Annual Manufacturing Report 2019

GAUGING THE MOOD OF UK MANUFACTURING

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Annual Manufacturing Report 2019

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Some of the photographs used in this report are by the winners of the 2018 Make UK Manufacturing Photography Competition, sponsored by Liberty House Group.

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Foreword

Welcome to the 2019 edition of the Annual Manufacturing Report, researched and delivered by *The Manufacturer*

A very warm welcome to *The Manufacturer's* Annual Manufacturing Report 2019. It would not be a stretch to say that at the time of writing (January 2019) the desire for a crystal ball has never been stronger. The lack of certainty in the UK economy is enough to embarrass a fortune teller. In the absence of any reliable means of prognostication, we must rely on the instincts of our readers to gauge how the next 12 months are going to go. We established this through a survey which was titled Gauging the Mood of UK Manufacturing, conducted in the last 6 weeks of 2018. I am sure you will have already guessed that the sector is feeling grim on the Brexit front thanks to a political class that appears to put national economic welfare after its own self-interest. (If I did have a reliable crystal ball I may be able to see that in fact the government is preparing to pull off a negotiating masterstroke of genius. I am not holding my breath.)

The dyspeptic mood towards Whitehall flows across the board, into attitudes towards policy on skills and training, particularly the Apprentice Levy, and to some extent into industrial strategy. It's understandable that those we surveyed would cut the government little slack on anything currently, but on industrial strategy we will jump to their defence. We have been following the challenge that government set industry in February 2017 in its outline industrial strategy, and watched as business leaders came together to formulate a strategy designed to better the entirety of UK manufacturing. Government has shown faith in that, and we applaud them for it. Our survey respondents are not in such generous mood, but we are confident that when results start to flow attitudes will soften.

We could not have produced this report without the extremely generous support of our sponsors PwC, Autodesk, Epicor and Board. Like anyone who works with the UK manufacturing sector, they recognise it, and appreciate it, for being a shining example of innovation, talent and drive. We are very grateful for the strong interest in the sector they display by supporting this report. They are good friends to manufacturers – and to *The Manufacturer* – so on their behalf and ours, we hope you enjoy reading it. Whatever may be coming down the track in 2019, we are going to need all the friends we can get.

NICK PETERS, EDITORIAL DIRECTOR
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Introduction

To the Annual Manufacturing Report 2019

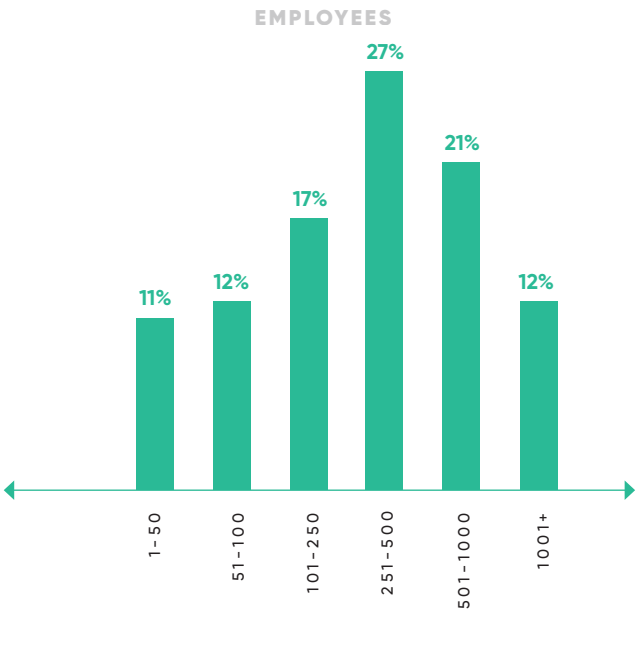
This report is based on a survey of manufacturers carried out by *The Manufacturer* magazine in November and December 2018 to determine how UK manufacturers feel about their lot over the coming year. We have been doing this for over 10 years now, as part of our service to the UK manufacturing sector.

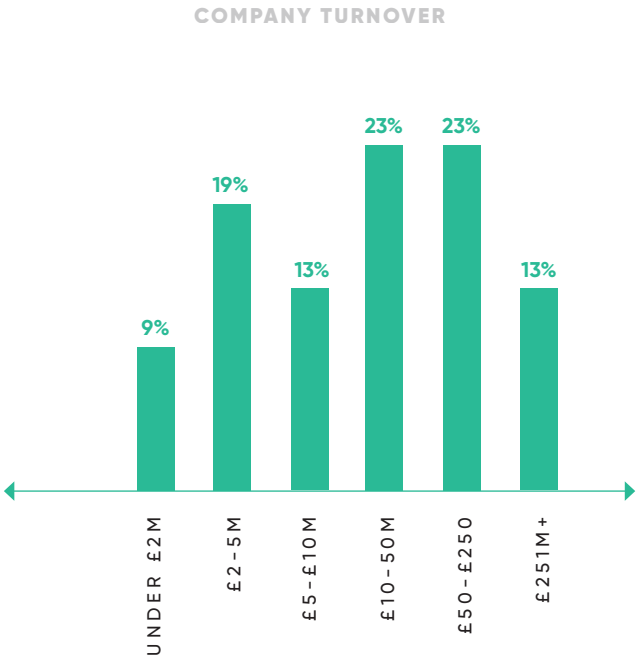
Methodology

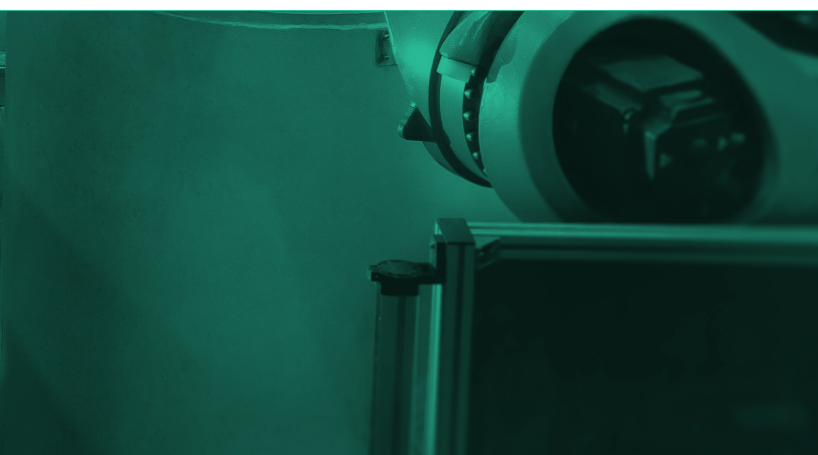
We asked survey respondents to choose between diametrically opposing points of view and then drew our conclusions from where they landed on a sliding scale. Therefore, when you look at the graphs in this report you will see for each issue two questions, positive (left) and negative (right), with the percentages each attracted. When referring to percentages 'for' or 'against', we aggregate the three either side of the middle line.

Due to rounding, not every graph will add up to 100%.

Also, you will see we have interviewed some of the respondents to put some rhetorical flesh on the statistical bones of their responses. We offered them the chance to be quoted anonymously, because otherwise we would only have been able to run quotes from people senior enough in their own companies to speak their minds on the record.







Niek Braam
8-axis Voortman V808 robotic thermal cutting machine, Leach Structural Steelwork, Preston.

SMART FACTORY

Huge potential, but clear strategy and strong leadership are required

Smart Factories encapsulate a range of transformational digital technologies that can help organisations improve efficiency, reduce cost or, in their widest application, create new business models that can drive competitive advantage.

By 2025, it's estimated that the global worth of Internet of Things technology will reach $6.2 trillion. So it's perhaps no surprise to see an increasing level of awareness among manufacturers in the Annual Manufacturing Report (AMR), with 74% of respondents accepting they'll need to adopt digital technologies in order to prosper.

The benefits these technologies offer are also well understood. In a 2017 report, the World Economic Forum identified a $100 trillion opportunity for both industry and society through the adoption of these technologies. The AMR indicates that the majority of respondents see the biggest benefits in improving design and production processes (77%) or in streamlining internal company processes (74%). Our own estimations show that Predictive Maintenance (one of the eight key technologies we consider necessary for organisations to become true digital champions) offers the potential to: increase machine life by 20-40%, reduce machine downtime by 30-50% and deliver 4-10% EBITDA margin improvements.

But there's still a gap between awareness and investment and implementation: the AMR shows one in four respondents currently have no digital plans while 26% have it on the radar but are unsure how to implement it.

This trend is also reflected in the recent PwC Digital Operations Survey which demonstrated only 1% of UK companies were digital champions, and UK manufacturers risk losing competitiveness and growing their digital products and services at a lower rate than global competitors.

So, aside from the obvious issue of investment, what's holding companies back from digital investment? The main blockers appear to be a lack of coherent digital strategies and the inability for organisations to understand what practical applications some of these technologies offer within their organisation. Indeed the Made Smarter Review, 2017, cites an inability to understand what 'good' looks like as one reason for low adoption rates among UK businesses.

For many organisations the adoption of these technologies involves breaking the traditional boundaries between the different functions, the recruitment of new skills and transforming activities into more flexible, continuous processes. If UK firms are to capitalise on the benefits of smart factories, a clear strategy and strong leadership from top management is vital.

But the tide is turning: this year's AMR shows a clear and growing understanding of the opportunities digital technologies offer, from enabling staff to work smarter and be more engaged through to enabling businesses to serve customers more effectively or open up new markets.

The UK has a tremendous platform to capitalise on these technologies, but adoption needs to be accelerated. It will require clear leadership and a desire and culture for organisations to be braver in disrupting their existing business models.

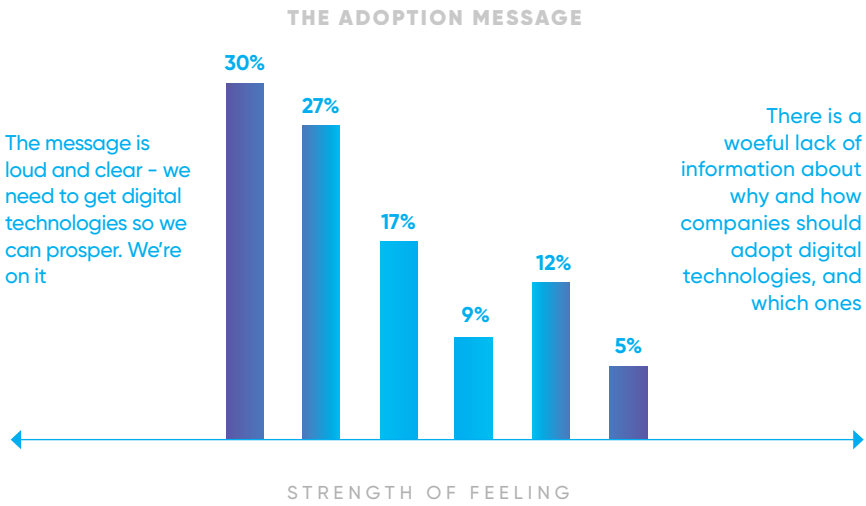
CARA HAFFEY
Industrial Manufacturing & Automotive Leader, PwC
cara.haffey@pwc.com
www.pwc.co.uk/manufacturing

Just to be clear about what we mean by 'Smart Factory': for the purposes of this report, we include what happens inside manufacturing plants, from production line through to office administration and HR, and what happens outside them, as in the supply chain and customer service.

