The manufacturers' organisation

In partnership with:

Santander Corporate & Commercial

INVESTMENT MONITOR 2017/18

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INTRODUCTION

Welcome to our fourth annual investment monitor, in partnership with Santander, gauging trends in investment in technology and machinery in the UK manufacturing sector. After the post-crisis bounce back in investment levels, official statistics are showing that momentum in manufacturing capital spend has tailed off. Our survey, once again delves into industry's past investment performance, and given the range of uncertainties facing businesses and forecasts, we look at what the future could hold for manufacturing and investment.

This year we also take a closer look at what manufacturers have been doing to automate, how those strategies have been shaping up and what's been holding back companies' progress.

- In the past two years manufacturers **invested 6.5% of turnover in new plant and machinery,** down from that reported a year ago.
- The slowdown was signalled in last year's Monitor, when near three fifths expected to invest the same or less. Looking ahead, **more of this year's respondents plan to spend a bit more** in the coming two years.
- New **plant and machinery** investment is becoming necessary for those in the half of our sample which plan to raise spending. There is a need to **replace equipment which is becoming obsolete** more rapidly.
- Uncertainty about the outlook has diminished as the global economy is recovering. Manufacturers are **investing to secure new opportunities and to increase capacity** in the face of skill shortages.
- For the rest the **shadow of Brexit is undermining confidence** and manufacturers are relying on past investments to be sufficient to meet current demand, but with little focus on investing to improve process efficiency.
- These dividing lines are clear when it comes to the focus on automation, where a **quarter have a clear strategy and have already invested to automate** most or all of their applicable processes.
- Decisions on what and when to automate and the application of evolving technology is not plain sailing. **Our survey finds that the upfront cost of automation is one of the most cited challenges.**
- This is closely followed by a basket of skills-related ones – not just the ability of key workforce members to implement technology, but also the **leadership skills needed to manage change.**
- The impact of these hurdles varies depending on **where companies are in their automation journey** and the extent to which this forms part of the company's wider business strategy.
- The ways in which policy and stakeholders can help also need to be cognisant of these differences. Banks, business support and government need to be just as **up to speed on the implications of technical change.**

Investment over the proceeding 2 years dipped back in 2017

Average expenditure in plant and machinery in the proceeding 2 years, as a % of turnover

2014	2015	2016	2017
5.9	7.2	7.5	6.5

But looking ahead manufacturers are planning on investing more

Investment intentions over next 2 years, % of companies

2014		2015		2016		2017	
Same/less	More	Same/less	More	Same/less	More	Same/less	More
50.6	49.4	53.6	46.3	57.4	42.6	48.8	51.1

The need to replace or upgrade equipment remains the number one reason for investing

% of companies citing factors that encourage increased investment	2015	2016	2017
Need to replace/upgrade equipment	59.8	50.8	63.1
Expanding into new areas of activity	30.8	35.5	31.9
Need to reduce labour content	-	26.6	30.0
Confidence in the export outlook has improved	24.3	19.4	16.9
Confidence in the domestic demand environment has improved	36.4	18.5	13.8

But many manufacturers believe they have no need for more investment

% of companies citing factors that deter them from investing	2015	2016	2017
No need for more investment	49.0	35.4	39.9
We have spare capacity in our business	37.7	29.3	39.9
Order book uncertainty	20.5	38.4	23.0
Confidence in the domestic demand environment has worsened	21.3	28.7	17.6
Political uncertainty	3.3	25.0	16.9

Source: EEF Investment Monitor Surveys

1. KEY SURVEY FINDINGS
WHAT'S HAPPENED?

Our past two Investment Monitor Reports (2015 and 2016) have seen manufacturers raise their expenditure on plant and machinery as a proportion of turnover, in the preceding two year period. In 2017 however, average investment expenditure took a step back, with manufacturers turning more cautious, amidst the uncertain macroeconomic environment.

The fall in average investment expenditure from 7.5% of turnover in our last report, to 6.5% this year, is not that surprising, given the uncertainty generated both in the lead up to the EU referendum, and the resulting fallout, together with some significant external challenges, namely falls in commodity prices and sluggish global growth.

