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MAKEuk
The Manufacturers' Organisation

BUILDING GLOBAL RESILIENT SUPPLY CHAINS: **EFFICIENCY & VOLATILITY**



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EXECUTIVE SUMMARY

Over the past two years manufacturers' supply chains have faced unprecedented disruption with the combination of the UK leaving the European Union and the global pandemic, sitting alongside rocketing transport, energy, and raw material costs. This disruptive cocktail has forced businesses to dramatically review their supply chain arrangements at speed, with a growing trend bringing the supply base closer to home.

Nearly half (42%) of manufacturers have increased the proportion of suppliers based in Great Britain, with further reshoring in the pipeline for over two-fifths of companies. Predictability and certainty were key drivers alongside a desire to build resilience after the near collapse of global supply chains during the worldwide pandemic. The average manufacturer said that half of their supply chain is now based in the UK. Over a quarter (28%) of manufacturers revealed that their other primary focus for supply has been Western Europe for the same reasons of reliability, with a further quarter predicting an increase in the proportion of suppliers from the region in the coming year. It is important however to note that manufacturers will still seek to have suppliers in Asia Pacific, with just over one in five expecting an increase from there reflecting the pull of low- cost product and labour.

Many companies have also increased the number of suppliers they use in order to mitigate against risk and ensure less reliance on a smaller supply pool, thus increasing their options in the event of further disruption to trade. One in five businesses said they have now between 51 and 100 suppliers in their supply chain, while a further 15% say they have between 101 and 200.

Effective monitoring of supply chains regardless of geography has become increasingly important for businesses and is now seen as a key tranche of resilience delivery. Over 70% of manufacturers have now developed a strategy for managing suppliers. This means they can detect issues quickly and monitor availability and prices as well as tracking transport costs and just in time deliveries. A lack of visibility up and down a supply chain is recognised as a challenge in a global market, which is likely to remain increasingly volatile in the near to medium term. Manufacturers are also recognising the importance of introducing digital technologies into their monitoring processes, with spend on digital supply chain technologies starting to creep up. Two in five

manufacturers will invest over 10% more to improve their supply chains and over half are confident they will be able to keep up this level of investment. The top advantage of implementing improvements to supply chain management is a faster response to changes cited by over a third (34%) of companies, with the last two years in particular highlighting the need for the ability to adapt to change quickly.

Key factors in selecting suppliers are still complex but top of the hierarchy of influence are product quality, availability, and cost. At a time when manufacturers are experiencing spiralling prices from energy to labour and raw materials, companies are citing lower inventory costs as another major benefit to supply chain management improvements. With volatility increasingly looking like it will be the new normal, traditional supply chain orthodoxy has been about driving efficiency, shortening supply chains and creating lean processes to support a "just in time" business model. This looks like it is being replaced by a "just in case" strategy to create a resilience which UK manufacturing has never needed more.

To ensure UK manufacturing keeps its place as a leader in the global marketplace while the recovery from Covid-19 continues, it is important that Government continues to work closely with industry to establish a cross-industry and government resilience taskforce to assess future supply chain risks and put an action plan in place to cope with any future disruptive event.

Methodology: Make UK conducted a survey of manufacturers between 2nd and 23rd February 2022. 132 senior decision makers in Make UK responded to the survey across a range of sectors and size of companies. The survey period was immediate before Russia's invasion in Ukraine on 24th February 2022.

PART 1: THE MANUFACTURING SUPPLY CHAIN

The global economy has shifted considerably in the last few decades. Globalisation, along with considerable advancements in digitisation, has made it easier than ever before to trade with businesses from far-flung places. This ability has had a significant impact on businesses' supply chains. In the 1990s many business supply chains were merely linear trade/business done between company A and company B. But now in 2022 and in a sector such as manufacturing, where more so than many other sectors in the economy is made up of complex just in time supply chains, businesses will now have over 50 suppliers in their supply chain.

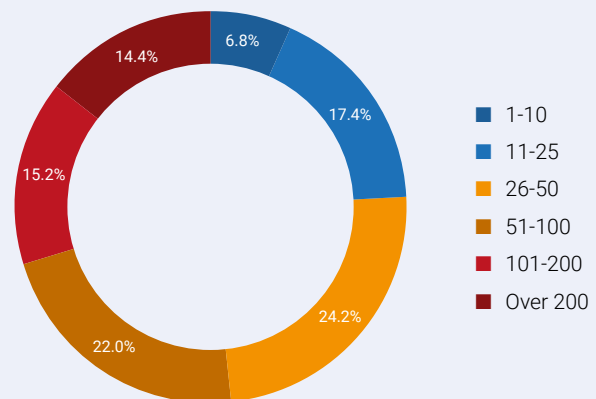
1 IN 5 MANUFACTURERS HAVE BETWEEN 51 AND 100 SUPPLIERS IN THEIR SUPPLY CHAIN

Our survey data suggests exactly that with over one in five (22%) of manufacturers saying they have between 51 and 100 suppliers in their supply chain. A further 15% say they have between 101 and 200 and 14% cite over 200 suppliers in their supply chain. These high numbers not only demonstrate the complexity of manufacturing supply chains, but also the need to monitor supply chains and ensure that supply chain strategies are put in place. We explore this later in our report.

If we were to compare this to 20 years prior where businesses mainly operated in linear supply chains, it is clear to see that manufacturers of today are operating within a complex ecosystem of suppliers and customers. But it's not just comparing decades. If we look to the past two years which have seen the UK's full exit from the EU as well as a global pandemic, the supplier base has changed for many, albeit not all:

Chart 1: Manufacturers are likely to have over 50 suppliers in their supply chain

% companies citing number of suppliers in their supply chain



Source: Make UK Global Supply Chains Survey 2022

1 IN 5 (22%)
**OF MANUFACTURERS SAID
THE NUMBER OF THEIR
SUPPLIERS HAS DECREASED
IN THE PAST TWO YEARS**

**ALMOST
TWO-FIFTHS** (38%)
**SAID SUPPLIER NUMBERS
HAVE INCREASED**

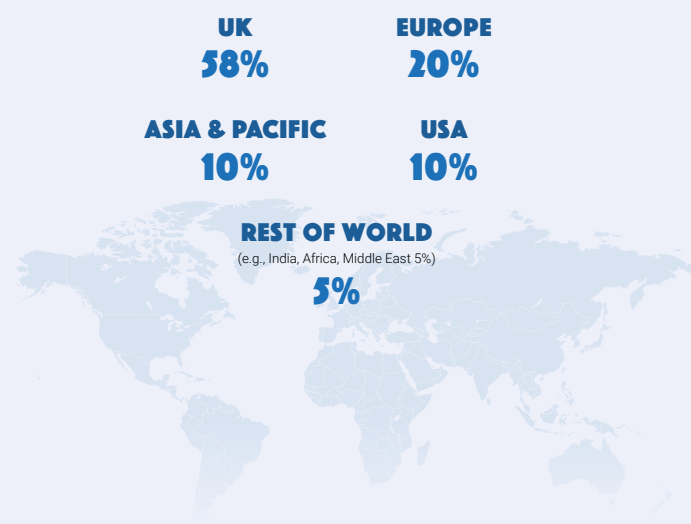
THE REMAINDER (40%)
**SAID THEIR SUPPLIER
BASE HAS BROADLY
REMAINED THE SAME.**

With that considerable increase in suppliers and customers in supply chain it's interesting to note that with the advancements in digital technology and continued globalisation many of these suppliers and customers are further field, suggesting that not only has the supply chain grown by number, it has also grown by geographical size. That said, the supply chain is still more likely to be 'closer to home' than global, with the average manufacturer saying that half (50%) of their supply chain is based in Great Britain.

ON AVERAGE OVER **50%** OF A MANUFACTURERS' SUPPLY CHAIN IS BASED IN THE UK

These figures add evidence in favour of the gravity model for trade which indicates that countries trade more with other nations that are geographically closer in proximity. At the firm level, many manufacturers naturally trade with businesses closer to home. This can be down to simply reducing lead times and costs as well the ease at which a firm can monitor its supply-chain.

How the average manufacturer's supplier base is split by region:



What is also interesting is the trends in how the geographical location of suppliers has changed over the past two years, with again a trend to move the supplier base closer to home. Indeed, almost one in five (18%) manufacturers said the proportion of their suppliers based in Great Britain has significantly increased in the past two years and a further 24% say it has moderately increased. If this trend continues, then the UK may observe an increase in reshoring across manufacturing as businesses that trade with UK businesses seek to maintain key customers.