Critically, we are dealing with the digital technologies that allow manufacturers to gather data from their operations, interpret it and ultimately predict with confidence events like machine health and output levels. This window into what is happening inside their plants can also be made (selectively) available to other members in their supply chain in order to provide instant tracking of goods in and out, and generate greater business confidence and resilience.

The official campaign for adoption of these technologies by UK manufacturers is an issue we examine in another section of this report 'Government Policy and Industrial Strategy'. Here we delve into manufacturers' thinking, positive and negative, around what these digital manufacturing technologies might mean to their business.

Broadly, it is notable how similar this year's survey results are compared with those detailed in the 2018 *Annual Manufacturing Report*. There is a strong bias towards agreeing with all the beneficial impacts these technologies offer, operationally and financially. Last year, 69% agreed with the adoption message, this year we see an encouraging rise to 74%.



The positive response is even higher when respondents were asked if the data from connected machines will improve decision-making and reduce costs – it is an incontrovertible 91%.
(See graph on next page)

"I have attended several different events that either focused on Industry 4.0, or it was an agenda item. At all of them, I felt the focus was on more developed companies who would find it easier to adopt the technologies and less so on smaller companies. I think more could be done to educate a wider range of businesses, with factual evidence, and let them make an educated decision on their digital strategy."

David Blagg, Head of Operations, Fenmarc www.fenmarc.com

SMART FACTORY TECHNOLOGIES WILL BE USED TO

- **77%** Improve design and production processes
- **74%** Streamline internal company processes from shop floor to admin
- **42%** Communicate better with our supply chain
- **40%** Deliver a better customer purchasing experience
- **32%** Deliver a better customer field service experience for the customer

"The UK has a tremendous platform to capitalise on these technologies, but adoption needs to be accelerated. It will require clear leadership and a desire and culture for organisations to be braver in disrupting their existing business models."

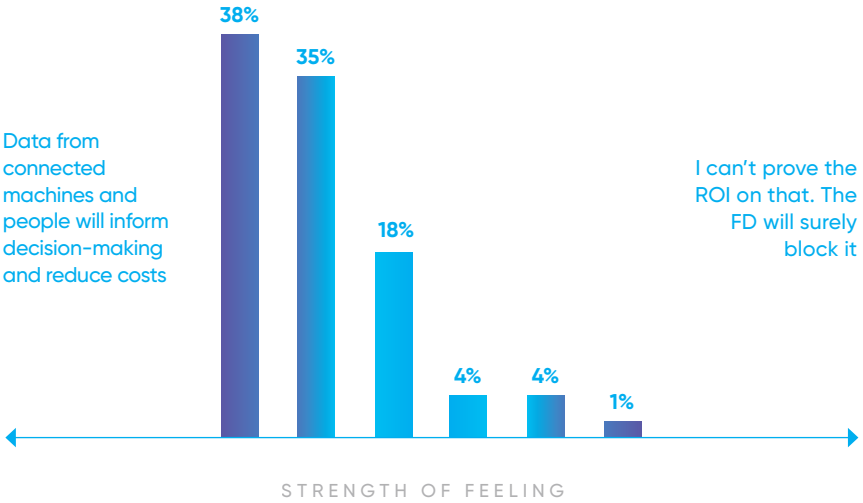
CARA HAFFEY
Industrial Manufacturing & Automotive Leader
PwC

OUR PLACE ON THE ADOPTION JOURNEY

- **27%** Currently we have no plans. It is not on our radar
- **26%** It is on our radar, but we are unsure about how to implement it
- **23%** We have adopted smart factory technologies but only for standalone projects
- **15%** Digital technologies are widespread in the company, with key functions integrated
- **2%** Our entire factory, from workforce management to production and supply chain, is digitised
- **7%** Other

> There is a lot of nonsense spoken about digital technologies and the Fourth Industrial Revolution. Training is probably more important to a business such as Penny Hydraulics and change is something that happens every day in most businesses. A major investment was made in automated design that was backed by a firm business case showing that it would generate many times its £100k up front cost. These decisions have to be based on facts not from following trends.
> *Robin Penn, MD, Penny Hydraulics www.pennyhydraulics.com*

DIGITALISATION ROI



And yet as the figures on the centre of this page demonstrate, over 50% of those surveyed either have no plans to implement them or are not sure why they should. Or are not even sure what we are talking about.

Some individual responses:

"Not sure what you mean by digital smart factory technologies. We have an ERP system and we have CNC/robotic machinery."

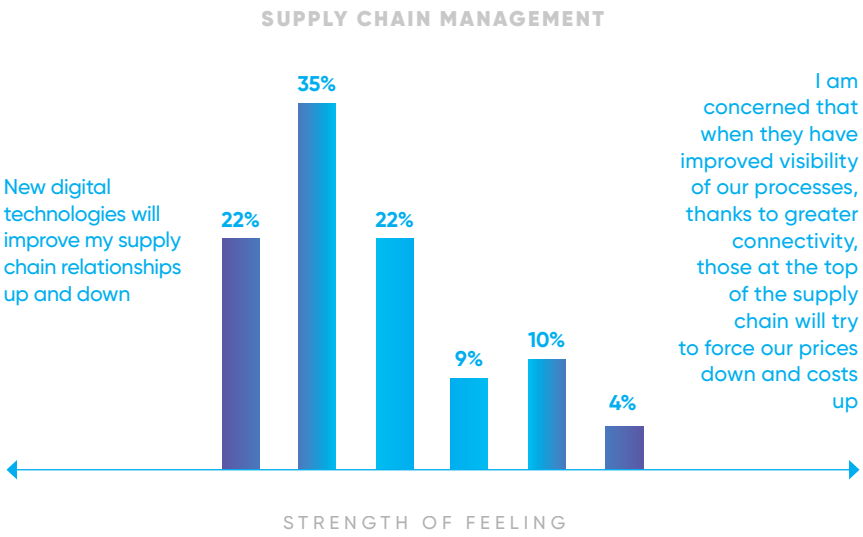
"We are too small for it to be cost-effective."

"It is an area that we discuss with clients in the SME sector and is something that many SMEs have vaguely on their radar but have no immediate plans to implement."

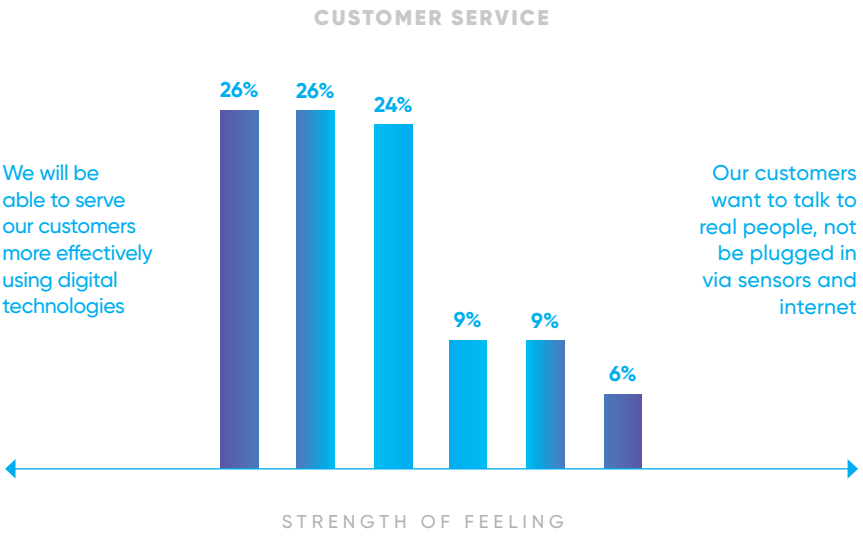
"I am not sure what digital smart factory technology is."

Obviously, there is a gap in understanding if a manufacturer who has an ERP system and deploys CNC/robotic machinery is not aware they are already deploying digital smart factory technologies. Perhaps it is the fault of us in the media, of technology vendors and advocates such as the Catapults and the Made Smarter Commission that we tend to use portfolio language like 'Industry 4.0', '4IR', and 'digital manufacturing technologies' without stopping to consider whether everyone is on the same page as us. That would seem to demand more clarity, more understanding and more patience in the way we talk about them.

There has been some discussion among SMEs whether the kind of transparency that a connected supply chain offers between all its members might be of questionable value, if it means larger companies up the chain have visibility of input pricing and thereby are able to squeeze smaller companies' margins. The following graph suggests such fears are overblown. While we did not specifically test for this, the culture in manufacturing appears to be becoming more collegial and collaborative as manufacturers of all sizes realise that the zero-sum games of the past can't work in the digital age.



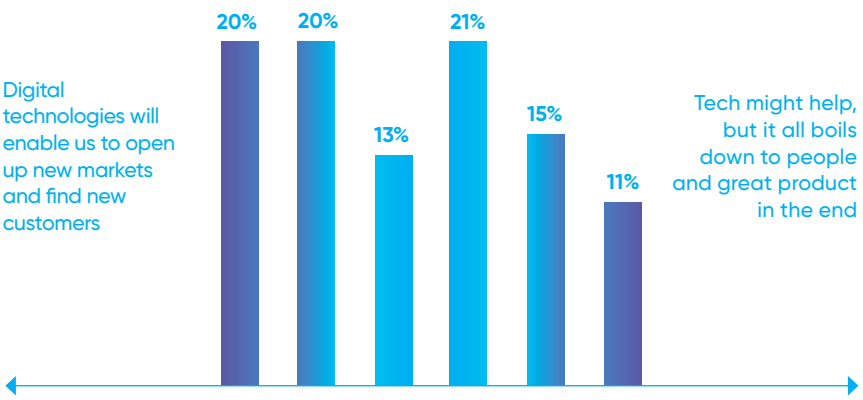
In the old days, supply chains were linear – a company only ever saw its suppliers and its immediate customer. The digital supply chain is in 3D, allowing visibility and communications between all parties. It is a place for farmers, not hunters.



The ability of digitally-connected companies to service their customers better is of significant importance. Digital technologies driving modern manufacturing machinery allows for mass customisation, or the 'customer of one' as it is also known. Carmakers can claim to have been in that game for many years, but only in the sense of aggregating customer-unique assemblies from a set of parts. Modern customisation is of a different order, allowing even small companies to serve a wide variety of customer demands on the production line.

Given that 76% of respondents agreed that digital technologies improve customer service, it is slightly surprising that only 53% believe they can open up new markets and find new customers.

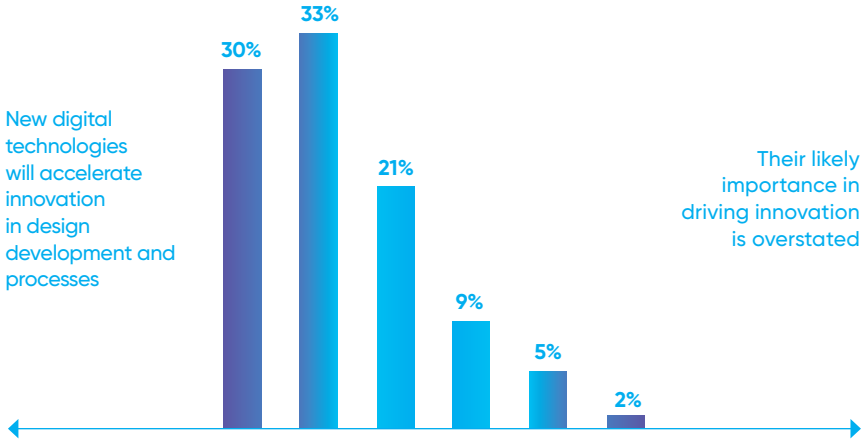
BUSINESS ENABLER



STRENGTH OF FEELING

This compares with 68% who responded positively last year. We judge this gap to be a case of some companies either not yet understanding how digital technologies can become a powerful enabler across the whole range of business - not just in terms of production and the supply chain - or again, are not clear about how to make it happen.