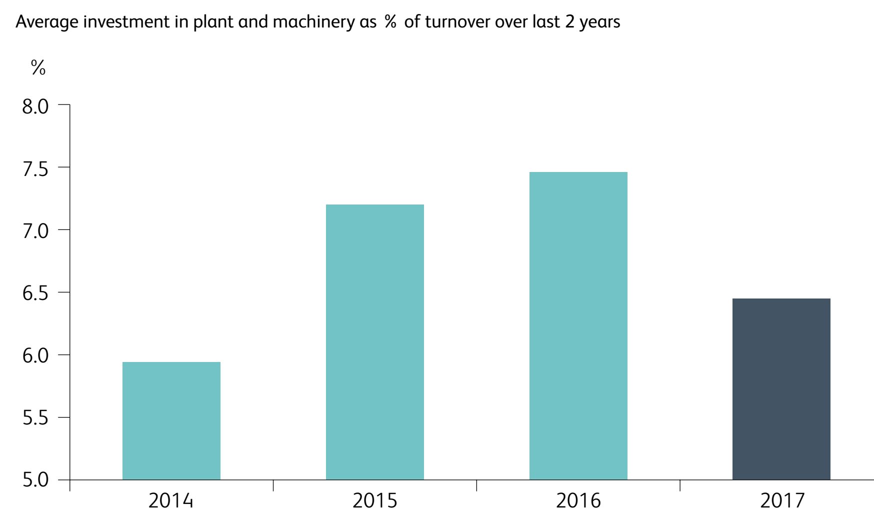
Indeed, the slowing in investment in this year's survey was predicted in Investment Monitor 2016, with demand and order book uncertainty expected to deter manufacturers when it came to their capital expenditure plans. Our results are also backed up by official data, which illustrates that, after a number of years of robust performance, manufacturing investment tailed off in 2016, falling by 6.6%.

Looking at the breakdown of investment expenditure by company size also reveals few surprises. We find in our survey that small and medium sized companies who we traditionally see invest a smaller proportion of turnover in plant and machinery - also taking the brunt of the elevated levels of uncertainty. Once again these companies are investing a significantly smaller proportion of their turnover than larger companies over the last two years, as they suffer from their reduced ability to hedge against the risks that the current macroeconomic environment represents.

Despite investment slowing in the last two years, the concerns of an all-out collapse in capital expenditure plans have not materialised. The 6.5% of turnover reinvested in plant and machinery recorded in this year's report remains above the level seen in 2014, the year the survey began. Likewise, total manufacturing investment, and capital expenditure investment, despite falling, remain 19% and 35% above their 2009 troughs, according to official statistics. Manufacturers have continued to recognise the need to invest to meet existing demand requirements, and expand capacity where needed, instead of taking an investment hiatus.

Looking ahead, it appears the better than anticipated performance in the UK economy over the last year, as well as the global economy, is encouraging manufacturers to look past their Brexit related uncertainties to a certain extent. Just over half of survey respondents cited that they will look to spend more on plant and machinery as a proportion of their turnover over the coming two years. It remains finely balanced however.