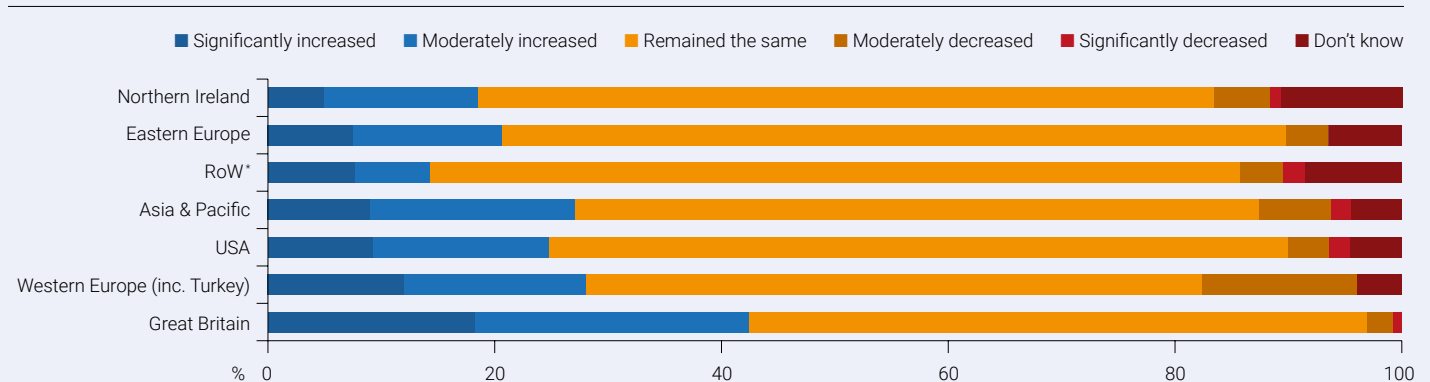
OVER **TWO-FIFTHS** OF MANUFACTURERS SAID THE PROPORTION OF THEIR SUPPLIERS BASED IN THE UK HAS INCREASED IN THE PAST TWO YEARS

The other focus has been Western Europe with 12% saying their supplier based has significantly increased and a further 16% stating it has moderately increased. Similar to an increase in direct reshoring, this data suggests that some level of relative reshoring may increase in the future too. This is when businesses move as close to home as possible without relocating domestically, for example, by moving to a neighbouring country to maintain close proximity with the supplier and/or customer.

There are a multitude of reasons behind this most recent shift and it would be hard to attribute this shift to just one factor, but the last two years have been a perfect storm for looking closer to home for suppliers/customers. If you take the two considerable external factors that have occurred over the last 2 years, they will go a long way in explaining this shift. Firstly, the UK's exit from the EU, leaving both Single Market and Customs Union has resulted in more and more hoops to jump through to trade with the bloc, but that was expected; any country leaving a Single Market and Customs Union will face friction where there was none before. Therefore, manufacturers now have to make export declarations and pay duty, declare the origin of their goods and have the correct labelling/ documentation with them upon crossing into the bloc.

Chart 2: In the past two years the supplier base has moved closer to home

% companies citing how their suppliers have changed in the past 24 months



*(e.g., India, Africa, South Americas, Middle East)

Source: Make UK Global Supply Chains 2022

This is an added burden, so it is of no surprise that some manufacturers have decided to bring their supply chain closer to home. Naturally there still are other reasons manufacturers consider when looking at suppliers and it's not solely based on whether or not you are part of a Customs Union or Single Market. Lots of factors are considered – one of the key ones is price. We will look at later on in the paper at what factors impact manufacturers when selecting new suppliers.

The other external factor that has had a significant impact on manufacturers' supply chains over the last two years is the pandemic. What came with the pandemic was a slow down across global markets, a shortage of materials/products and it is becoming increasingly difficult to move products from further afield. This was all largely down to the pandemic, especially the first 6-12 months where many countries went into lockdowns, so factories and manufacturing facilities were shut down for large parts of 2020. This meant demand grew but production was very limited. The pandemic put major strain on global supply chains with companies experiencing large delays or trouble even ordering certain products/materials. These significant external factors made industry address its supply chain and look at ways to provide certainty and resilience throughout the chain.

When we asked companies to look ahead to the next 24 months and how they envisage their suppliers to change in that timeframe, it was very much following the trend we've seen in the previous two years. Over two-fifths (43%) of manufacturers expect to see an increase in the proportion of suppliers based in GB, which is a significant amount but again would seem to point towards manufacturers seeking further certainty and resilience closer to home, and more predictability.

**2 IN 5
MANUFACTURERS EXPECT TO
INCREASE THEIR SUPPLIERS IN
GB IN THE NEXT 2 YEARS**

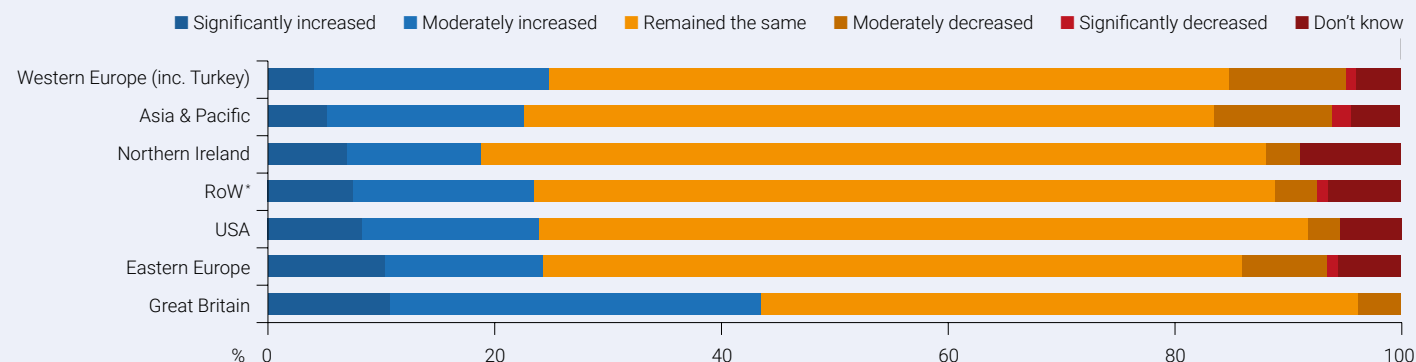


A quarter (25%) predict an increase in the proportion of suppliers from Western Europe, which could point towards manufacturers wanting to move closer to home but also still potentially benefit from the lower costs that are associated with Western Europe. However, almost a quarter again (24%) expect an increase in proportion of suppliers in Eastern

Europe, again moving supplies closer to home. It is important to note that industry will still seek to have suppliers in the Asia Pacific region with just over one in five (22%) expecting an increase so still the Asia Pacific region will remain vitally important due to reasons we will raise later on in the paper but including low cost of product and labour.

Chart 3: Manufacturers aren't planning for major changes to their supply chain locations in the next two years

% companies citing how they expect their supply base to change in the next two years



*(e.g., India, Africa, South Americas, Middle East)

Source: Make UK Global Supply Chains 2022

REVIEWING SUPPLY CHAINS HAS BECOME IMPORTANT TO COMPLYING WITH NEW RULES OF ORIGIN:

Rules of origin determine where goods originate from and which goods are covered in trade agreements. Manufacturers need to understand the rules of origin to:

- claim tariff preference when importing
- prove the origin of goods exporting

The origin of the goods:

- is where they have been grown, produced or manufactured
- may not be the country where they are shipped or bought from

This applies to all goods, whether they're covered by the UK's trade agreements, Generalized Scheme of Preferences or non-preferential rules of origin.

Preferential and non-preferential rules of origin may both apply. Where preferential rules do not apply you should use the non-preferential rules.

Some products are subject to preferential and non-preferential tariff quotas that allow a certain amount of goods to be imported or exported at a reduced or zero rate of duty. To benefit from the lower rate of duty a business must claim a tariff quota when you import the goods.

With this in mind, manufacturers are reviewing their supply chains in order to comply with these new Rules of Origin. Almost half (47%) of companies have reviewed all of their suppliers, 28% have reviewed some of their suppliers and a further 14% are planning to do so. Just 8% are either unaware of the need to do so or have no plans to.

PART 2: SUPPLY CHAIN STRATEGIES AND MONITORING

WHAT GETS MEASURED GETS MANAGED

As the received wisdoms goes, “what gets measured gets managed” and, while this can be true, what is also important is what to measure and why measure it. This is where a strategy comes in to ensure that what is measured and managed supports the overall objectives of the businesses. This is equally as true with supply chains as with any other part of the business. The good news is that manufacturers are on the whole developing supply chain strategies with over 7 in 10 (72%) of manufacturers describing their strategy as either intermediate or advanced, meaning they are either largely developed or well defined and generally form part of the company’s wider business goals.