INNOVATION DRIVERS

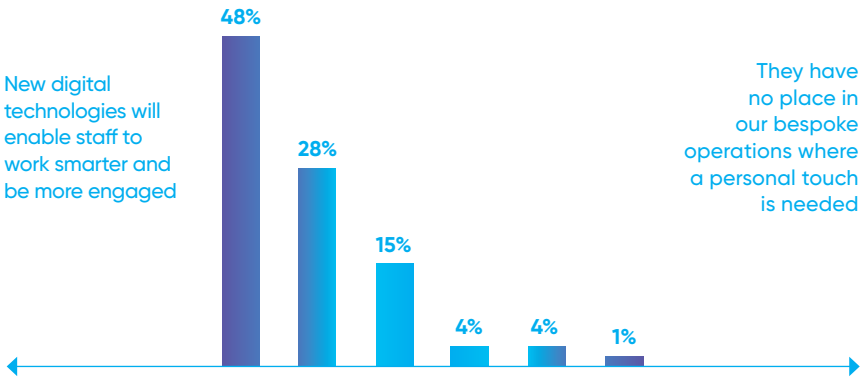


STRENGTH OF FEELING

What they do understand is the power of these technologies to accelerate innovation cycles and improve the efficiency of manufacturing processes.

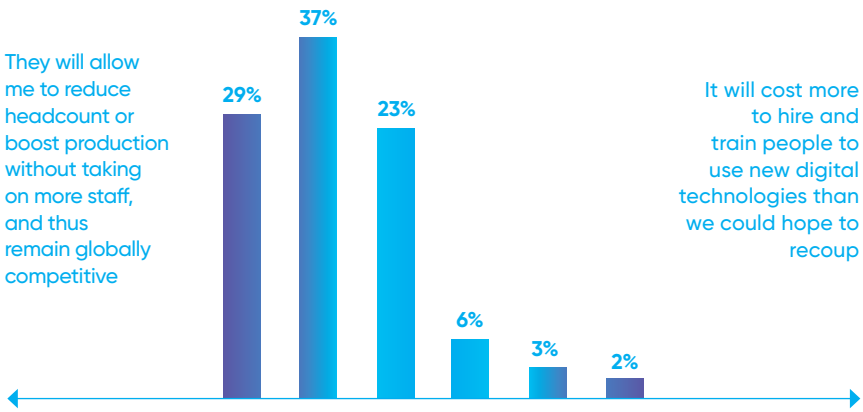
> We have seen the benefits of being early adopters, reducing electricity costs, labour costs per unit and able to take on work competing with much larger companies. Innovation means we can create new products and secure work, in the UK and for export, that could not be done without the new technology. As the rate of change for automation and robotics is now developing rapidly along with digitalisation, waiting is no longer an option.
> *Richard Hagan, Managing Director, Crystal Doors www.crystaldoors.co.uk*

WORKFORCE ENGAGEMENT



Respondents were also overwhelmingly of the belief – 91% - that the workforce becomes much more engaged when they can work smarter, working alongside machines rather than operating them.

IMPACT ON JOBS



From the dawning of the Fourth Industrial Revolution, the ultimate scare story has been that automation means the manufacturing workforce will be slashed. While some parts of manufacturing have been able to achieve close to 100% automation in some processes, our experience is that companies prefer to hang onto the employees displaced by automation and retrain them for more value-added tasks. Of our respondents, 89% agreed that while greater automation means they could cut headcount, digitalisation will actually allow them to do more with the same number of people. In other words, to become more productive.

The message that digitalisation leads to efficiency improvement across the board, from the production line through the workforce, supply chain and customer service appears to have been received loud and clear, but much work remains to be done by vendors and by the Made Smarter Commission to achieve a breakthrough in communicating to manufacturers how best they can embark on their digital journeys.

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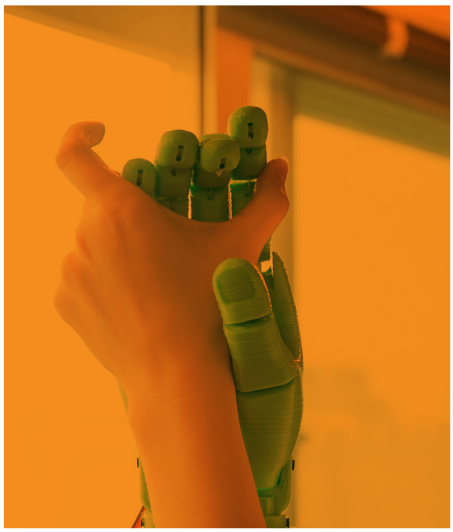

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Siobhan Lock
Network of ducts around the outside of the boiler at Margam Green Energy in Port Talbot

GOVERNMENT POLICY & INDUSTRIAL STRATEGY

Digital Manufacturing Week 2019

Liverpool, 12-15 November

Faith in government policy is weak but sector resilience solid

What to make of the year ahead? Companies say they are considering leaving the UK, others have. Some, like Nissan in Sunderland, have cancelled planned investment, citing adverse market attitudes to diesels, but making clear that Brexit contributed to their decision. As a snapshot of what is happening in the manufacturing sector as we publish this report, it's pretty grim, before one even mentions the tortuous EU negotiations and the Conservative party's internal machinations over Brexit.

All of this means manufacturers are significantly gloomier than they were this time last year, and who can blame them? Inevitably, their blame attaches to the government for turning the most significant event in post-war UK history into a suspense thriller that even Alfred Hitchcock would have regarded as far-fetched. We share that sentiment. History will no doubt help us understand the subtleties of what is going on in Whitehall, if subtleties there are, but right now it looks as if the health of our sector is under threat.

A heavy preponderance of manufacturers say their strategic planning is being put at risk, and a significant majority believes manufacturing will be plunged into chaos by Brexit. Of course we cannot know what will happen post-29 March, which is precisely the problem: no one knows. This lack of clarity and certainty, created by the seemingly circular conversation with Brussels, is informing attitudes to the government's Industrial Strategy, made manifest in the Made Smarter Commission and the North West Pilot.

Manufacturers say they are highly sceptical about government's stated good intentions towards the sector, and while we understand why, in light of the Brexit crisis, they might say that, we take a more positive view. Those with long enough memories will know that industrial strategy of old was run by ministers and civil servants. The age of 'picking winners', which inevitably turned into losers, gave it all a bad name. This industrial strategy is business-led and is not about picking winners but enabling companies to become winners if they wish to take advantage of the support, financial and advisory, that the Made Smarter Commission will make available. It has only just got underway with the £20m North West Pilot gearing up to prove the case for embracing new data-driven technologies. Manufacturers do accept the case for adopting these technologies, but there is still confusion out there. It will be interesting to see how the Commission address that. As the previous section notes, some companies have adopted digital technologies without knowing it, because for them the conversation is remote and out of touch.

But perhaps the statistic we should take most comfort from is the overwhelming belief among manufacturers that we have the drive to succeed as a nation. That self-belief should serve us well in the year ahead.

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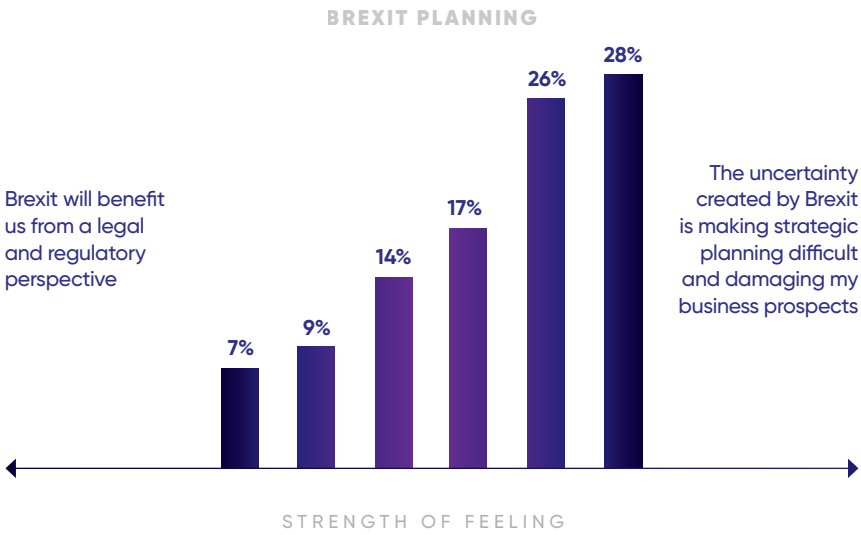
Two issues dominate this part of the report: Brexit, and the realisation of the government's Industrial Strategy for manufacturing, in the form of the Made Smarter Commission and its first major initiative, the £20m North West Pilot, which was unveiled at our *Digital Manufacturing Week* in Liverpool last November. What we wanted to discover was the extent to which manufacturers are prepared for Brexit, in whatever form it materialises (this was written in January 2019), and the extent to which the government is achieving cut-through with its core message to manufacturers which is, very bluntly, digitalise or decline.

In many respects, the two issues overlap significantly. Adopting digital technologies takes investment, and as night follows day, pushing the investment button is a tough call when staring into the abyss of uncertainty that Brexit represents. Playdale Playgrounds have been making playground equipment in Cumbria for 40 years, for the UK and global market. They have heard the digitalisation message loud and clear and want to go ahead, but as Paul Mallinson, Playdale's Technical & Operations Director told us, "We have reasonably good clarity in terms of what and how we could do it (digitalise) but uncertainty coming from Brexit is preventing us from fully pursuing the plan due to funding, and the risk of needing those funds to cope with the impact of Brexit."



Arguably, the government has played a dangerous game with business. They always refused to take No Deal off the table in order not to weaken their negotiating hand, but did very little to prepare the country for it, perhaps because fundamentally they never intended it to actually happen. Businesses have been left in a quandary - do we spend money preparing for the worst, or do we trust that a deal will be done? Neither they, nor the government, have factored in that it could happen by accident. This accounts for the deepening gloom we see reflected in our survey, conducted at the end of 2018, as it became obvious that time was running low.