Chart 1: Investment has slowed over the last 2 years



Source: EEF Investment Monitor 2017/18

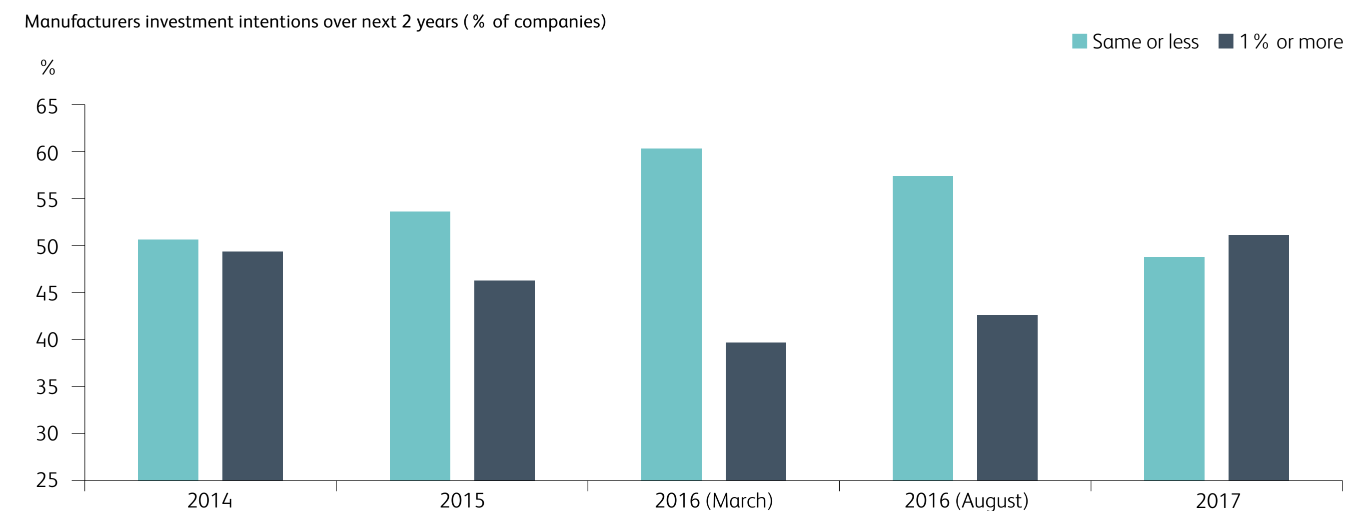
2. KEY SURVEY FINDINGS
THE FUTURE IS FINELY BALANCED

For the first time in the surveys history, a majority of companies (51.1%) intend to spend more on plant and machinery over the coming two years, compared to 48.8% who intend to spend the same or less. The rise, from 42.6% and 39.7% in our August and March surveys last year, is reflective of the better than anticipated economic outlook, one year on from the EU referendum. Encouragingly the proportion of companies intending to spend less on plant and machinery also dropped to its lowest level since 2014, at 17.1%.

While this is promising news, and points to a pick-up in manufacturing investment over the coming years, the results provide no cast iron guarantees, nor do they indicate that manufacturers will unleash investment in significant volumes.

The results are effectively a 50/50 split between those who intend to spend more, and those who intend to spend the same or less. Taking a closer look at the breakdown reveals little overall difference in the number of companies who intend to spend more at the higher band levels (e.g. 6-10% more, 11-25% more), compared to our 2016 report. Therefore, while there are more companies in the "spend more" camp, it is finely poised, with a number of factors, including Brexit related

Chart 2: A majority of manufacturers intend to spend more on plant and machinery over the next 2 years



Source: EEF Investment Monitor 2017/18

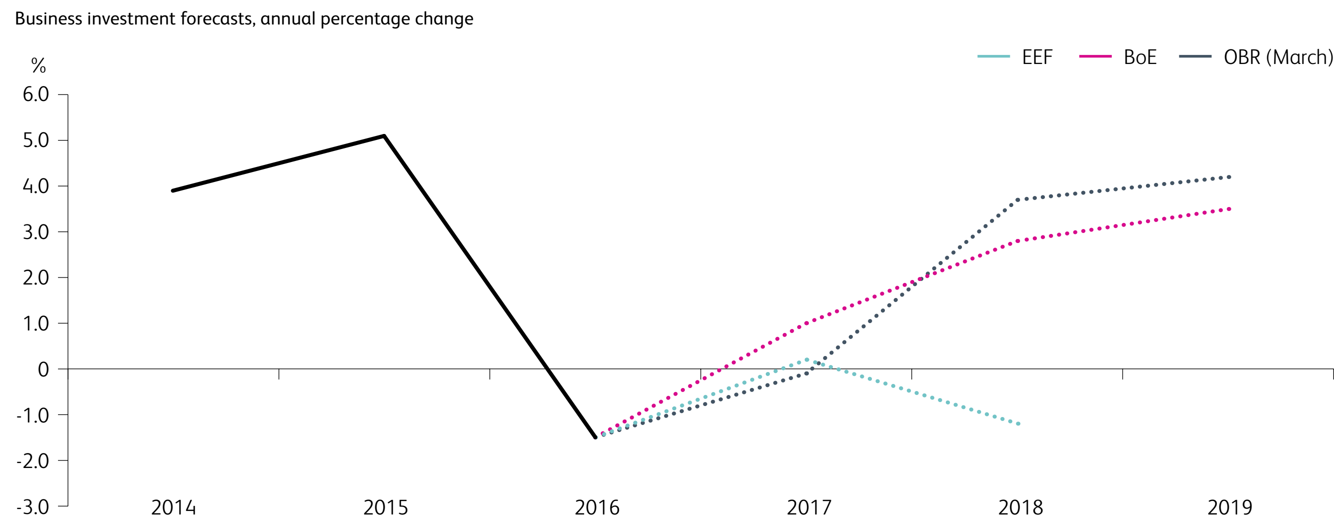
uncertainty, slower UK growth, and exchange rate effects on the cost of machinery, at play.