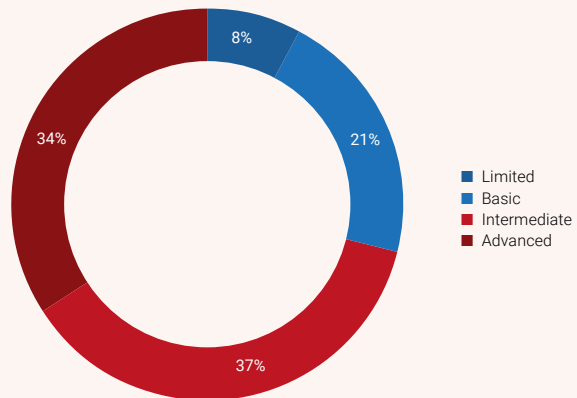
1 IN 3 MANUFACTURERS DESCRIBE THEIR SUPPLY CHAIN STRATEGIES AS ADVANCED

WHY DO MANUFACTURERS MANAGE THEIR SUPPLY CHAINS?

The benefits of supply chain management can be seen as responding to the challenges which complex and integrated global supply chains can present. As seen later in this report (part 4) the chief challenges to supply chain management cited by manufacturers are input availability and prices, as well as transport costs and ensuring that on time deliveries.

It is therefore little surprise that the primary benefit of supply chain management is the ability to remain agile and move faster, and lower operational costs. This helps businesses to increase profitability and can help with better risk mitigation.

Chart 4: Manufacturers supply chain strategies are becoming increasingly sophisticated

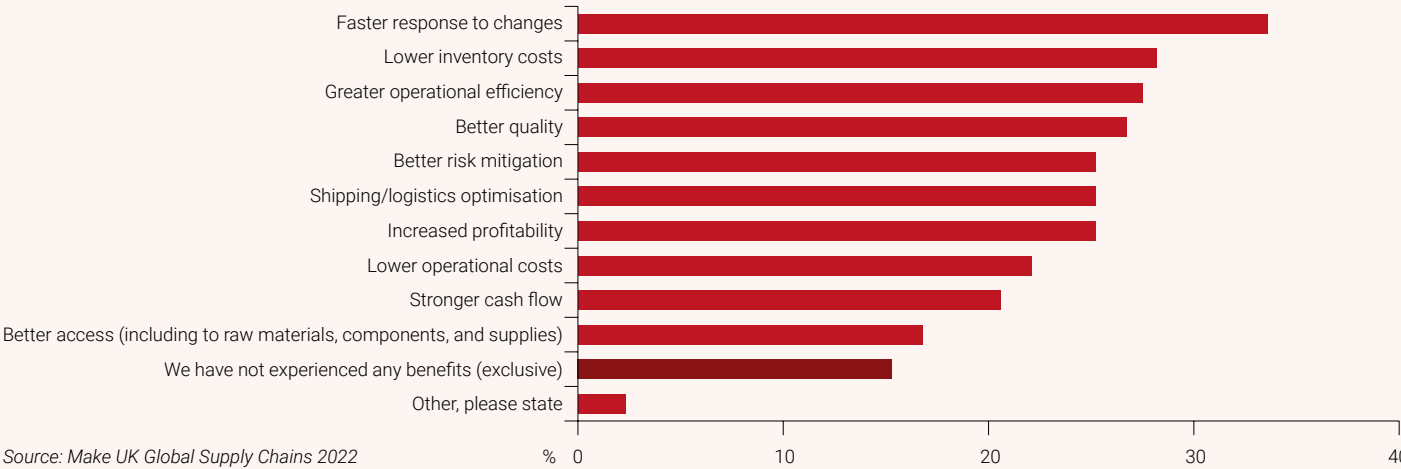


Supply chain strategies

- Limited:** Business ambitions are understood but not supported by a strategy
- Basic:** A strategy is emerging, and initiatives are being aligned to agreed business outcomes
- Intermediate:** A strategy has largely been developed and is now being refined to deliver specific target business outcomes
- Advanced:** Well defined strategy is in place, aligned to wider business goals and being executed

Source: Make UK Global Supply Chains Survey 2022

Chart 5: Faster, lower costs and greater efficiencies are main benefits to improved supply chain management



**OVER A THIRD
OF MANUFACTURERS CITE
FASTER RESPONSE TO CHANGES
AS A BENEFIT TO IMPROVED
SUPPLY CHAIN MANAGEMENT**

Manufacturers citing the benefits of supply chain management as lowering inventory costs, logistics optimisation and stronger cash flow are much more likely to have Intermediate or Advanced strategies in place.

However, lower operating costs and better access to raw materials are relatively well split across all supply chain strategies except Limited.

Despite numerous benefits, a handful (15%) of manufacturers said they do not see any benefit from supply chain management improvement. The data shows that these tend to be SMEs and more likely to have a Basic supply chain strategy, although not exclusively.

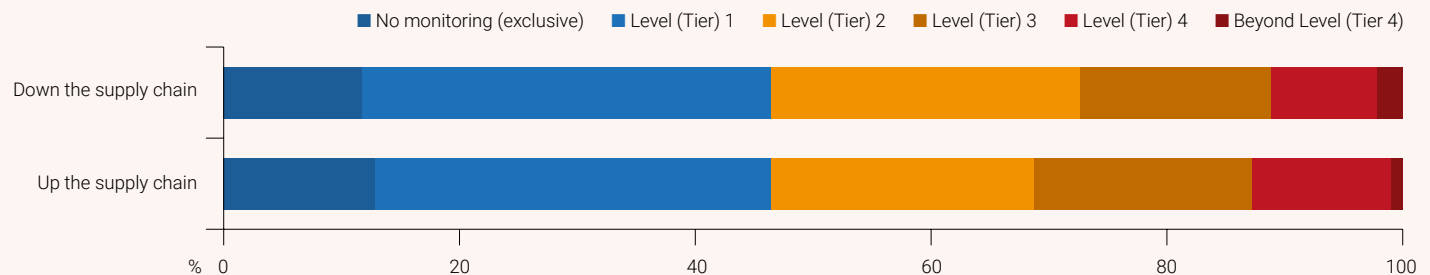
**SUPPLY CHAIN STRATEGY –
A DETERMINING FACTOR?**

While it is positive that the majority (72%) of manufacturers describe their supply chain strategy as either Intermediate or Advanced, the data shows that those with either a limited or basic strategy tend to be predominantly small and medium sized businesses. It can also be seen that the number of suppliers can impact the strategy, with those with below 50 suppliers tending towards Limited and Basic strategies, whereas above 50 the trend is towards Intermediate or Advanced. Ultimately, the more suppliers you have, the more sophisticated your supply chain strategies need to be.

This can have a knock-on impact on how supply chain management is prioritised in a company, with the same split between Limited or Basic and Intermediate or Advanced also holding true for investment intentions. Those with Limited or Basic are twice as likely to hold investments in supply chain technologies at about the same levels, compared to those with Intermediate or Advanced strategies.

Chart 6: Supply chain monitoring is mixed

% companies reporting the extent to which they monitor their supply chains



Source: Make UK Global Supply Chains 2022

ONE UP, ONE DOWN OR TWO UP, TWO DOWN?

Almost half of manufacturers are monitoring one level up and down their supply chains, with around a third looking one step beyond at the second tier of supply chains. However, the data clearly shows that size of the business impacts monitoring levels, with smaller and medium sized businesses tending towards either not monitoring their supply chain at all or simply monitoring one tier up and down the supply chain. Larger businesses are more likely to be looking beyond the first tier with only very large businesses reporting beyond tier 4.

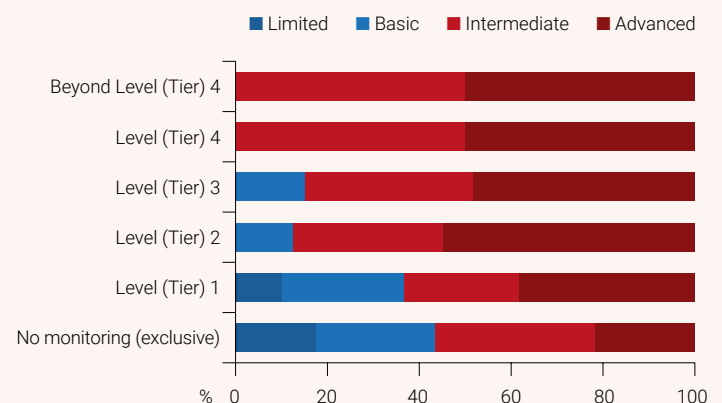
In addition, the supply chain strategy will also impact how manufacturers monitor their supply chains. Only manufacturers with Intermediate or Advanced strategies monitor up their supply chains beyond tier 3. Unsurprisingly, companies with a Limited strategy are either reporting no monitoring or just tier 1 visibility.

