR, eye-tracking and emotion-sensing technology.

"We're also exploring future uses," Donald reveals. "Now we've got the model, we're looking at how you could use it to test for safety along with different HS2 teams to test it out. We're also exploring how we could use it for other HS2 stations."

An interesting caveat of High Speed 2's twin innovation is that HS2 Ltd offers double contracts to clients: one contract for a digital twin and another for the real-world asset. This not only points to the growing business importance of the tech, but also a smart way to avoid tangled management by siloed stakeholders. Having a digital twin available at the foundational stages of a project can only help avoid supply chain problems from forming and compounding.

"I think it's most efficient to create one model that you're constantly adding to with more capabilities," Donald adds. "The biggest thing is having multiple stakeholders accessing the same models, and that's how you and your partners are learning together from the same data."

In the view of Stephane Crosnier, UK supply chain and operations lead for **Accenture**, digital twins give enterprises greater structural visibility when it comes to supply chains.

"Technology enables two



Supply chain visibility provided by technology can have a major impact on operating and financial performance

STEPHANE CROSNIER / ACCENTURE

types of visibility: structural and dynamic. Structural visibility is like an X-ray which gives you a snapshot of your operations to help uncover vulnerabilities.

"With a digital twin of its supply chain, a company can use advanced analytics to simulate its supply chain's performance and stress test for risks and vulnerabilities."

Accenture recently worked with one major European automotive supplier to manufacture enough product to meet demand. The company's supply chain was struggling due to the current microchip shortage, another ongoing blight in today's post-COVID world.

Working with the supplier, Accenture developed a digital twin to provide visibility into interdependencies and to identify the revenue streams and clients that relied on specific subcomponents.

Currently, the automotive supplier's supply chain teams are working with Accenture on deploying a digital twin-enabled supply chain stress test. This test will look across the chain to further identify vulnerabilities and risk areas, plus also calculate time parameters for specific threats or disruptions.

From the results, Accenture argues, a groundwork can be laid by the enterprise for subsequent actions it should take to prevent weak links in its supply chain.

"Ultimately, the supply chain visibility provided by technology can have a major impact on a company's overall operating and financial performance," says Crosnier.

"It's an inescapable reality that the future of an organisation's supply chain operations depends on more advanced big data and analytics capabilities - and those that don't prioritise this risk falling behind their competitors."

Technology can't prevent every freak occurrence from happening, but it's clear innovative software and hardware can help industries protect their supply chains in these chaotic times.



The biggest thing is multiple stakeholders accessing the same models, all learning together from the same data

HEATHER DONALD / HS2

The tipping point scenario for consumer product supply chains is now

BY MIKE PETEVINOS head of consumer products and retail for Capgemini UK



Consumer product (CP) companies are sitting in hot water, right in the middle of a value chain that is transforming across almost every conceivable dimension. And it's not a stretch too far to say that most are hot under the collar, and many have reached a tipping point.

There are two opposing forces at play that are wreaking havoc on CP supply chains: the need for more supply chain complexity, but also the demand for that complexity to be delivered more cheaply. For many CP organisations, these two forces simply can't coexist in their supply chain without some serious changes. Furthermore, using a technology estate that is often fragmented with significant customisation, is proving a huge challenge for organisations operating on a global scale. They need to make a step-change in their capabilities, strategically and structurally, if they are going to be able to overcome the heat.

SUPPLY CHAIN COMPLEXITY FOR CONSUMER PRODUCTS

The complexity pressures for CP supply chains are coming in from multiple angles.

Consumer demands

The trend of consumers wanting to buy through dif-

ferent channels has been accelerated during and following the pandemic, whether your customers are buying online, direct-to-consumer or through varied marketplaces.

Meanwhile, consumer demand for a more sustainable and responsible world is rightly driving leading organisations to rethink their purpose and long-term impact, too. Health and beauty CP businesses are seeing this demand particularly, with huge drives to provide ecommerce platforms and channel variation, as well as sustainability and innovation for products, production and supply.

Logistical holdups

Behind consumer front lines, we're seeing input pressures like issues of supply, including port bottlenecks and raw material and labour shortages. These are all factors pushing the need for CP organisations to adapt quickly, funnelling support to the commercial side of the business to drive growth and, in some ways, protect the top line.

Market innovations

Increasingly fierce global and local competition, new channels, and new providers are all pushing CP organisations to produce better innovation agility and margin performance. They are needing to respond faster to mar-

ket trends and deliver to a wider array of channel types and customer types with greater product innovation.

The result is just massive amounts of complexity for supply chains. It creates a very specific pressure for CP organisations around needing to deliver, and their supply chains needing to fulfil demand in very different ways. For some CP organisations, they are even shifting from manufacturing and marketing businesses to becoming retailers and/or service companies in order to cope.

MARGINS CUT FURTHER FOR HIGH-VOLUME, LOW-VALUE CONSUMER GOODS

It's ever the case that supply chains are under pressure from a margin perspective to support the business - in fact, it's the biggest part of the cost base for CP organisations.