The uncertainty, and finely balanced nature of the future profile of business investment is reflected in the divergence in economic forecasts. For instance, while the Bank of England are forecasting business investment to grow at a solid pace over the coming years, as we gain "clarity on the Brexit deal", the reverse could just as easily hold true.

Manufacturers' attitudes towards investing not just in capacity, but also in production improvements, such as automation and the benefits it offers in terms of productivity, will also be a defining factor in determining which camp manufacturers fall into – the spend more, or the spend same/less camp.

Over the next two sections we will look at what factors may have influenced these two camps. We'll look firstly at those planning to increase their investment in the next couple of years and the reasons behind those decisions, then look at the characteristics of companies paring back expenditure on new machinery.

Chart 3: Future profile of business investment provokes debate



Source: EEF, Bank of England and OBR

3. SPEND MORE
IMPROVED ECONOMIC OUTLOOK IS ENCOURAGING MANUFACTURERS TO INVEST

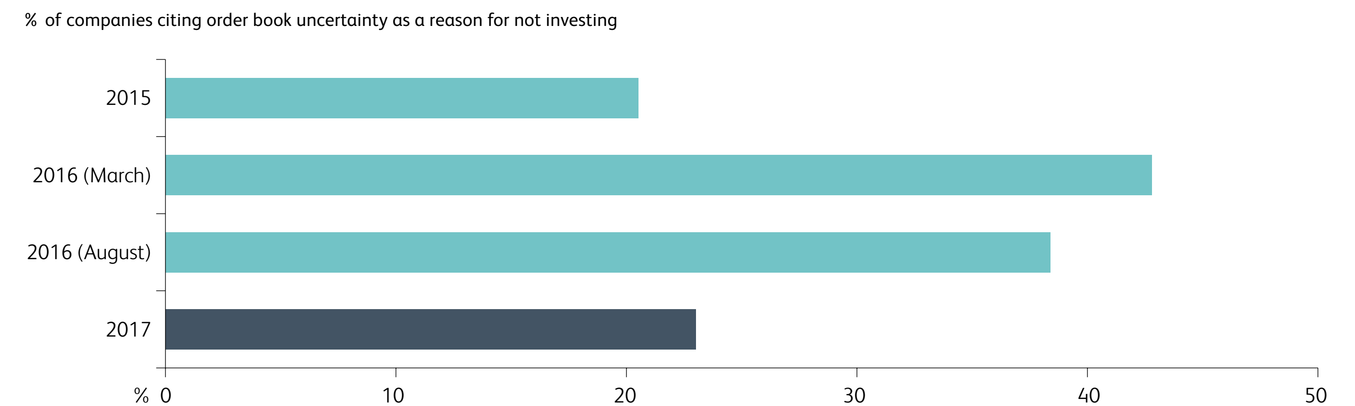
It is now over a year since the UK electorate voted to leave the European Union. At the time of Investment Monitor 2016, in the immediate aftermath of the vote, the byword for the state of the economy was uncertainty. How will Brexit effect business investment decisions? Which sectors are most exposed? What will be the overall impact on the UK economy? While many of these questions remain largely unanswered, the economy, and in particular the manufacturing sector, has exceeded expectations and performed admirably over the last year.

Indeed, private survey data, including the Markit/CIPS PMI survey, as well as our own Manufacturing Outlook surveys, have been overwhelmingly positive since the start of 2017, while official data, overlooking a blip in the automotive sector in q2, has also been largely healthy. The sector is benefiting from an improved global outlook, with demand picking up across key export markets in the eurozone, the US and China, offsetting weaker domestic demand in the process. Along with this the sustained depreciation in sterling is providing a further boost to exports.