> "Small businesses like mine who rely on an EU supply chain can't afford the added bureaucracy that is currently threatening to crash down on us. Post-Brexit, we face a triple blow of higher import costs, added paperwork, and a likely recession. The Conservative Party have given up being the party of business, while the Opposition show no interest in taking up that baton. With the ERG and Corbyn consolidating power within their respective parties, and until business owners flood the membership of either, this isn't likely to change anytime soon."
>
> *Oliver Nissen, Director, Cumbric Limited*

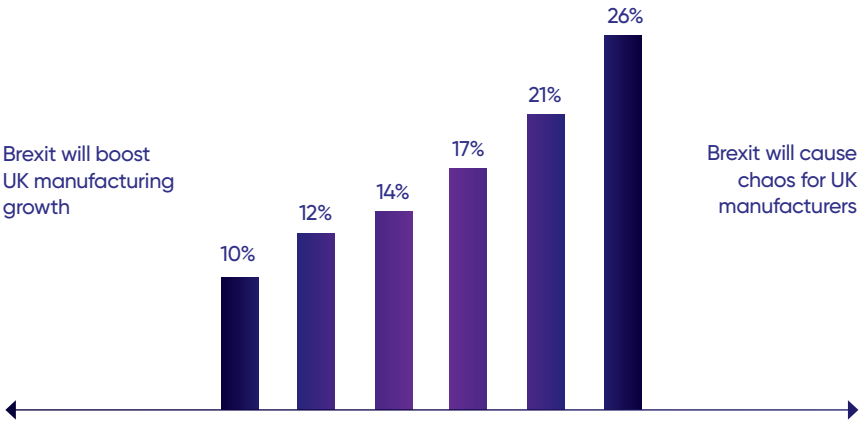
71%

said Brexit uncertainty is damaging strategic planning and business prospects

64%

said Brexit will cause chaos for manufacturers

BREXIT OUTLOOK

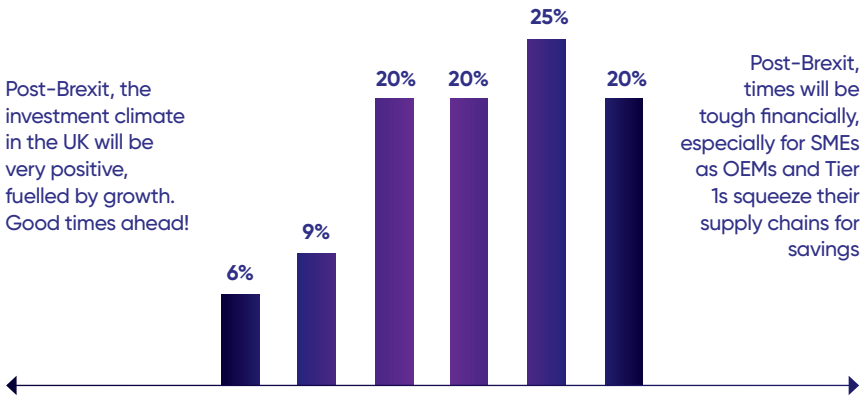


STRENGTH OF FEELING

This time last year, 54% of respondents said Brexit will cause chaos for UK manufacturing. Today, that figure has shot up to 64%. It is intriguing that 36% therefore believe the counter argument, that Brexit will boost growth. Manufacturers are voters too and some will inevitably feel the UK can successfully navigate a future outside the EU.

This picture is reflected in the next graph where respondents were asked to consider what doing business would be like post-Brexit, particularly when it comes to investment and supply chain relationships. Sixty-five per cent believe SMEs will suffer disproportionately, with 35% believing that growth and investment will be on an upswing.

BREXIT OUTCOMES

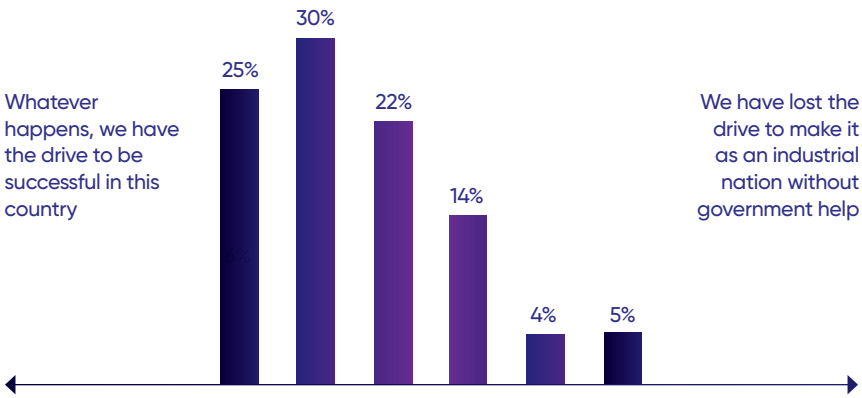


STRENGTH OF FEELING

What does give pause is that the 65% who fear for hard times post-Brexit are responding specifically to a statement that suggests stronger companies will survive by squeezing the weak. Arguably that happens all the time, perhaps through unfairly extended payment terms, and that is why smaller companies display such vulnerability. Countering that is an emerging picture in the sector of supply chains becoming more collaborative as they become more digitally connected. Ultimately nobody wins when business is carried on in an atmosphere of winners and losers.

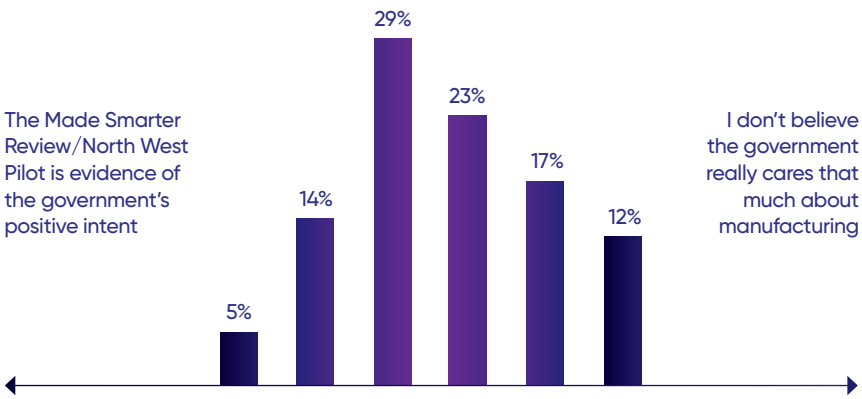
Much more positive is manufacturers' opinion of their own resilience. Of course, nobody likes to admit they don't have the Bulldog Spirit, but it is good to see that even if times do get tougher, a hefty 77% say there is a strong drive for success in this country, that they can be the architects of their own success without knocking on government's door asking for help. That said, at this time last year, that figure was 83%. We suspect no one will be surprised that this otherwise positive sentiment has taken a knock over the last year.

THE UK - DRIVEN



On the issue of industrial strategy, manufacturers appear evenly split. Perhaps some of the sourness over Brexit is making itself felt, but 52% believe the government doesn't really care that much about the sector, with 48% believing that the Made Smarter Commission and the North West Pilot are evidence of solid government intent. Of those, only 5% are fully supportive with many more hovering close to scepticism.

GOVERNMENT INTENT



Maybe the picture will change when the Industrial Strategy's good intentions are backed up by solid evidence of companies doing better as a result of acting on the advice and assistance they receive. In our own continuing conversation with UK manufacturers, it is clear there are broadly two types when it comes to issues like this. There are those who prefer caution over risk, to learn from other companies' mistakes. And then there are those early adopters who may make those mistakes, but also know that they are most likely to gain first-mover advantage.

77%

said that, whatever happens, we have the drive to succeed as an industrial nation

52%

said they don't believe government cares that much for manufacturing

For instance, we asked a more direct question about the Made Smarter strategy of promoting digitalisation, and again received a very guarded response.

The fact that the Made Smarter Commission, which will channel significant government funding and business support for manufacturing, attracts such lukewarm support should not come as too much of a surprise, disappointing though it might be to all in business and government who have worked so hard to make it a reality. Government industrial policy over recent decades has been very patchy, if it has existed at all. Manufacturers have a right to be sceptical of this new iteration and await the evidence. Plus, we are testing the waters at the start of a process not the end of it.

That said, at *The Manufacturer* we consider this government's industrial policy to be a very significant improvement across the board on what went before. It has taken the best of previous policies, particularly the Catapults initiative, and then encouraged business to make the running, via the Made Smarter Review, and now the Made Smarter Commission. The first pilot project is underway in the North West, helping smaller manufacturers transition into a digital manufacturing future. We trust that this time next year we will be able to present a more positive reaction from our audience.

> “
>
> No-one can predict the outcome of Brexit, so I would expect the government to provide businesses with three potential scenarios with their best practice advice on what businesses should be doing now in order to prepare as best as possible for each one. The large companies will probably have the resources to plan and manage this, but the smaller companies are also vital to the UK economy - the better we are all prepared, the more we can reduce the impact of Brexit.
>
> If this was a potential war, would the army generals sit back and say let's wait and see what happens? Of course not! They would be positioning their troops and making their plans to be ready to counter any attack, wherever it may come from. Small businesses are the foot soldiers – absolutely essential to success. We don't need to know the high-level thinking – what we need is practical help in getting us ready for the fight!
>
> *Andrew Bennett, Managing Director, Allan + Bertram*
> *www.allanandbertram.com*
>
> ”

Steve McLellan
Jacking pipes, Naylor Drainage

SKILLS & TRAINING

AUTODESK.

Recruiting for the skills we need today – and the ones we will need tomorrow

Manufacturing employers are hungry for engineers with the skills to satisfy current requirements, but often complain of university graduates or apprentices that come to them unable to perform certain essential tasks. We recognise the importance of meeting this demand more efficiently, but is this yet another symptom of the industry trying harder to meet demand as opposed to trying to be 'smarter'? We'd also question the long-term viability of a workforce trained to only solve yesterday's problems.

We believe Britain must equip its workforce with a broader range of skills, earlier, and empower them to identify and add to their skills as their careers develop.

For example:

- Applying 'design thinking' and greater interpersonal skills to traditional problems
- Identifying and using the right digital tools to research and collaboratively design smart, connected products that can be made using a hybrid of manufacturing techniques
- The ability to continually research, absorb and apply new skills and technologies to the constant mix of challenges and opportunities that manufacturers face daily
- Leveraging social platforms and coding skills to connect with customers directly and change the experience of buying, owning and operating products

The majority of the current apprenticeship frameworks reference out-of-date skills and lack the real-world experience that employers seek. Thankfully, these issues are now being addressed by organisations like the Institute for Apprenticeships & Technical Education (IfATE) but any interventions must balance the skills of today against the skills of the future, a lot of which are actually unknown, but that should not stop us moving forwards.

A number of universities and apprentice centres such as Imperial College London and the Institute for Advanced Manufacturing and Engineering at Coventry University (IfAME)[1] produce high calibre, industry-ready graduates that possess the right blend of skills with real world experience. Such lighthouse models need to be studied and replicated. For example, a student from Imperial College London recently supported an SME in reducing a traditional process of creating custom foam inserts for bespoke protective cases down from 180 minutes to just 15. When placed inside traditional environments, such individuals act as "Digital Catalysts" establishing co-mentoring relationships with existing staff, absorbing their experience, challenging tradition and bringing a fresh, digital perspective to the situation. This establishes a natural upskilling environment at significantly lower levels of investment than current alternatives.

If we are to crack this issue, then two things must happen.

Firstly, we ourselves must step outside of tradition, stop focusing on the problem and explore new ways of bringing these new skills into our businesses. That's our responsibility.

Secondly, huge simplification is needed, as referenced by Lord Sainsbury in his 'Post-16 Skills plan and independent report on technical education'[2]. That's the government's responsibility.

As the survey results on the next few pages demonstrate, the issue of skills and training is front and centre of the manufacturing sector's concerns right now. It is vital that solutions proposed by policymakers dovetail not only with manufacturers' needs today, but with what they will need tomorrow.