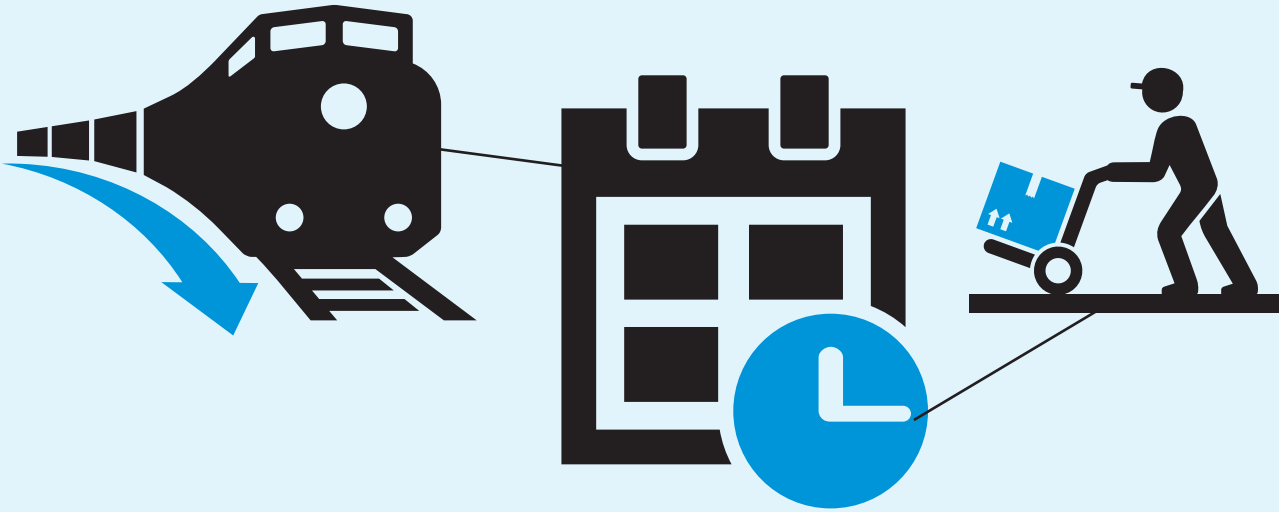
Unprecedented rising costs

The current climate, as well as the ongoing fallout from the pandemic, is causing costs at every stage of the supply chain to rise, tightening profit margins. A backlog of shortages for products and raw materials is pushing costs higher to obtain these ordinarily high-volume, low-value goods. We've seen many companies even having to pay higher air shipping fees to move goods and avoid the bottlenecks at ports. Safety stocks have also increased due to the challenges in the continuity of supply, bringing up the cost of storage and warehousing, too.

Meanwhile, if you're the likes of a



Many companies are paying higher air shipping fees to move goods and avoid the bottlenecks at ports. Safety stocks have also increased due to challenges



food manufacturer, for instance, and input price rises are coming from the situation in Ukraine, as well as challenges around Brexit, then those pressures have become incredibly acute.

HOW ARE CONSUMER PRODUCT ORGANISATIONS RESPONDING?

The only way to manage this tipping point is through technology and driving optimisation. If CP organisations need to create value for the front end of the organisation, they've got to try optimisation in the back.

The investments in best-in-class capabilities are enabling just that, across product/service innovation, marketing, ecommerce, net revenue management, and demand sensing. The effect can also be seen across end-to-end planning, strategic sourcing, transportation management and order orchestration.

Again, the challenge comes from a significant amount of investment, structural change, and alignment around the globe. That's the space most consumer goods companies are now in – looking at those investments and thinking about how they can drive that maturity in the supply chain.

Maturing technology is providing a solution

However, the behemoth programmes of the past, that spiralled in terms of time and cost, and rarely delivered on the promise, would be enough to make any chief experience officer think twice.

While an automotive organisation might have ten major factories, a consumer products company might have the complexity of 100 factories around the world. So, up until now, most CP

organisations have rightly focussed on individual business capability projects.

Under this new tipping point of pressures, we are now seeing that same technology investment trickling down through to increasing numbers of fast-moving CP organisations. The business case is starting to work for their high-volume, low-value supply chains. As we start to see the maturity of the technology, the price points are starting to come down, the advantages of modern ERP platforms are growing, and technology is also enabling organisations to scale it to global operations.

ENSURING THE BEST TECHNOLOGY RESULTS FOR CP SUPPLY CHAINS

The opportunity lies in how businesses might make their supply chains smarter. Organisations will need to create an interconnected set of transformation programmes, coordinated in parallel. Business capability projects, an ERP modernisation programme, a transformation to cloud, a data and insights programme, and an operating model transformation should all work in tandem to deliver new value from shared service and above market models.

Ensure data is at the forefront, and not the poor cousin

Data should sit alongside technology investments as the critical enabler. Every part of structural change for CP organisations demands a need for rich analytics and AI capabilities

with a strong data foundation, thereby providing the ability to have the data, the ability to derive insight from it at scale, and finally your ability to then execute.

Bringing internal data from across the organisation alongside ever growing sources of external data and insights should enable improved demand sensing. Therefore, a demand planning offering can really understand what the demand profile is going to look like against this very complex customer and consumer landscape.

Achieving this full visibility from sourcing and manufacturing to logistics allows CP organisations to be as effective as possible in sending the right signal out into their supply chain.

With good foundations, you can (and should) drive pace through industrialised roll-outs

By implementing the template design phase deep enough to achieve confidence across trade archetypes and business stakeholders, you can bring to life key aspects of the solution that the business needs to be able to touch and feel. After this, the pilot can be viewed as the proving ground for a fast and industrialised deployment approach and benefit delivery.

In the raging pressure cooker of challenges surrounding consumer product supply chains, the organisations that are choosing to make the investments and execute them effectively can ride the tipping point wave with ease and finesse.



While an automotive organisation might have ten major factories, a consumer products company might have the complexity of 100 factories around the world



In an uncertain world, organisations need supply chains that are stable and predictable - yet flexible.

Working with our clients, Capgemini builds architectures, processes and integrated technologies, to create solutions fit for both now, and the future.



Think we can help?

Steve Harrison

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