A lack of visibility up and down a supply chain can be a challenge in a global market which is increasingly likely to bring more volatility. That may explain why companies with an Advanced supply chain strategy are more confident about meeting demands in 2022, despite 9 in 10 (89% of companies) agreeing or strongly agreeing that supply chains will remain under pressure in 2022, and 1 in 5 companies that supply chain vulnerabilities are a strategic big risk in 2022.

The drivers behind the monitoring strategy can be complex. Business model and the position in supply chains will have an impact on the level of monitoring of supply chains. Some manufacturers may have short chains both up and down their supply chains. In addition, manufacturers tell us that while they monitor only one or two levels up and down their supply chains, they work with these partners to provide better visibility beyond their own monitoring, asking suppliers to ensure their own supplies are monitored and managed. This can often be a stipulation for supply, particularly with prime manufacturers and OEMs.

Chart 7: Companies with advanced strategies more likely to extensively monitor their supply chain

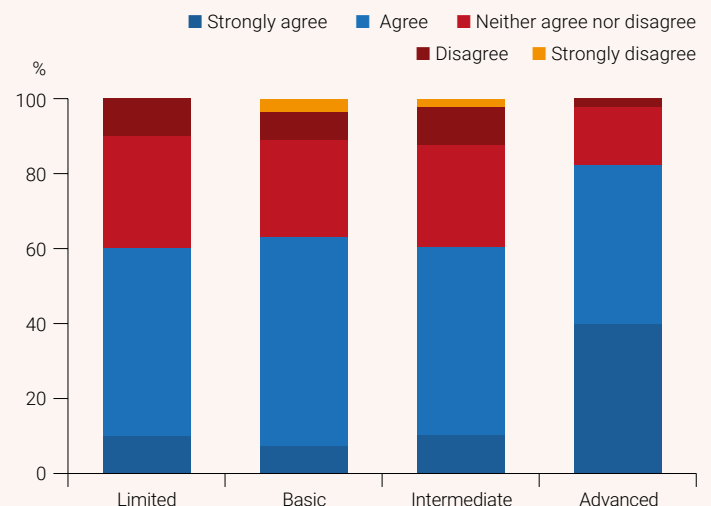
% companies reporting the extent to which they monitor by strategy stage



Source: Make UK Global Supply Chains 2022

Chart 8: Advanced strategies lead to increased confidence

% companies agreeing to the statement – my company is confident in meeting demands for goods and services in 2022



Source: Make UK Global Supply Chains 2022

FACTORS DRIVING DECISIONS ON SUPPLIERS

The reasons behind selecting suppliers can be complex but manufacturers have a clear hierarchy of factors which influence the choice of supplier, with quality topping the list. Following on from this, the list of factors trends from properties of the goods/services being selected towards the priorities of the company with which the manufactures deals.

This means that product quality, availability and cost are the prime factors for most manufacturers in selecting their chosen supplier. This trend holds across all sizes of business, regardless of the number of suppliers and the level of supply chain management strategy each company employs.

Quality, availability and cost are king.

As both the cited benefits and challenges of supply chain management have shown, time is an important factor, and delivery time is the fourth most important factor. As we have seen with increasing volatility and the need to manage integrated supply chains, it is again not surprising that reliability is also an important factor.

Finally, the contractual terms and the Environmental, Social, Governance (ESG) policies are among the least most important factors. However, when the data is analysed further the importance of a supplier’s ESG policies grows, with larger manufacturers putting a higher priority on these factors.

PROXIMITY VS GEOGRAPHY

When asked about factors which influence manufacturers choice of a suitable supplier, geographical proximity is cited as the least important factor. However, the data suggests the opposite; with most manufacturers relying on domestic suppliers, they then look to Europe before considering markets further afield.

When exploring what is behind this contradiction, it is important to consider that while geographical proximity is a low priority for supplier choice, delivery time is number 4 and reliability is number 5. With most decisions being driven by quality, availability and cost it could be assumed that local suppliers must meet those requirements more easily than suppliers further afield. However, while delivery times and reliability must account for some of the dominance of local suppliers and the fact that it is easier to manage supply chains closer to home, there may be other factors impacting supplier selection decisions.

What may explain the contradiction in stated priorities – with the data showing that closer to home clearly dominates

Chart 9: Quality is king

Companies citing the most important factor to choosing a supplier

1	QUALITY	
2	AVAILABILITY	
3	COST	
4	DELIVERY TIME	
5	RELIABILITY	
6	SUPPLIER CONTRACTUAL TERMS	
7	ENVIRONMENTAL, SOCIAL, GOVERNANCE (ESG)	
8	GEOGRAPHICAL PROXIMITY	

Source: Make UK Global Supply Chains 2022

With the drive to net zero, manufacturers are measuring CO₂ emissions from their supply chains.

As manufacturers increasingly take steps to be net zero by 2050, they are considering how they measure not only their own emissions but those of their supply chain. Considering the ambition of the target as well as the commercial gains to be had for manufacturers in a net zero carbon economy it is unsurprising to see that one in three manufacturers are already measuring their CO₂ emissions from their supply chains. A further 23% aren’t currently but plan to in the next 12 months and 24% are considering doing so. Of concern is the 23% of companies that are not and have no plans to do so. If we are to accelerate our net zero journey, manufacturers will need to look across their value chains and not simply focus on their own carbon emissions.

– is that what manufacturers are looking for is the best quality at the best price. In seeking this, manufacturers tend to start locally then gradually move further afield. Therefore, while location would seldom be a factor in choosing between suppliers, naturally manufacturers start the search close to home.

PART 1: SUPPLY CHAIN TECHNOLOGIES

The manufacturing sector is undergoing a profound digital transformation, changing the way manufacturers design, produce and engage with customers, making it more productive, resilient and sustainable. The adoption of new digital technologies has never been so important. Businesses need to future proof their companies against any upcoming challenges and their competitors. New digital technologies are enabling manufacturers to become more sustainable and making their global supply chain more resilient.

Supply chain resilience is currently top of the agenda for policy makers, government, and business leaders alike. External business factors such as the pandemic, Brexit, and large-scale geopolitical shifts such as the Russian invasion of Ukraine have highlighted how important it is to invest in global supply chain resilience.

MANUFACTURERS' FOCUS ON DIGITAL SUPPLY CHAIN SOLUTIONS TO MONITOR THEIR SUPPLY CHAINS IS MIXED

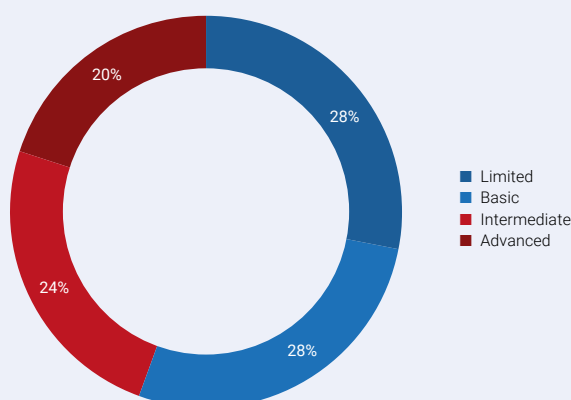
When it comes to implementing digital supply chain solutions in order to monitor supply chains manufacturers have, for the most part, a limited or basic focus. Almost three in ten (28%) say their focus is limited, in that they do not have an approach to implementing digital supply chain solutions. The same number again (28%) say their focus is basic, in that they use a basic digital approach, when necessary, based around technology modernisation.

At the other end of the scale, one in five (20%) say their focus is advanced, meaning they are adopting current market solutions and seeking to invest or be early adopters of new digital supply chain solutions. A quarter (24%) are a step behind with an intermediate focus, using tried and tested digital supply chain solutions within their business.

Unsurprisingly, larger firms were more likely to be in the advanced stage. In fact, over two-thirds (64%) of manufacturers with over 1000 employees were in the advanced stage, with a similar trend seen when it comes to turnover. The higher the turnover of the company, the more advanced the focus on implementing digital technologies to monitor supply chains.