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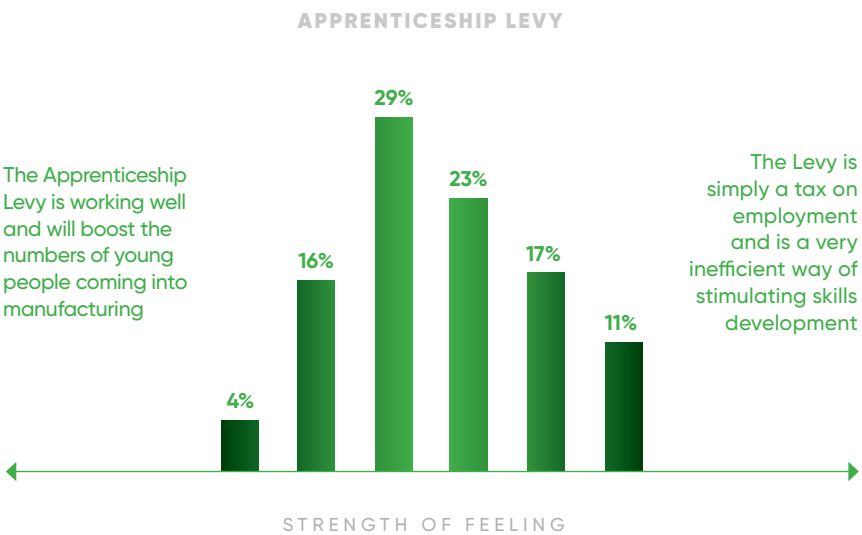
[1] *www.coventry.ac.uk/ame*

[2] *www.gov.uk/government/publications/post-16-skills-plan-and-independent-report-on-technical-education*

At *The Manufacturer* there is a standing joke that whenever two or more manufacturers are gathered together, it takes barely any time at all before they start bemoaning the skills gap, the recruitment crisis and that 'nobody understands the sector anymore. They hardly know we exist.'

Joke or not, the truth is that skills and recruitment represent the most pressing item on most manufacturers' agenda. We effectively lost a generation of manufacturers after the de-industrialisation of the 70s and 80s. Manufacturing retreated into the shadows as successive governments fixed all their attention on services, particularly finance. Parents and grandparents, whose only experience of manufacturing was that it was dirty, a 'second best career option', agreed with government that the only way forward for a young person was a degree, and steered their offspring away from manufacturing and all the trades that make it happen.

Today, the government is trying to row back from the damage they caused with the Apprenticeship Levy, by which companies with payrolls in excess of £3m annually pay into a fund from which all companies can then draw to fund their training. There was a precipitous fall-off in apprenticeship uptake in 2018 as companies steered clear of a clumsy process and then started complaining that the Levy was more of a tax.



More support the Levy this year, 49%, than last year, 40%, although only a derisory 4% are wholeheartedly in favour. Hardly a ringing endorsement of a flagship policy.

That said, manufacturers appear to be encouraged by the revival of apprenticeships over the last few years, even if 28% believe the system is expensive, confusing and tilted too far to the benefit of larger companies.

> "The experience that we've had with the apprentice scheme is that, even with financial assistance, it costs the business a significant amount to have apprentices on the apprentice system. This is because they spend a lot of time at college and not on the shop floor, and also because the skills they learn at college are not directly useful on our shop floor, so we have to effectively train them again to get the most from them. On top of this, some apprentices want experience at another workplace when they've finished their apprenticeship. Many leave once they are qualified. As an aside, this used to help us as an SME as we would pick up the apprentices from the big companies nearby when they were looking to move."
> *Business Development Manager, metalworking company*

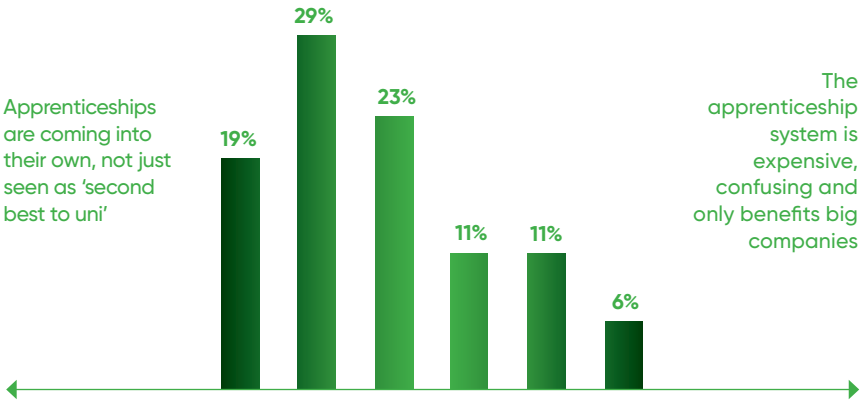
51%

believe the Apprenticeship Levy is a tax on employment and is inefficient at driving apprenticeships

57%

said the education system is a disaster for industry; it needs a total overhaul

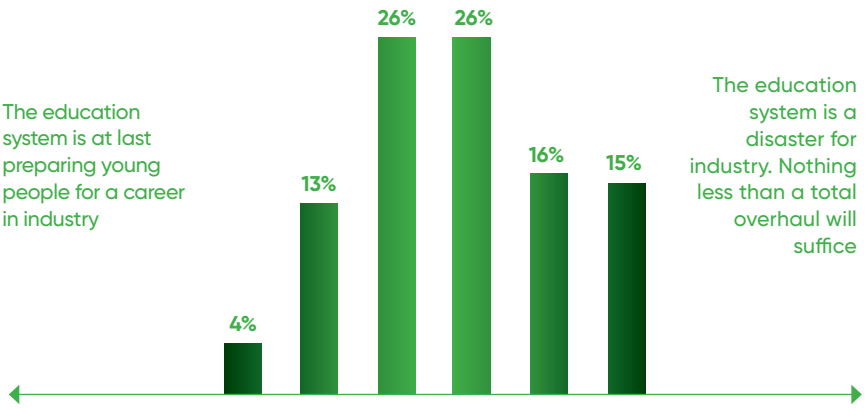
APPRENTICESHIPS ADVANCE



STRENGTH OF FEELING

Everything stems from the education system and whether it is doing right by manufacturing. Given the slowness of the system to adapt – which is inevitable, given its size and how policy changes can take years to implement – it is perhaps understandable that only 43%, the same number this year as last, think it is doing a good job.

EDUCATION IN THE UK

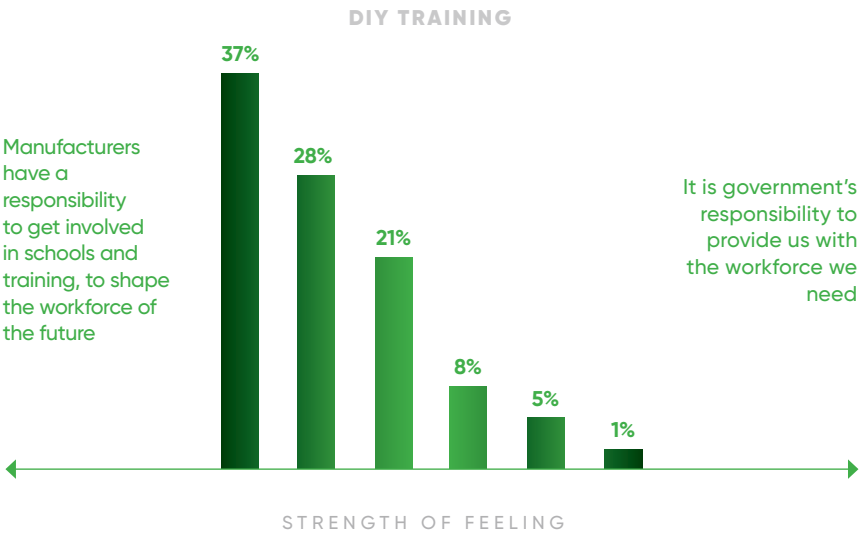


STRENGTH OF FEELING

It is not just schools, of course, that are involved in apprenticeships. Further Education colleges provide the classroom learning that is a critical part of the process. Not everyone finds it a good experience.

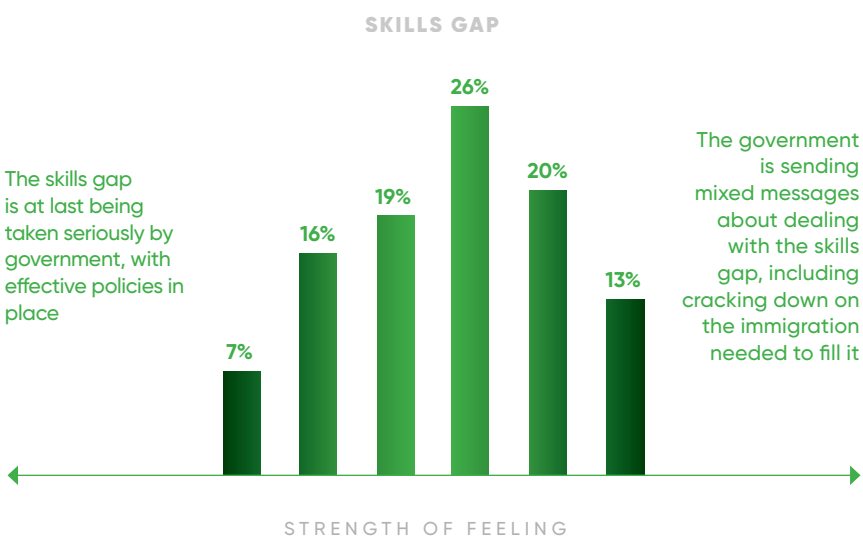
> Our experience of developing our team through our local college has been enormously disappointing. It would seem that their ability to attract and retain teachers and lecturers is particularly poor, to the point where they are now trying to recruit from the apprentice student base. Poaching from the companies that they are here to support surely cannot be a solution, and by all accounts ours is not a unique case. *Laura McBrown, Managing Director, G&B Electronic Designs www.gandbelectronics.co.uk*

Perhaps inevitably, more and more companies are starting their own training centres, either on their own if they are big enough, or in collaboration with other local companies. "We prefer to train our own juniors in-house, outside of the official apprentice scheme," said the executive from the metalworking company quoted earlier. "We can teach them the specifics of our shop floor, they are working on our shop floor all the time while learning, and they seem to come out the other end with more loyalty to the company and its people."



We also asked if it was government's job to provide manufacturers with a trained workforce. Only 15% said yes, which is surprising in the context of the next question. Perhaps they felt it should not have been an either/or question, and felt more strongly about manufacturers stepping in where government appears not to have succeeded.

That would explain why, when given the choice, the majority of companies say the government is not addressing the skills gap properly.