This buoyant demand environment is resulting in healthy pipelines of work, leading to a majority of manufacturers choosing to invest more over the coming years, as some of the uncertainty seen in last year's report diminishes. This improved economic outlook is most evident when looking at the number of manufacturers in our survey citing order book uncertainty as a reason for not investing, falling from a hefty 42.8% and 38.4% in our two 2016 surveys, to 23% this year.

With demand steadily improving in key export markets, and uncertainty moderating as a "business as usual" approach takes hold, manufacturers are happy to upgrade and replace their current capital equipment, which has become obsolete and out-dated. This was, as it has been in the three previous years, the topmost reason manufacturers cited for increasing their investment plans, up from

Chart 4: The improved economic outlook has reduced order book uncertainty



Source: EEF Investment Monitor 2017/18

50.8% in 2016 to 63.1% in 2017. The improved outlook is also encouraging manufacturers to expand into new areas of activity, with just under a third of respondents citing this as a factor behind their decision to increase their investment expenditure. This is not that surprising given the wealth of positive statistics being churned out abroad.

Finally, and perhaps most interestingly, 30% of manufacturers in our survey are increasing their capital expenditure to reduce labour content, the third most cited factor in our survey. This, as a reason for investing, has steadily ticked up over our previous two surveys, as the chronic skills shortage that effects the sector, as well as the threat of losing access to EU labour, is spurring on many manufacturers to invest in automation.

The desire to reduce labour content is not always reactive for manufacturers however, with many choosing to invest in technology as they realise the potential that automation and the subsequent process improvements it can bring. That said, this still represents a rather small proportion given the opportunities on offer, and is indicative of the work needed to be done in order for the sector to fully utilise the opportunities automation offers.

Sector Analysis: All sectors are benefiting from stronger demand prospects

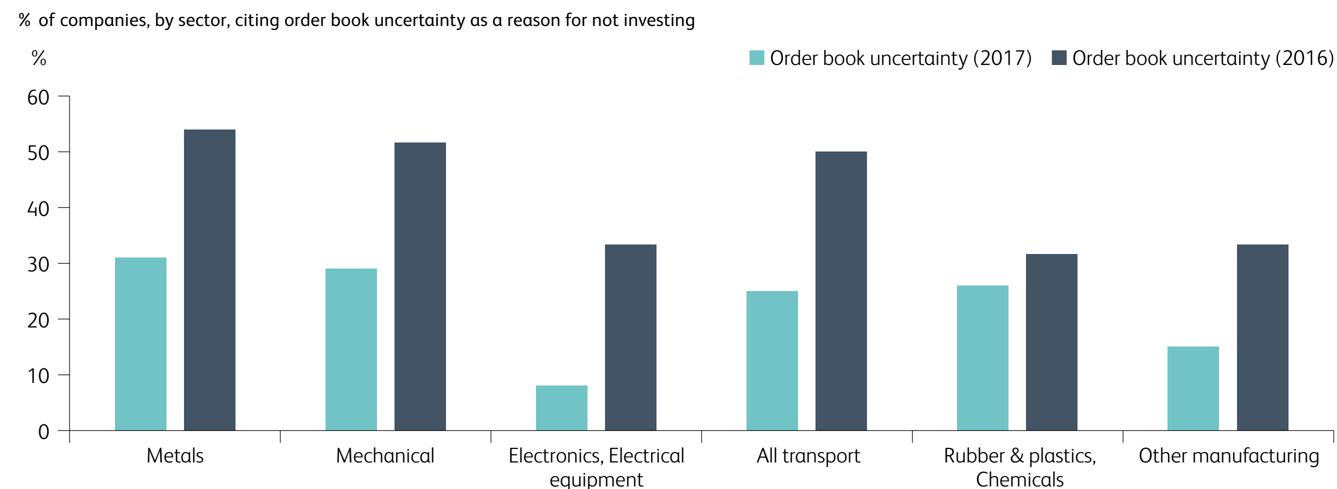
The underlying trends we are seeing in this year's results, namely stronger demand prospects on the back of an improved global outlook, is mirrored at a sector level. Manufacturers across all sectors have noted a fall in order book uncertainty as a reason for not investing since 2016, with the capital goods and metal sectors in particular benefiting from the improved demand environment after a number of years of subdued growth.