Chart 10: Manufacturers focus on digital supply chain solutions is mixed

% companies citing their company's focus on using digital supply chain solutions



Supply chain strategies

Limited: Do not have an approach to implementing digital supply chain solutions

Basic: Use a basic digital approach invest, when necessary, based around technology modernisation or improving legacy systems

Intermediate: Use an intermediate digital approach i.e., tried and tested digital supply chain solutions already in the market

Advanced: Adopting of current market solutions and seek to invest/be early adopters of new digital supply chain solution

Source: Make UK Global Supply Chains Survey 2022

**1 IN 5
MANUFACTURERS SAY
THEIR FOCUS ON DIGITAL
SUPPLY CHAIN SOLUTIONS IS
'ADVANCED'**

SPEND ON SUPPLY CHAIN TECHNOLOGIES IS BEGINNING TO CREEP UP

Overall, manufacturers are looking to increase or maintain their current investment into supply chain technologies over the next two years. Indeed, over two-fifths (42% of manufacturers) are looking to increase their investment to over 10% in order to make their supply chain more responsive and flexible. This is at a time where the sector is still recovering from the cost implications of the UK's full exit from the EU as well as the pandemic. At the time of writing, manufacturers are also experiencing significant business costs such as energy, accelerated by the events taking place in Ukraine. However, this accumulation of events, while costly to businesses, has no doubt turned their attention to the need to invest in supply chain technologies and future proof their businesses.

2 IN 5 MANUFACTURERS WILL INVEST OVER 10% MORE TO IMPROVE THEIR SUPPLY CHAINS

Over half (55%) of manufacturers are confident that they can keep their investment in the supply chain technologies at the same level without a need to decrease it. Only a small handful (3%) of manufacturers expect to reduce their investment plans by more than 10% in the coming two years, which is low considering the major challenges and cost pressures facing UK manufacturers right now.

Manufacturers are looking at a host of different technologies and tools to invest in, such as analytics and dashboards, control towers and real time sense and respond platforms, which will help them with both better data collection and more flexible and speedier processes.

DASHBOARDS AND ANALYTICS SEEN AS KEY TO SUPPLY CHAIN MONITORING SUCCESS

When it comes to using digital technologies to monitor their global supply chains, manufacturers are overwhelmingly likely to cite the use of dashboards and analytics. In fact, these are used by over half (57%) of manufacturers. Moreover, dashboards and analytics were just as likely to be used by small and micro businesses as larger firms.

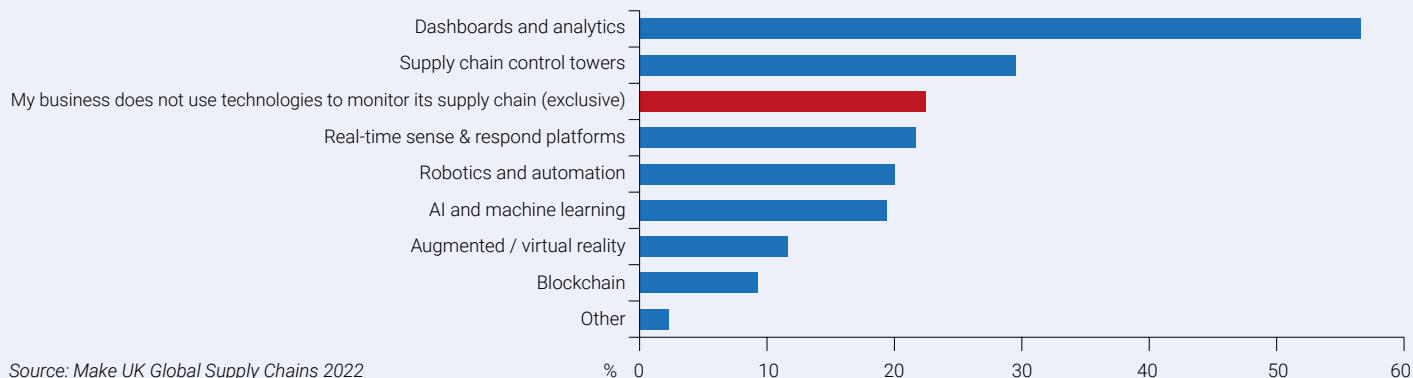
This is well above the other digital technologies being used, due to simplicity of use, easy access to different platforms available on the market, and the cost to invest in it is significantly low compared with more complex technologies supporting supply chain monitoring.

Supply chain control towers are being used by 3 in 10 manufacturers, while real-time sense and response platforms being utilised by 22% of firms.

Further down the list we see the use of industrial digital technologies such as AI and machine learning (19%), augmented and virtual reality (12%), robotics and automation (20%). Larger firms were more likely to be utilising such technologies, which is consistent with Make UK's wider research on the use of industrial digital technologies. At the bottom of the list, and due to the lack of knowledge, cost and reservations towards cyber security issues is the use of blockchain (used by just 9%) of manufacturers.

Chart 11: Dashboards and analytics top technology used to monitor supply chains

% companies citing the technologies used for monitoring



Source: Make UK Global Supply Chains 2022

While there is widespread use of a range of technologies, some manufacturers are being left behind. In fact, almost a quarter (23%) of manufacturers say they do not use any form of technologies to monitor their supply chain. There is a tale of two halves here. We are seeing some manufacturers focus in on digital technologies as a global supply chain monitoring tool and who have become early adopters at speed. On the other hand, we are seeing a cohort of manufacturers who risk being left behind by not taking action when it comes to supply chain management.

We know that recent disruptions to global supply chains have forced manufacturers to rethink their strategies and focus on the relationship they have with their supply chain with manufacturers increasingly looking to diversify their supply chain and understand exactly who their supply chain is. But what we are not seeing in tandem is the awareness that digital technologies can provide the solutions to companies to become more agile and more responsive when faced with supply chain strategies. Support is needed and while industry and partners can help, some form of Government intervention is also necessary.



PART 4: CHALLENGES AND OPPORTUNITIES

THE UNPRECEDENTED CHALLENGES MANUFACTURERS HAVE FACED

Manufacturers have been faced with a myriad of challenges in the past two years which has significantly disrupted their supply chains, and consequently impacted their business. Our survey shows that the Covid-19 pandemic was the single biggest disruption, with 47% of manufacturers saying this had caused catastrophic or major disruption to their supply chains. This was followed by the UK's exit from the EU, which 32% of manufacturers said had had a significant impact.

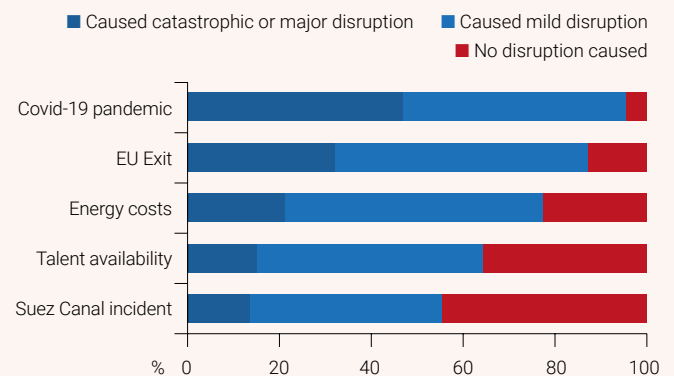
However, as the energy crisis shows no sign of abating, many manufacturers are facing the prospect of rising energy costs directly causing disruption to their supply chains. In fact, almost 6 in 10 manufacturers said that energy costs were already causing mild disruption to their supply chains. Moreover, the survey was conducted ahead of Russia's invasion in Ukraine which has either directly or indirectly hit manufacturers further in terms of energy supply. If we were to repeat this question towards the end of the year, we would expect to see this figure increase further still. As manufacturers take the necessary steps to mitigate the impact of rising energy costs, many are choosing to adjust business practices. This will no doubt have some knock-on impact on the day-to-day operations for manufacturers supply chains.