71%

believe apprenticeships are developing into a proper alternative to higher education for school leavers

66%

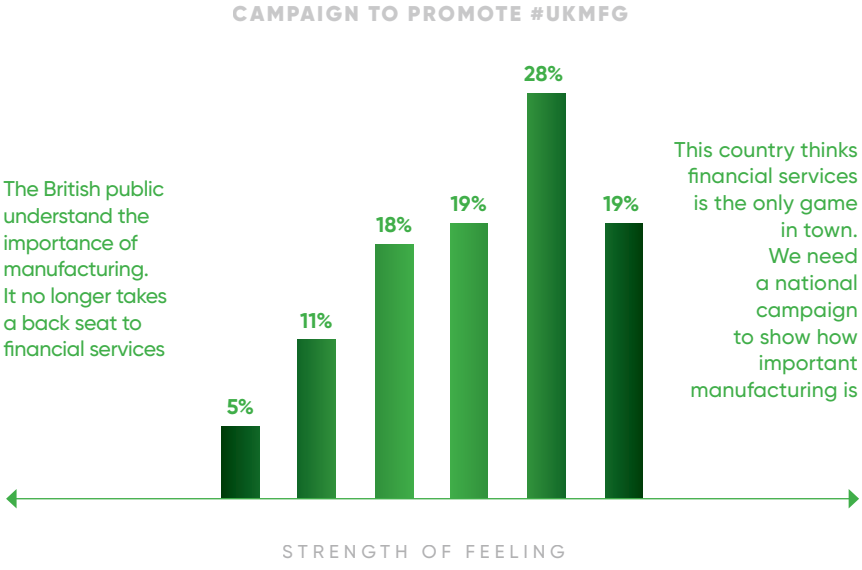
said the British people do not understand the importance of manufacturing to the economy. We need a national campaign of education.

> Investment in training in digital technologies is still being discussed and not acted upon. Funding for such activities has come via such routes as the European Regional Development Fund. That is now uncertain – what happens after 29 March?
>
> Industry needs to engage with young people – but the public still do not see engineering as the rewarding and essential profession that other countries such as Germany do. Nor do they understand how jobs in manufacturing impact on jobs in other sectors. A typical aerospace facility generates four jobs in the supply chain for each job in the main company. These five highly paid individuals support two more jobs in the community (pubs, restaurants and retail for instance.) Therefore each job in an aero/auto giant generates five or six more around the facility. For proof just look at the mining and steel communities and the subsequent effect on the towns and villages that relied upon them when the pits or foundries closed. *Executive, global engineering company*

This negative response of 59% compares with 53% in 2018, which should alarm policymakers. Time is not on our side. With every year, more experienced workers retire, and there are too few coming behind them to take their place.

It even applies to Brexit, because so many jobs in this country have been filled by workers from the continental EU. It is more than apparent from the formation of government policy around Brexit that priority has been given to putting up barriers to immigration first, then worrying about how to provide manufacturing (and other sectors of the economy) with the workers they have relied on.

These comments underscore what many companies, individuals and associations have long said: that there needs to be a campaign to tell people in the UK just how important manufacturing is to our nation.



It is a cry as common as the need for action on skills and training, but those voices who are trying to spread the good news about manufacturing are failing to achieve cut-through. Something has to happen soon: the skills gap won't fill itself.

Andy Newman
Welding, Griffon Hoverworks

GROWTH & EXPORTS

EPICOR

grow business not software

Business growth stems from having the right technology and the right attitude

A profound digital transformation is currently shaping the future of global manufacturing. As with any transformation, the opportunities for growth are enormous - but so are the challenges. Whilst a general optimism and confidence around the UK sector prevails, we are certainly in unchartered waters. Those manufacturers who will thrive over the coming years are, in our view, those who prepare themselves to not only be agile in terms of being able to take advantage of opportunities and cope with the challenges, but those who have a robust growth strategy built on solid foundations.

Positioning your business for growth means looking to the future and adopting new methodologies, all of which should be underpinned by new technologies. Unless you have real-time visibility and insight into your business, you can't make the necessary decisions to drive that growth trajectory. Increasingly more of the data informing your decisions will come from embedded analytics and connected devices, so it is paramount that manufacturers have a modern enterprise resource planning (ERP) foundation to support the innovative technologies which enable real-time reporting, analytics, automation and the Internet of Things. Forty years of working with UK manufacturers have given us key insights into the key focus areas for growth.

Ensure and increase profitability

If your business's data isn't useful, visible and accessible 24/7, you're working blind. Data analytics and business intelligence tools are helping even the smallest companies gain advantage and boost profitability. A must-have investment is real-time visibility.

Drive productivity up and costs down

Reduce the rate of rework and quality mistakes, remove a time-wasting step in your process, and give people the tools and training they need to achieve "wins". Modern technology not only supports staff today but helps attract much needed talent into our sector.

Open new opportunities for growth

Add new services and products and explore new segments and geographic areas. Having the right systems in place to prosper in new markets is of paramount importance, so ensure your technology provider can support your plans.

Leverage Cloud technology for growth

Allow for better connectedness with the Cloud. Hardware and software upgrades will become easier, and extensibilities will allow users to more easily tap into modern technologies as they become mainstream.

Connected factories with devices that gather data, self-monitor, and report performance; machines that collect information that can be analysed and made actionable autonomously; and factory workers with wearable technology and mobile devices, making them more productive and efficient - all exist already, and are driving competitive edge.

Epicor technology is developed specifically for manufacturing. As a technology partner that developed its technology precisely to support the manufacturing sector, we are best placed to support your plans and give you the confidence to grow.

MARK HUGHES
Regional Vice President UK & Ireland
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To state the obvious, without growth companies decline. Growth is not a nice-to-have, it is a must-have. The need for growth in manufacturers' product ranges, in sales, in productivity, in market share, in exports is relentless. It is a litany of pressures that keep business owners and senior executives up at night.

We focus on growth in this section, but in truth every other section of this report features an aspect of business that affects growth: there is Brexit, of course; access to finance for investment; skilled staff and how to recruit them; the digital smart factory technologies that can exponentially increase productivity. They all play a part, so in this section of the survey we gauged mood and ambition, to see if UK manufacturers still have a tiger in their tank after a couple of years of profound uncertainty over Brexit and yo-yo exchange rates.

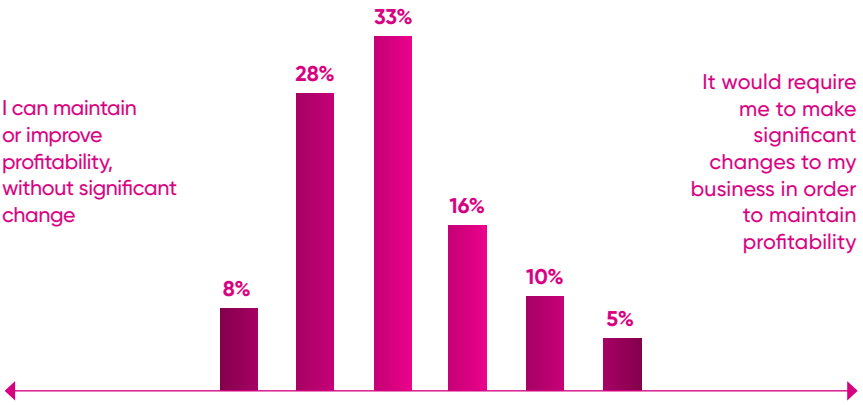
A further factor is the drag on growth created by regulation. According to a recent report by the FSB and the Centre for Economics and Business Research (Cebr), the cost of government regulation has hit manufacturers particularly hard. Between 2011 and 2017 costs attributed to government regulation and policy rose by 19%, on average £60,000, nearly all that in 2016 and 2017. These are costs associated with statutory wage levels, pension auto-enrolment, and tax compliance. And they all have to be paid before a penny is made in profit. It perhaps explains why last year the UK dropped from the 4th best country in the world to run a business to 9th (World Bank.) (That is still better than all other EU nations, by the way.)

This April promises more regulatory drag, including Making Tax Digital, a higher living wage, rising employer auto-enrolment contributions and further business rates hikes. The FSB says, "This will be a flashpoint for a lot of businesses, one which could threaten the futures of many." And then there's Brexit. So how do our respondents feel about the immediate future? Given all of the above, they appear fairly resilient.

Only 13% say they are super-confident they know how to grow their business, but with the next two levels of confidence standing at 37% and 29%, we can say with some certainty that the majority of UK manufacturers are feeling confident. Yes, 21% are on the negative side of that graph, but not every company feels like a champion, and probably cannot see where growth is coming from. These are companies who would benefit from an organisation such as the Manufacturing Advisory Service, part of Business Growth Services, whose demise in 2015 following a government spending cut was much-lamented by manufacturers who had benefitted from its services. The gap has not been filled by the private sector, despite the Treasury's hopes.

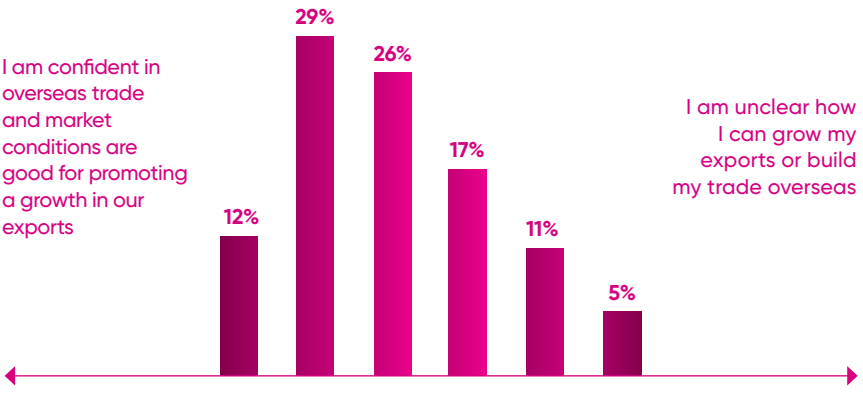
A report in *The Manufacturer* on a gathering of SME manufacturers to discuss growth reported: Several of the businesses highlighted positive experiences of working with the Manufacturing Advisory Service, prior to it being unceremoniously wound up, and more recently, the Manufacturing Growth Programme delivered by Economic Growth Solutions, which works via LEPs and receives £10m funding from the European Regional Development Fund. (Post 29 March, who knows?) One leader noted that the support offered by the Department for International Trade had been largely stripped back, and "they don't have the funds to help reduce the risk or outlay of attending an international trade show."

STEADY AS SHE GOES...?

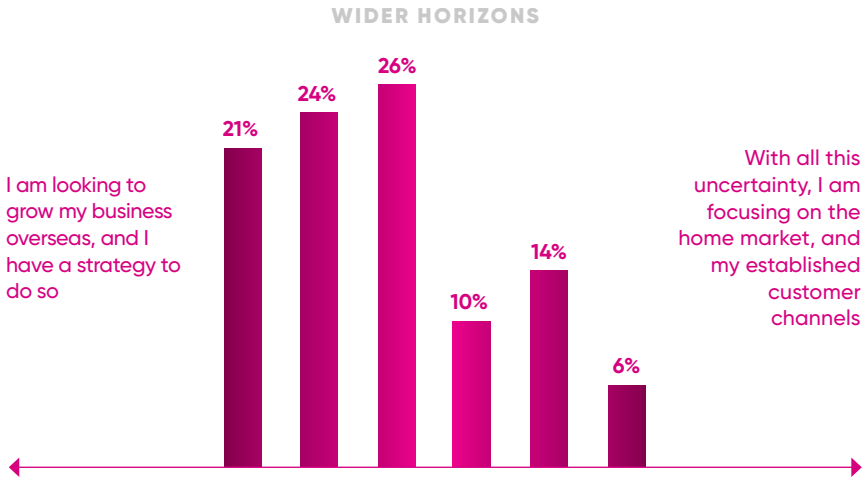


When asked if their companies had a growth path baked into their existing processes, the positive figure is 69%, again with the super-confident quite low at just 8%. At a time (January 2019, Brexit looming) when a pall of doom seems to hang over UK businesses, it is good to see such resilience. Perhaps it is a coincidence, but virtually the same level of confidence is demonstrated when asked about exports - 67% positive - the obvious inference being that companies regard conditions for exporting as good. At a time when we are inevitably concerned about the future trading relationship with the EU, it is worth remembering that a great many companies export outside the EU, accounting for 52% of our exports. (ONS, 2016.) Translate that into the direct question of whether manufacturers are actively seeking new markets, and that positive figure increases to an encouraging 71%.