The metals sector, and specifically the steel industry, is showing signs of recovery after a couple of calamitous years, benefiting from the sterling deprecation, as well as measures to address the longstanding overcapacity problem. Meanwhile the rise in global investment as a result of the healthy global outlook is boosting mechanical equipment manufacturers – the chief investment good in UK manufacturing. The pick-up in these sectors are encouraging manufacturers to invest, with half of all manufacturers in both of these sectors planning on spending more on plant and machinery over the next 2 years, compared to 23% and 38% in Investment Monitor 2016.

Conversely, while sectors which are less export intensive, for instance those in the construction supply chain such as rubber and plastics, have seen order book uncertainty fall, they are not benefiting to the same extent due to their reliance on the domestic market. Indeed, 32% of manufacturers in the rubber, plastics and chemicals sectors cited worsening confidence in the domestic demand environment as a reason not to invest. The weaker domestic environment is therefore likely to be behind order book uncertainty remaining relatively stable in these sectors.

Chart 5: Order book uncertainty is down across manufacturing sectors

% of companies, by sector, citing order book uncertainty as a reason for not investing



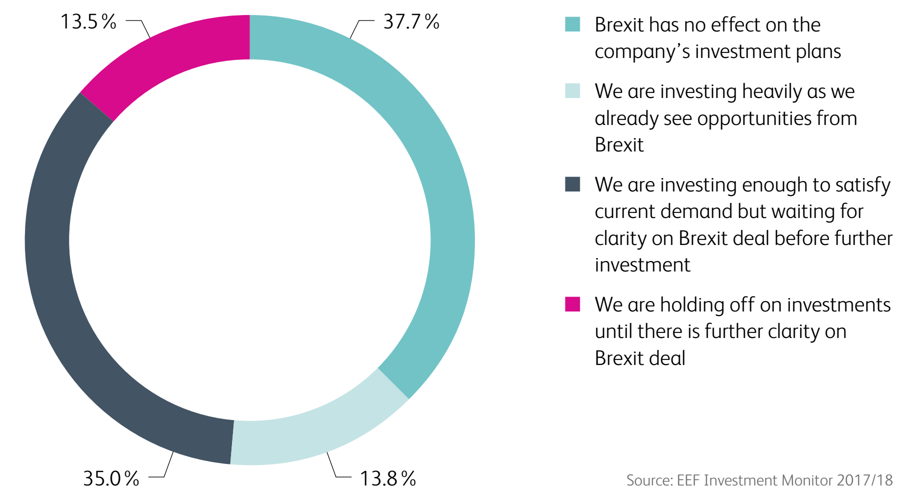
Source: EEF Investment Monitor 2017/18

4. SPEND THE SAME/LESS
BREXIT UNCERTAINTY? OR JUST NOT INVESTING IN THE RIGHT ASSETS?

While the results of the survey suggest a bit of a reality check on the impact of Brexit on capital investment plans - only 13.5% of manufacturers are holding off on investment plans as a result of Brexit - there remains a significant proportion who intend to spend the same, or less, on plant and machinery equipment over the coming two years, despite the positive manufacturing outlook. So if Brexit and the heightened uncertainty that goes with it is not the overriding main factor, as our survey indicates, what are the other reasons behind almost half of manufacturers choosing not to invest more?

Chart 6: Is Brexit's impact on investment plans being overstated?