8 IN 10

**MANUFACTURERS SAY ENERGY
COSTS HAVE CAUSED EITHER A
MAJOR OR MILD DISRUPTION
TO THEIR SUPPLY CHAINS**

Chart 12: The pandemic has caused catastrophic supply chain disruption for many manufacturers

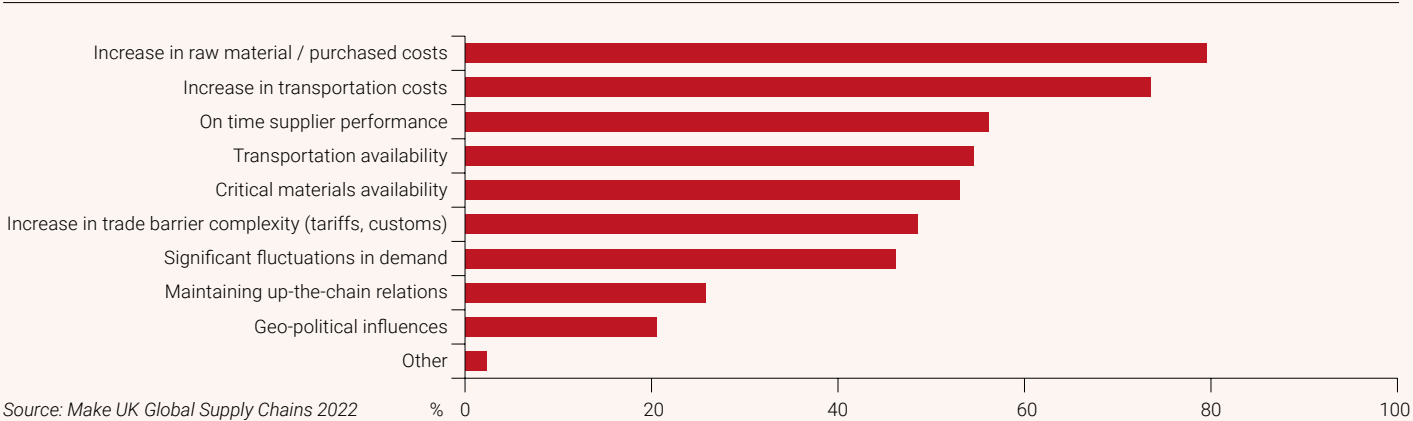
% companies citing supply chain disruption impact



Source: Make UK Global Supply Chains 2022

Chart 13: Raw material costs tops list of supply chain challenges

% companies citing the main



These external shocks over the last 24 months means that many manufacturers have been faced with significant external challenges and pressures. Pinpointing the exact pinch point for manufacturers is not easy, and as our survey shows, there are many. The biggest external challenge manufacturers have faced with regards to their supply chain has been the increase in raw material costs (almost 8 in 10). From aluminium to timber to nickel, the increase in raw material costs is driving input price inflation to record levels. Whilst normally this increase would not be business critical as many manufacturers could pass on the input price increase, many are now unable to do this. With consumer inflation soaring, manufacturers are seeing their price margins squeezed.

The second biggest external challenge manufacturers faced with regards to their supply chain in the last 24 months has been increased transportation costs - 74% of manufacturers said that this was a challenge. This was a particular challenge for manufacturers who had between 26 and 50 suppliers (27%). However, where manufacturers had either more or fewer than

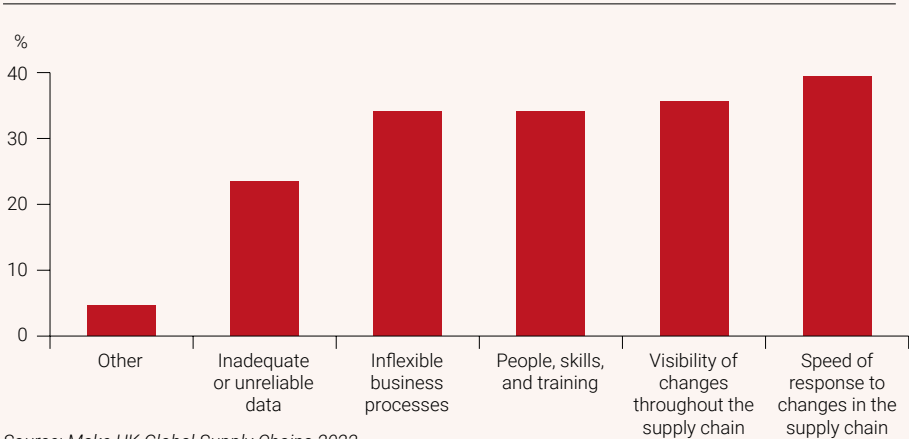
this number of suppliers, the impact of increased transportation costs was far less. This suggests that there is a sweet spot in how many suppliers to have. Manufacturers at both extremes, i.e., less than 10 but greater than 200, were able to mitigate to impacts of increase transportation costs through either economies of scale or having a very small pool of reliable logistical partners.

INHIBITING FACTORS TO TRANSFORMING SUPPLY CHAINS

Our survey evidence shows that manufacturers are also faced with factors inhibiting their ability to transform their supply chains. In fact, a lack of visibility, flexibility and agility is holding manufacturers back. The biggest factor inhibiting manufacturers was the ability to respond at speed to the changes in their supply chains (39%). This especially rang true for manufacturers which employed over 500 employees (60%) but is somewhat unsurprising given the nature of reorienting the processes of a much larger manufacturer.

Chart 14: Lack of visibility is hampering supply chain transformation

% companies citing the biggest factors inhibiting their company's supply chain transformation



The second biggest inhibiting factor was the lack of visibility of changes throughout the supply chain – 36% of manufacturer identified this issue. Visibility of your supply chains is crucial to mitigating any impact that may be caused up or down the supply chain. However, visibility both up and down the supply chain has been an issue for a number of years. In fact, previous Make UK research found that only 13% of manufacturers had full visibility of their supply chains. And despite the numerous geopolitical events since 2009, little has changed since we asked the same questions in 2009 (7%) and in 2012 (11%). It is clear that the visibility gap for manufacturers remains.

Historically, not having end-to-end visibility of a supply chain was less likely to be an inhibitor. This is fundamentally down to how the manufacturing industry operated by placing the greatest importance on the immediate supplier/customer and expecting their suppliers/customers to monitor their own relationships one level up or down. By doing this, the entire supply chain flowed smoothly and enabled the UK to specialise in the Just in Time model we know today. However, the pandemic exposed the risks of not managing supply chains effectively on recently so it is not surprising that so few are on top of this.

SUCCESSFUL SUPPLY CHAIN MANAGEMENT LEADS TO OPPORTUNITIES

When the above challenges are overcome by the manufacturers, supply chain management improvement is put in place and multiple benefits can be reaped. Those companies that don't take advantage of supply change management improvements risk being left behind, at a time where manufacturers are clearly facing expedient challenges. Becoming more agile, more flexible and more efficient with greater better visibility of their supply chain is the clear win for companies which take steps to improve their chain management.

1 IN 3 MANUFACTURERS REPORT FAST RESPONSES TO CHANGES WHEN ADOPTING SUCCESSFUL SUPPLY CHAIN MANAGEMENT

The top advantage of implementing improvements is a faster response to changes cited by over a third (34%) of manufacturers. And with the past two years in particular highlighting the need for responsiveness and the ability to adapt to change it is unsurprising that this is the most commonly cited benefit. Looking back at the past two years we know that companies that have digitalised have responded faster to the new situation that pandemic brought so suddenly onto the businesses, and this is true for supply chain management too.

At a time when manufacturers are experiencing spiralling costs from energy to labour to raw materials, it is good to see that manufacturers cite lower inventory costs as a benefit to supply chain management improvements. This is closely followed by greater operational efficiency (cited by 28%) of companies which again can reduce the overall cost of doing business and keep manufacturers competitive. Bringing these cost parts together we see that by taking action on supply chain management, one in five (21%) of manufacturers are in a stronger cash flow position.

Given the challenges reported earlier on cost and access to raw materials, it seems that improved supply chain management is part of the solution. Indeed 17% of manufacturers said it helps them have better access to raw materials and components. This in turn offers a better-quality product or service, which is a benefit cited by almost one in three (27%) manufacturers.

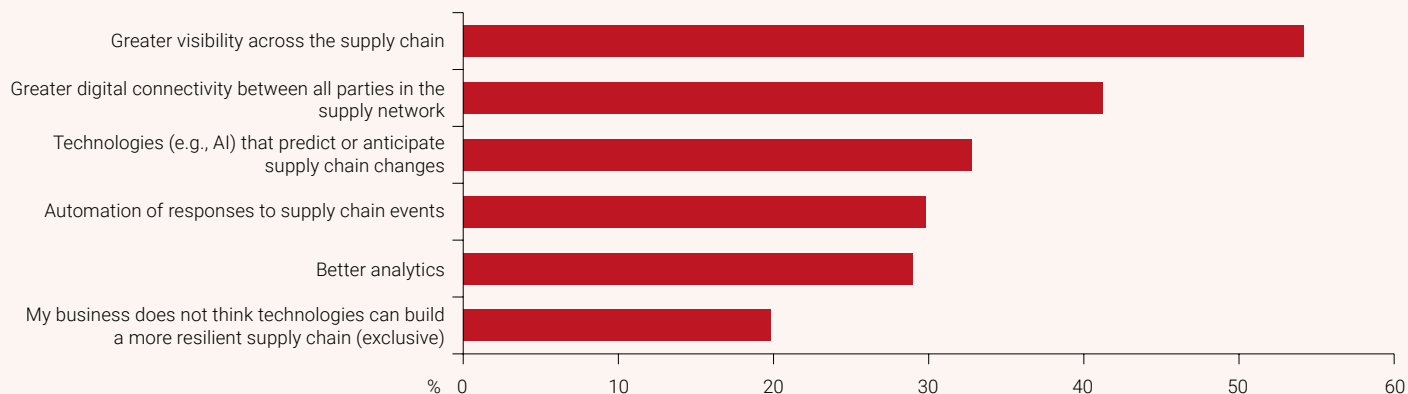
For these benefits to truly materialise across the sector there is a need for better knowledge and improved awareness on the benefits that improved supply chain management can bring. Once again, despite the benefits being acknowledged by the vast majority of manufacturers, 15% say they have not experienced any benefits. It may be that external factors are so significant that the disruptions in the supply chain can't be mitigated. That said, any mitigation and risk management is better than none at all.