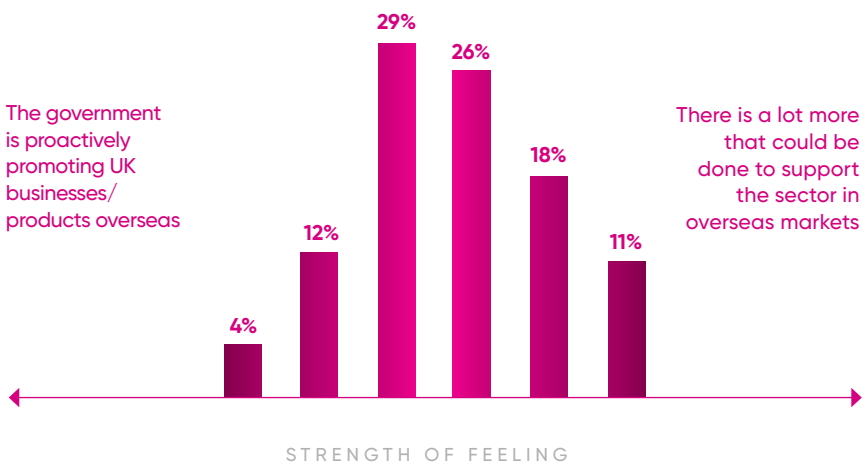
EXPORT GROWTH



There are two factors to consider when looking at the 33% of respondents on the Export Growth graph on the previous page who are unsure about how to go about exporting.



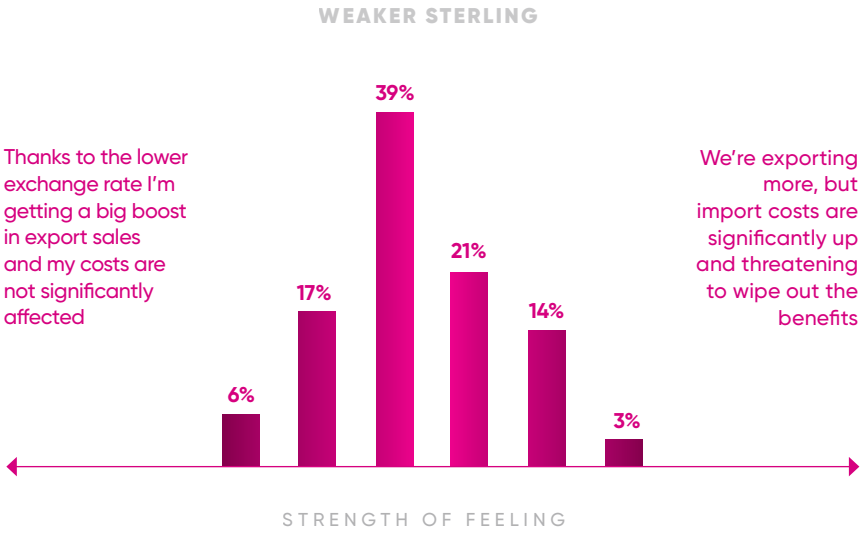
One is the guidance and financial support they need in order to find new markets and the other is the exchange rate. Key guidance and support is provided by UK Export Finance (www.great.gov.uk) to de-risk the process, but manufacturers need reminding of its existence. As the 71% of ambitious exporters in the above graph show, there is a willing audience.



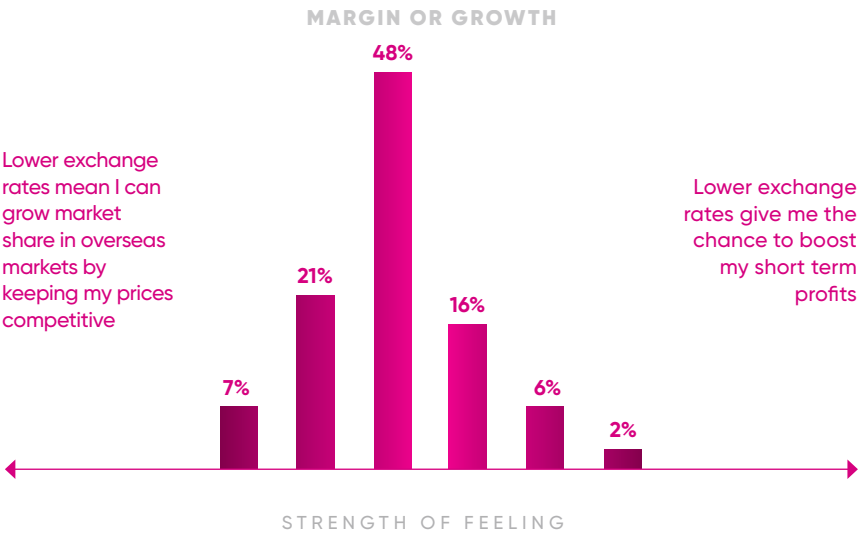
Over half our respondents (55%) say that government should do more to help exporters, a proportion unchanged from last year. Laura McBrown of G&B Electronics suggested that the government has too little appreciation for the challenges SMEs face when trying to export, particularly in light of the Brexit red line over the customs union. "I am concerned that the government does not have sufficient understanding of the effect of globalisation on the supply chain and the impact that coming out of the customs union and trying to qualify for trade deals is going have on the UK manufacturing industry," she said.

With regard to the exchange rate, at the time of writing it is $1.31 to the pound. This time in 2018 it stood at $1.40, and towards the end of the year it fell as low as $1.26.

Sixty two per cent of our respondents saw weaker sterling as an opportunity. The other 38% felt the pressure of the inevitable increase in the price of raw materials that the weaker pound brings about.



How do manufacturers view the opportunity presented by a weaker pound? Do they go for market share by keeping prices low, or do they go for a quick boost to their bottom line? A solid 76% say they aim for growth not quick profits, which is encouraging as we approach what many describe as the most important moment in our national history since WW2. Manufacturers will need all the positive attitude they can muster and, as they make abundantly clear, they would appreciate well-targeted, well-funded support from government.



Andrew Bennett, managing director of calendar manufacturers Allan & Bertram, says, "If we end up with tariffs on exports to Europe, I assume there would be similar tariffs applied to imports from Europe, so I expect the government to allocate this revenue to exporting businesses to compensate for the export tariffs and allow us to remain competitive. Not only does the government need to support the business economy in practical terms, it needs to be seen to be doing so. If the government worked with businesses to get us all prepared, that could send a very powerful message to the UK and the EU negotiators: 'We are ready!'"

Adrian Waine
Structural steel painting

FINANCING INVESTMENT

Investing in certainty in an age of doubt

Uncertainty is never the product of a single phenomenon. If the UK manufacturing sector is feeling uncertain about the future, this may be a knock-on effect of Brexit, but there will be more to the story than Brexit alone. As this year's *Annual Manufacturing Report* demonstrates, that may include fears over finding skilled workers, the bewildering speed of technological change, or how to make investment decisions with confidence. Stakes are high and getting higher.

In my experience, the companies that succeed in overcoming multi-pronged challenges are those that distil them down to manageable problems that, once solved, make the next problem(s) easier to tackle. A company overwhelmed by a macro issue such as Brexit will only mitigate its risk, and improve its chances of success, if it ensures that every part of its business is aligned. The way to achieve this is to have the relevant data to hand that makes effective decision-making simple and reliable. And that data needs to be unambiguous. A manager confused by conflicting messages is a manager about to make the wrong decision.

This is why, at BOARD, we talk about a 'single version of the truth'. Data that has been aggregated from all corners of the business, from production through to sales and customer service, and properly analysed not only gives a unified meaning to the past and the present, but also offers a road map to the future.

Investment in data acquisition and analytics that offer manufacturers a strategic advantage is made much simpler by forms of financing already familiar to back offices; Software-as-a-Service (SaaS) is commonplace there, but, as this report indicates, less so when it comes to core manufacturing systems.

Currently, executives are reluctant to pull the trigger on major equipment investments, for reasons that the following pages will make clear.

But such decisions can be significantly de-risked if organisations ensure they have that single version of the truth comprehension about their business, and a 360-degree view of the challenges that may confront them. Once they have achieved this strategic high ground, the decision to make the investments needed for growth and productivity becomes significantly less stressful.

There is a significant opportunity for manufacturers here, one that can help them counter the daunting odds and navigate their way to a successful future.

ALAN BAGNALL
Manufacturing Lead
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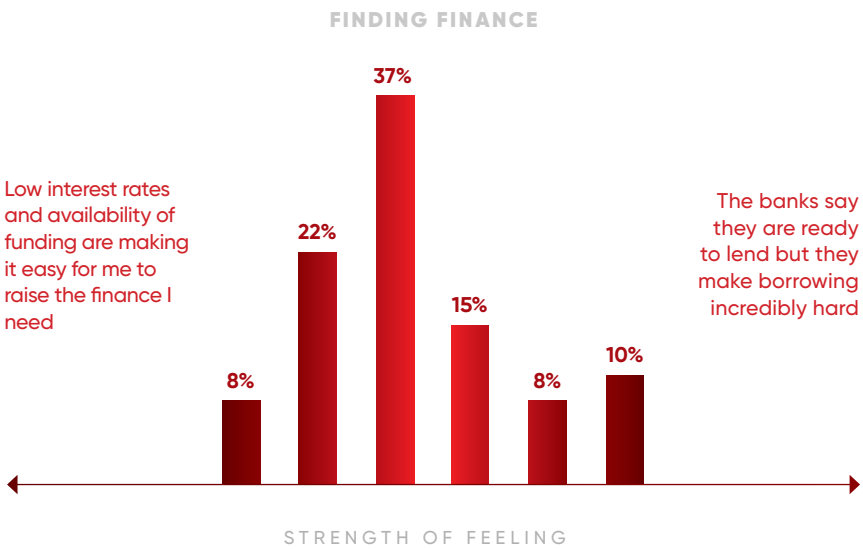
There can be no argument that manufacturing is an investment-heavy sector. Companies either fund investment in machinery and IT themselves, or they borrow from investors or banks. Funding from their own reserves obviously makes sense and keeps their liabilities lower, but the process of accumulating that cash can slow down their pace of growth. Borrowing from third parties used to be par for the course, but ever since the GFC (global financial crisis), the banking system has been under enormous pressures of its own. Protecting balance sheets has been the order of the day for them too which often means that the good intentions they display towards manufacturers in their marketing don't always translate into comfortable finance arrangements.

This seems paradoxical at a time when interest rates remain at historic lows. All things being equal, banks and businesses should be making hay. Our first graph shows that is only partly the case.