Companies investment intentions following the EU referendum



- Brexit has no effect on the company's investment plans
- We are investing heavily as we already see opportunities from Brexit
- We are investing enough to satisfy current demand but waiting for clarity on Brexit deal before further investment
- We are holding off on investments until there is further clarity on Brexit deal

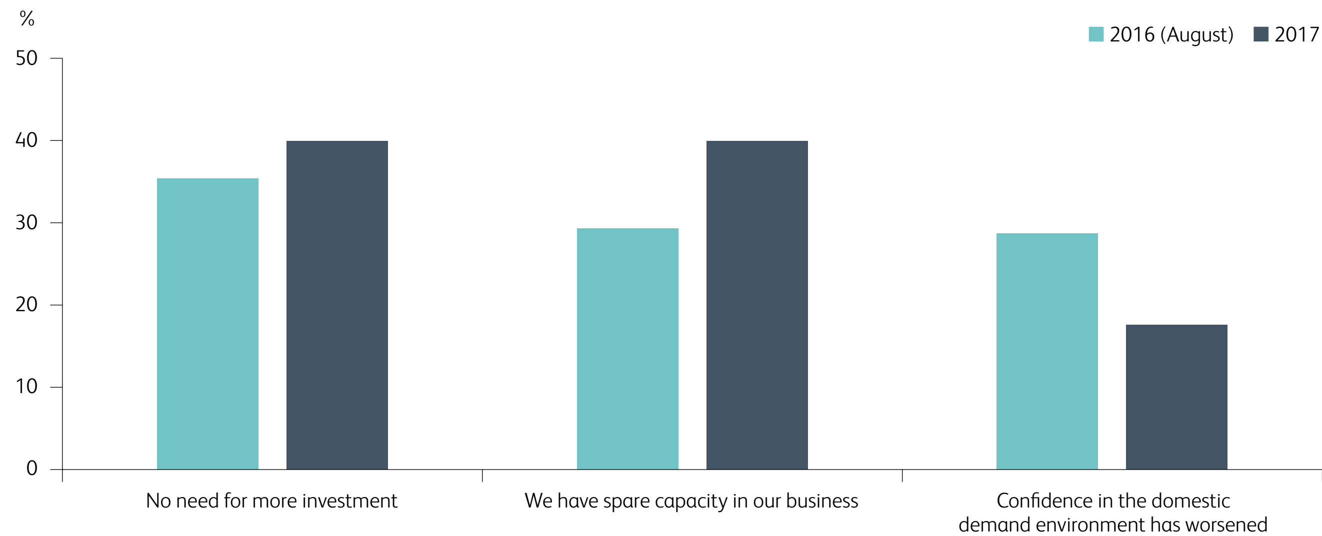
Source: EEF Investment Monitor 2017/18

The results indicate that manufacturers believe they have no reason, or need, at this point in time, to increase their capital expenditure. The top two reasons cited in the survey for not investing were "no need for more investment" and "we have spare capacity in our business" with 39.9% of companies citing both. The reasons for not investing are therefore conscious decisions, rather than those dictated by the macroeconomic environment. These manufacturers are choosing to rely on their past capital expenditure, given that they have no need for more capacity to expand output.

While it is true there has been strong investment in plant and machinery over the last couple of years, and manufacturers are likely to be well invested in their capital equipment, there is an underlying issue which is being overlooked. Investment is not just a tool to expand capacity, it is also a vehicle to improve the production process, to improve efficiency and ultimately productivity i.e. to produce stuff "better".

Our survey results suggest that many manufacturers are overlooking technology, and in particular automation technologies, when it comes to their investment decisions, and are consequentially missing out on the benefits they offer. This is an issue that is echoed in official data, which shows that the UK manufacturing sector invests less compared to other countries of similar standing, with a particular weakness in investment in machinery and equipment.

Chart 7: Manufacturers feel they have no need to invest



Source: EEF Investment Monitor 2017/18

"The reasons for not investing are therefore conscious decisions, rather than those dictated by the macroeconomic environment."

5. UK MANUFACTURING IS NOT INVESTING ENOUGH IN AUTOMATION

AN INTERNATIONAL COMPARISON

Official statistics confirm that manufacturing investment is lower in the UK than in other major European economies. In 2015 (the latest comparable data available), manufacturing investment as a share of GVA stood at 15.7% in the UK, compared to 18.6% in Germany, 22.4% in Italy and 25.9% in France. This is not, as many may have anticipated, a result of the financial crisis. Rather the gap, which was already in place, widened during the early 2000s, as manufacturing investment fell more sharply in the UK than in other countries. Since the financial crisis, UK investment has actually rebounded more strongly than in our European counterparts, but the gap still persists.