TECHNOLOGIES CAN HELP PAVE THE WAY TO MORE RESILIENT SUPPLY CHAINS

We have already documented the types of technologies that manufacturers are using for their supply chain strategies, but what our research also found was that technologies can also enhance supply chain resilience. As appears to be the common theme throughout our research, there are a number (in this case 20%) of manufacturers that do not think technologies can help build more resilient supply chains. We also know that knowledge and awareness can be the driver behind this response.

Chart 15: Visibility and ability to predict change key to building supply chain resilience

% companies reporting benefits of using digital technologies for supply chain



Source: Make UK Global Supply Chains 2022

8 IN 10

MANUFACTURERS THINK DIGITAL TECHNOLOGIES HELP BUILD RESILIENT SUPPLY CHAINS

For those already won over by the role that technology can play, over half (54%) of firms said greater visibility across the supply chain would help build greater supply chain resilience and over two-fifths (41%) of manufacturers said greater digital connectivity between all parties in the supply chain would do so. This was closely followed by a third of companies citing technologies, such as AI, that predict or anticipate supply chain changes. This is unsurprising given the theme around 'change' we have seen throughout this research. Likewise, automation of responses to supply chain events was cited by 3 in 10 companies and 29% cited better analytics.

PART 5: OPERATING WITHOUT BORDERS – BUILDING GLOBAL SUPPLY CHAIN RESILIENCE

Manufacturers are part of complex integrated supply chains, which have developed over many decades. Globalisation brought greater flexibility of supply and provided more opportunities for specialisation, creating integrated supply chains and an interdependent global manufacturing eco-system. During the latter part of the last century this was augmented with the establishment in Europe of a common market and the development of a common external customs policy further reducing, if not eliminating, tariff as well as non-tariff barriers to trade for UK manufacturers in their nearest market. It is therefore unsurprising that manufacturers have tended to seek suppliers either domestically or from this integrated market.

With the UK defining a new place in the global trading system with exit from the EU and the negotiation of trade deals with many new markets, this system has undergone a shock from which it is still recovering, as clearly highlighted with only 13% of manufacturers reporting no disruption in the last two years. While significant challenges of EU exit recede, more certainty is returning to supply chains with more predictable costs and timings, albeit more expensive and with longer lead in times. However, there is an emerging longer-term impact. From discussions with manufacturers, while existing relations with customers and suppliers between the UK and the EU have strived to overcome the challenges of the new trading rules, much of the reduction in trade appears to be accounted for through attrition and challenges in finding new business to replace it.

What is true is that the impact and shock in the UK's trading system has not just been caused by the UK defining a new place in global market, but Covid-19 has also clearly had a profound impact on the sector and its integrated supply chains. Be that from transport and logistics challenges to disruption of traditional supply and demand cycles. Covid-19 was cited as the most significant impact on the sector and the ability to manage supply chains in the last two years. This is unsurprising as Make UK's research in 2020 showed Covid-19 has had multiple impacts on supply chains, from disruptions to global shipping and aviation causing increased cost and delays to logistics, to changes in demand with significant drop off for some sectors and increases for other, to manufacturers reorientating production to support the national effect.

VOLATILITY AS THE NEW NORMAL

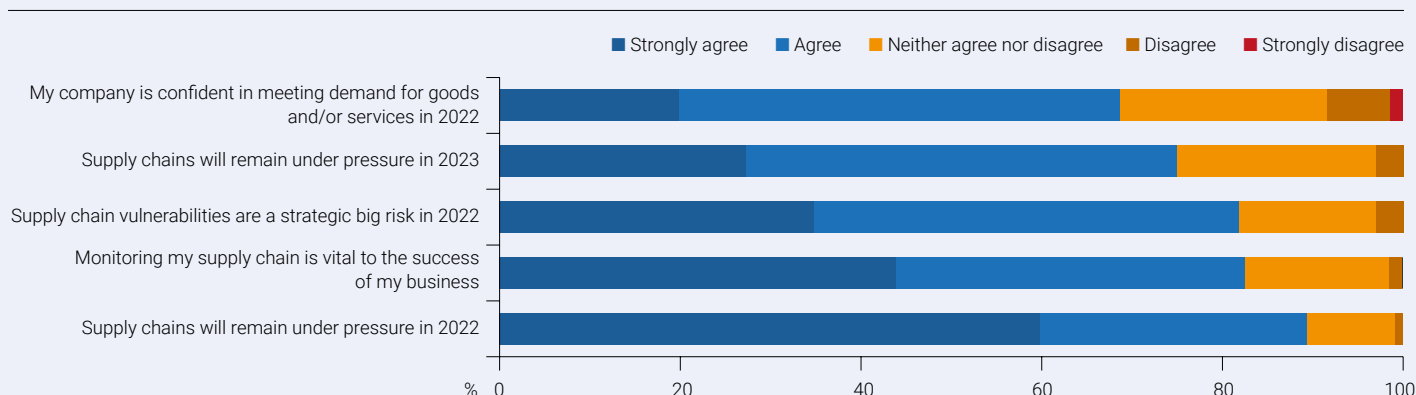
While clearly the dual impact of the new relationship with the EU and other markets and Covid-19 have caused major disruption for many (Q14), what the last decade has shown is that volatility is fast becoming a more common phenomenon than previously. The dual impact of the UK redefining its place in the global market through exit from the EU and the two-year impact of a global pandemic highlighted the interdependence of global economies and trade and the decades' reliance on international and intensive supply chains. However, while these two events will have a significant impact, they will only deepen what have in fact been a structural trend which has seen a decoupling of international trade from growth since the turn of the millennium. Global supply chains have been impacted by a wide range of factors from economic to geo-political challenges which have heaped pressure on the rules-based system, prompting a supply chain management rethink.

Traditional supply chain orthodoxy has been about driving efficiency, shortening supply chains, and creating lean manufacturing processes supporting a "just in time" business model which has helped manufacturers grow and remain competitive.

The result is a lean process, with lower stocking levels and just in time supply chains. This made sense in a world where international trade was tacked to global GDP growth and each year seems to bring an additional trading opportunity.

Chart 16: Supply chain pressures won't go away but manufacturers are confident on meeting demand

% companies agreeing to the following statements



Source: Make UK Global Supply Chains 2022

Throughout the period post-1947 (GATT - The General Agreement on Tariffs and Trade) trade barriers were reduced, and global supply chains began to flourish, increasing globalisation and trading diplomacy through trade, leading many manufacturers to source from further afield.

The new trend towards more volatility, coupled with the acceleration of technological advances in the conduct of trade, means that manufactures may need to rethink how supply chains are monitored, how resilience is built in and whether the continued focus on lean processing make sense. This will be conducted in a global market where instability, volatility and uncertain are fast becoming the new normal and predictability and reliability less common.