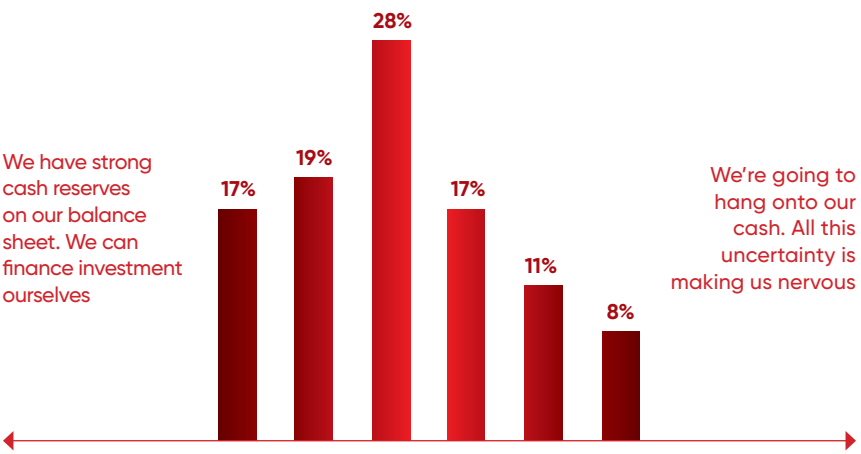


Notionally, 67% are more positive on this issue than not (intriguingly, the same proportion as last year) but yet again it is a very weak vote of confidence. Only 8% of respondents fully support the proposition. What the question does not take into consideration is confidence. In other words, would the picture look much different if manufacturers felt sufficiently gung-ho about the future that they actively sought financing? Banks can't lend if companies are gun-shy about asking for money.

It is perhaps inevitable therefore that companies say they prefer to play it safe by storing up cash for investment. As one manufacturer put it during a roundtable discussion attended by *The Manufacturer*, "I want to invest in equipment that offers new capabilities and access to new markets, but I can't currently afford the full cost, circa £500,000. I won't take a loan from the bank, so I'll wait two to three years until the price drops to affordable levels."

> "Consumers now demand instant access to lots of information about a product, its quality, options and have expectations of a fast delivery. Only by investing in digital adoption can all the required information for customer sales through multi channels be seamlessly and instantly gathered, and production planned for on-time delivery. Crystal Doors manufactures mass customisation, having thousands of pieces pass through the machines, unique in detail to each customer every week."
>
> *Richard Hagan, Managing Director, Crystal Doors www.crystaldoors.co.uk*

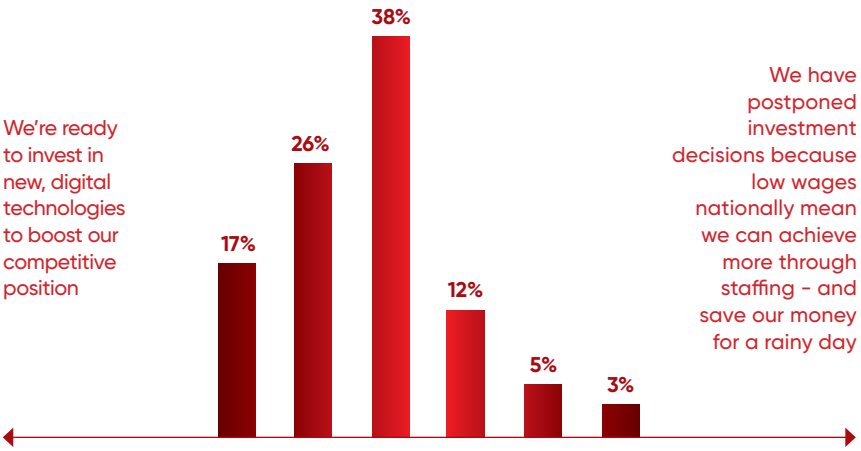
CASH RESERVES



It is a weak majority (64% compared with 61% last year) that say they will invest in growth using their own funds. How much of a knock to confidence would it take to shift those numbers into negative territory, conserving cash against whatever rainy days might bring? Pessimists might suggest we're in for a good many of those in the next 12 months. It all boils down to manufacturers' level of desire to take advantage of situations good or bad to get ahead. Some see a crisis as a threat, and retreat. Others see it as an opportunity to exploit.

Similarly, companies can either take advantage of the low-wage economy that has been gradually growing over the last 10 years, postponing investment and enjoying short-term profits through a relatively cheap labour force, or they can pull the trigger and invest in the digital technologies that they believe will give them a market edge.

INVESTMENT IN DIGITAL TECHNOLOGIES

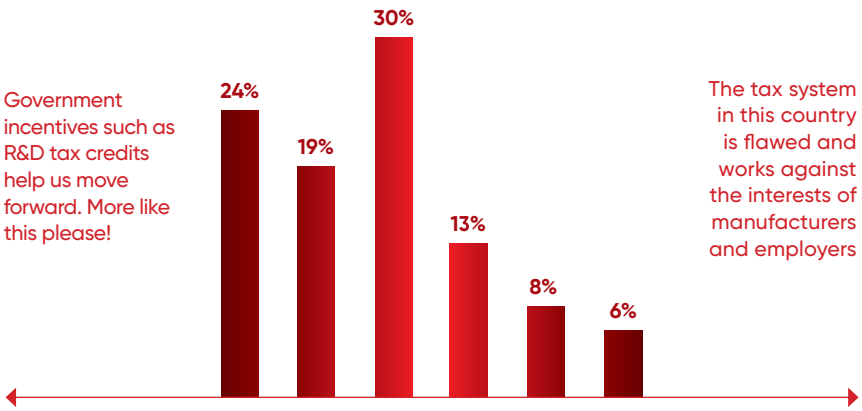


Again, there is that mushy centre ground: endorsement of the proposition, but not full-throated. The goal of the Made Smarter Commission's North West Pilot is to demonstrate to those in that 38% column, who understand the power of digitalising their manufacturing prospects but are hanging back for whatever reason, that the process can be smooth, inexpensive and that there is a network of advice and support out there to see them through it.

And that the results will literally pay dividends.

The Made Smarter Commission is the tangible consequence of the government's Industrial Strategy, launched in 2017, initiated and led by industry but supported financially by government. There are other forms of government support routinely available to manufacturers, most notably tax breaks, which attract 73% support on the positive side of the ledger. R&D tax credits are very popular, even if, bizarrely, manufacturers tell us that a number of their accountants do not understand them. These tax credits allow manufacturers to experiment with new processes at the government's expense. The existence of agencies who will claim these credits on companies' behalf, because their accountants failed to do so, proves their efficacy.

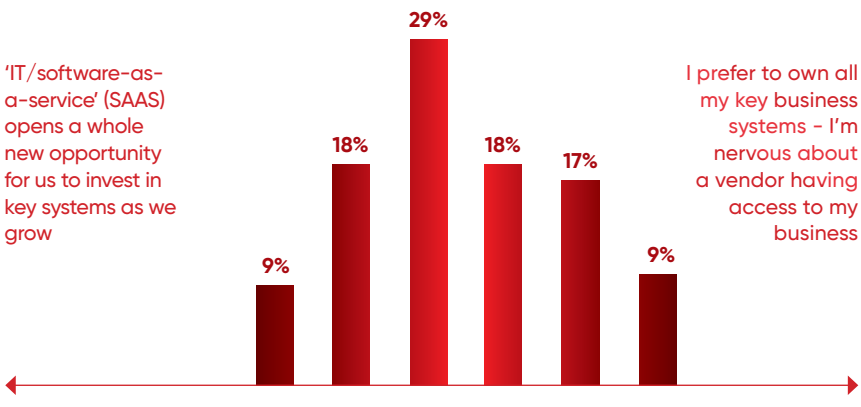
GOVERNMENT INCENTIVES



Talking of support, manufacturers who want to keep their costs down as they begin the process of digitalisation should be aware that many vendors are prepared to work with them on a Software-as-a-Service basis (SaaS). Most of us are used to this, as the Internet has developed the principle to the point where only rarely would a business buy a piece of admin software, such as Microsoft Outlook and other products outright. Are manufacturers prepared to do the same with the manufacturing process software that will propel them into the digital age?

Respondents were not universally supportive of this. What may work in the back-office garners only 56% support. We recommend manufacturers look very carefully at schemes that will enable them to take advantage of the technologies that work for them at a price that is spread comfortably via a SaaS arrangement.

VENDOR-CENTRED FUNDING



73%

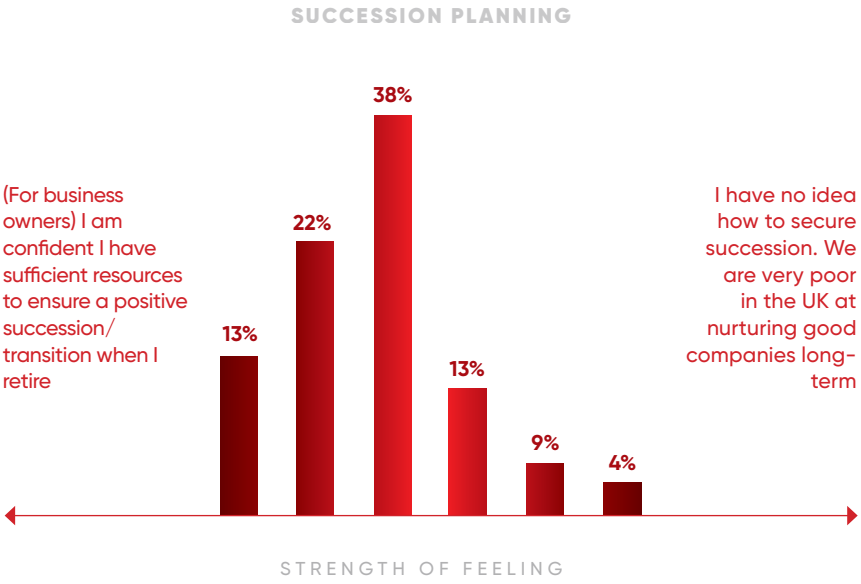
said they benefit from tax incentives such as R&D tax credits

73%

said they have some form of succession planning in place

The final subject we addressed in this part of the report involved succession planning. It is a phrase that family businesses will know well, but it also applies to SMEs that have grown from start-up to maturity, and now the owner(s) want to retire. It has importance beyond the interests of the individuals involved. In the UK we have a very poor record of growing businesses beyond the S of SME. We need to become more M! This is very difficult to do unless we develop a growth mind-set, particularly among lenders, that takes a long and patient view of the future. Too often we hear stories of great companies looking for buyers when owners want to retire but the kind of patient capital that would allow for longer term investment and a succession plan that includes managers and staff is very rare. Companies from overseas often have more understanding of such opportunities that offer long-term growth value and snap them up.

Looking at this graph, it would seem that a majority of respondents disagree with that proposition, that they have indeed been working out how to ensure their companies thrive into the future without them. We quote one below.



At *The Manufacturer* we are keen to stimulate debate on this subject, to look at the variety of schemes available, including full employee ownership as some companies have done spectacularly well, and to talk about how we in the UK can nurture smaller companies to grow into medium-sized companies that will be the engine room of our industrial future. We have some shining examples, but as our competitors, particularly Germany, demonstrate, only when there is a broad array of such companies in that middle-sized category will a manufacturing economy really thrive.

“

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Mark Wingfield, Managing Director, A&M EDM www.amedm.co.uk

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