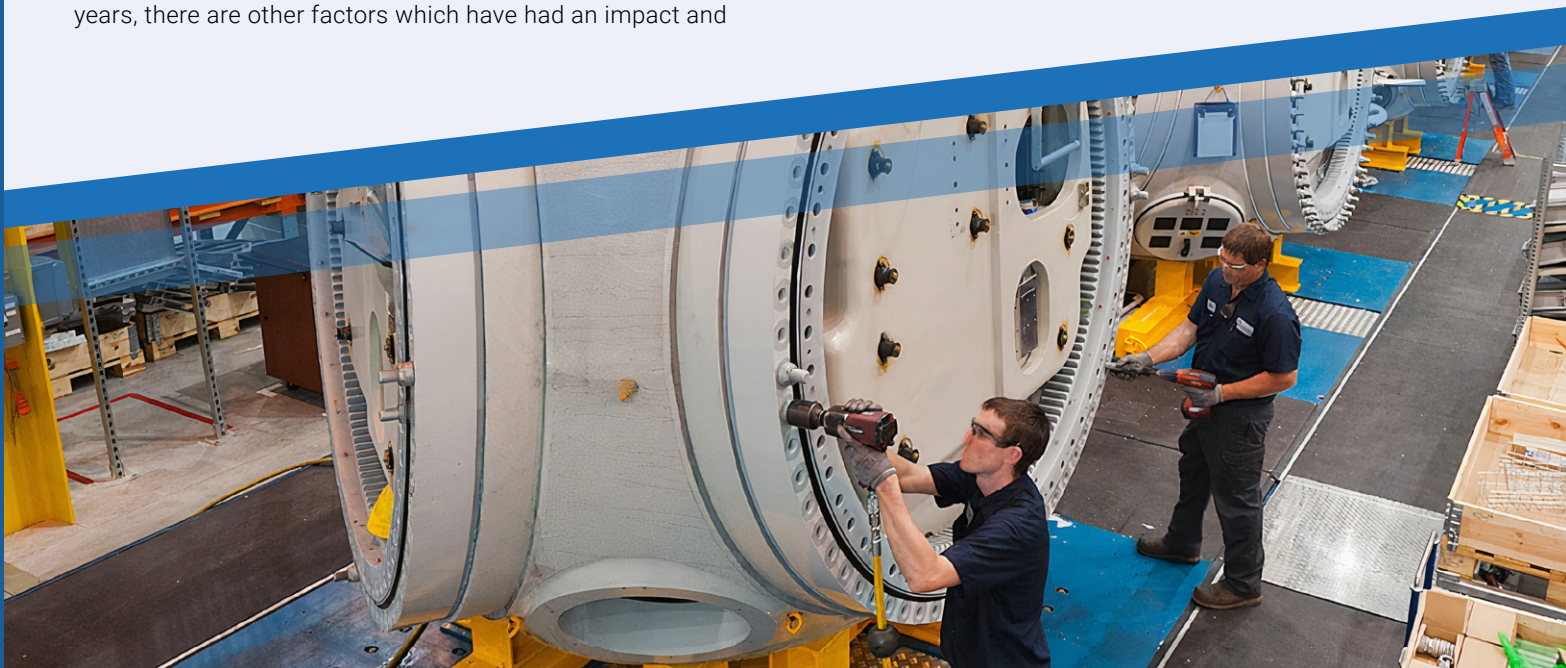
DISRUPTION, BUT OPTIMISM

Supply chains are vulnerable to many impacts both from internal and external factors. While it is evident external factors such as Covid-19 and the UK's exit from EU have caused the greatest disruption to supply chains in the last two years, there are other factors which have had an impact and

are likely to continue to do so. The increasing energy cost crisis, now exacerbated by the conflict in Ukraine and the availability of talent are significant and only likely to grow. The Spring Statement highlighted the acute pressure that talent shortages can have on an economy with it being a significant factor in the revision of the growth prediction for 2022 from roughly 6% to 3.8%.

It is therefore little surprise that manufactures are forecasting a challenging year ahead in both 2022 and into 2023. However, it is positive that they are broadly confident their strategy will meet demand.

While we recover from Covid-19, chart a new course in global markets and address current and future challenges, there are important steps the Government take in working with industry to ensure resilient supply chains, which are ready for the next challenge, but equally agile to take advantage on new opportunities as they arise.



POLICY RECOMMENDATIONS:

- **Government should establish a cross-industry and government resilience taskforce.** This taskforce would assess further risks of supply chain disruptions and establish an action plan for any future disruptive event. This includes a supply chain mapping exercise to understand our domestic capabilities as well as building an evidence base on opportunities and challenges associated with current and future supply chain.
- **Supply chain software management should be included in the Help to Grow: Digital scheme.** The Help to Grow: Digital scheme was hoped to be a solution that would accelerate SME manufacturer's push to digitalisation. However, Make UK members have highlighted its limitations in its current version which covers CRM and accounting software from a few accredited vendors. The scheme should be expanded to include supply chain software management to make it more useful and accessible to manufacturers.
- **Develop and publish public data that reports on lead times of raw materials to help businesses plan ahead.** Clearly manufacturers have been hit with supply chain disruptions to raw materials. However, there is no information on current lead times. Government should work with industry on developing and publishing data to understand lead times and allow manufacturers to plan ahead.
- **Explore how digital labelling could be used to assist manufacturers with the traceability of their products.** Digital labelling of products has the potential to ensure consumers around the world have access to the right information for their market while helping to reduce waste. It will be important to ensure that digital labelling assists manufacturers in managing their traceability requirements and could help support mapping of key goods flows.
- **Work with industry to explore how larger firms can provide greater visibility of supply chains at higher tiers to share information with SMEs with limited scope.** Our research demonstrates a lack of visibility particularly among SMEs. Exploring how larger firms and OEMs can provide greater visibility to share more broadly will improve overall end to end visibility.
- **Introduce capital allowances or a form of tax break for businesses that adopt certain digital solutions (such as blockchain).** Highlight the conglomeration affect if business did this across a supply-chain resulting in greater end-to-end performance.
- **Develop regional institutions and establish long-term initiatives to deliver supply chain support.** We strongly support the Institute for Manufacturing (IfM) recommendation here. Make UK members welcome the reference to MAS which acted as a strong support service to manufacturers. There is a strong case for a regional approach, but it must work alongside the existing regional network e.g., LEPs.

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VIEWPOINT

Supply chain complexity increasing with almost 40% reporting number of suppliers have increased in past 2 years

Resiliency vs Efficiency

Supply chain best practice has been built on long held trusted concepts such as the optimal placement of inventory, efficient use of manufacturing and distribution capacity and all while meeting customer demand, profitably. Efficiency and optimization the bywords for success.

But then manufacturing was hit with a succession of shockwaves one after the other; Financial crisis, Brexit, Covid, political and civil instability. The resultant macro-bullwhip effect causing it's own after-shocks with critical material shortages impacting industries as diverse as Automotive, Industrial, Food and Fashion.

As supply chain strategists examine the vulnerabilities of their supply chain, some are questioning some of the long-held concepts of best practice. Lean and JIT work, when suppliers deliver on time and in full. Single sourcing works when products are in common supply and volume purchasing drives price efficiencies. Low-cost country outsourcing works when distribution pricing isn't sky high and shipping containers are available.

In conversation with many manufacturers and supported by the Make UK survey, the rules of supply chain are being re-drawn. Resiliency trumps efficiency and is the new byword for success. The winners have been those who have been able to rapidly adjust their supply chain strategies to accommodate the succession of shocks.

Technology plays a part in building resilient supply chains. Visibility beyond immediate customers and suppliers is enabled with a digital supply chain and the survey shows the larger, advanced enterprises rely on this. This is likely why as the report states companies with an *'Advanced supply chain strategy are more confident about meeting demands in 2022, despite 9 in 10 (89% of companies) agreeing or strongly agreeing that supply chains will remain under pressure.'*

Dashboards, analytics and real-time sense and respond platforms are reported as the top technologies manufacturers are focussing on. But perhaps the bigger headline from the survey for UK manufacturers is that *'almost a quarter (23%) of manufacturers say they do not use any form of technologies to monitor their supply chain'*. The report goes on to observe *'We are seeing some manufacturers focus in on digital technologies as a global supply chain monitoring tool and who have become early adopters at speed. On the other hand, we are seeing a cohort of manufacturers who risk being left behind by not taking action when it comes to supply chain management.'*

The observation carries urgency when combined with the finding that *'over half (54%) of firms said greater visibility across the supply chain would help build greater supply chain resilience and over two-fifths (41%) of manufacturers said greater digital connectivity between all parties in the supply chain would do so.'*

Volatility is the new normal. We should expect it. But the survey reflects manufacturers optimism, who remain *'broadly confident their strategy will meet demand.'*

As proud sponsor of this research and of MakeUK events over the years, Infor is delighted to see the inclusion of a recommendation that *'Supply chain software management should be included in the Help to Grow: Digital scheme. The Help to Grow: Digital scheme was hoped to be a solution that would accelerate SME manufacturer's push to digitalisation.'*

We look forward to supporting Make UK and its membership in this and other ambitions.



Make UK is backing manufacturing – helping our sector to engineer a digital, global and green future. From the First Industrial Revolution to the emergence of the Fourth, the manufacturing sector has been the UK's economic engine and the world's workshop. The 20,000 manufacturers we represent have created the new technologies of today and are designing the innovations of tomorrow. By investing in their people, they continue to compete on a global stage, providing the solutions to the world's biggest challenges. Together, manufacturing is changing, adapting and transforming to meet the future needs of the UK economy. A forward-thinking, bold and versatile sector, manufacturers are engineering their own future.

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