There is no single story to explain this, however some of the gap can be explained by looking at the asset composition of investment in the UK. For instance, UK manufacturing significantly lags behind France in terms of share of value invested in R&D. While lower investment in machinery and equipment is broadly behind the gap in total investment between the UK, and Germany and Italy.

While this is disappointing, digging a little deeper into the statistics suggests that the weakness may be inflated to some extent. For example, almost a quarter of the gap between the UK and Germany in machinery investment can be explained by investment in transport equipment. This is a consequence of UK manufacturers' reliance on transport services.

There is also no evidence to suggest that UK manufacturers spend less on 4IR-related technologies and, excluding France, the UK's investment in computer software and databases is higher than in other major European countries. Despite these caveats, there is one area in particular where manufacturing investment in the UK remains worryingly lightweight: machinery and robots.

Machinery and robots

Although part of the gap can be explained, UK manufacturers still invest significantly less in machinery and equipment than their European counterparts. As a share of GVA they invest 6.24% in machinery equipment, less than Germany, France, and to an even greater extent Italy. This trend is also apparent when comparing the industry's robot density, where UK manufacturing, despite being above the global average, uses 71 robots per 10,000 employees compared to 305 in Japan, 301 in Germany, and 176 in the US. Given that robots and automation are synonymous with productivity improvements, manufacturers are missing out on a wealth of opportunities to improve their production processes.

This is a theory that is backed up by this year's Investment Monitor results.

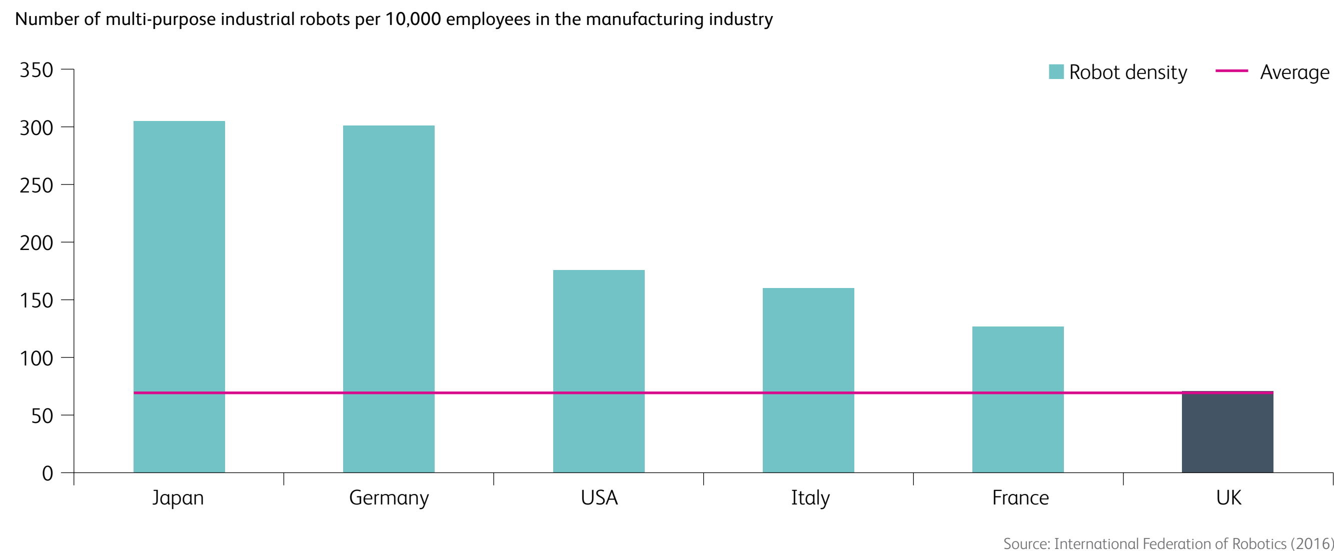
Chart 8: The UK falls behind in investment in machinery and equipment

Manufacturing investment in machinery and equipment as a share of GVA, volume terms 1999-2015

Source: Eurostat (*latest data available for Italy is 2014)

Chart 9: The UK's robot density is lower compared to its international counterparts

Number of multi-purpose industrial robots per 10,000 employees in the manufacturing industry



Source: International Federation of Robotics (2016)

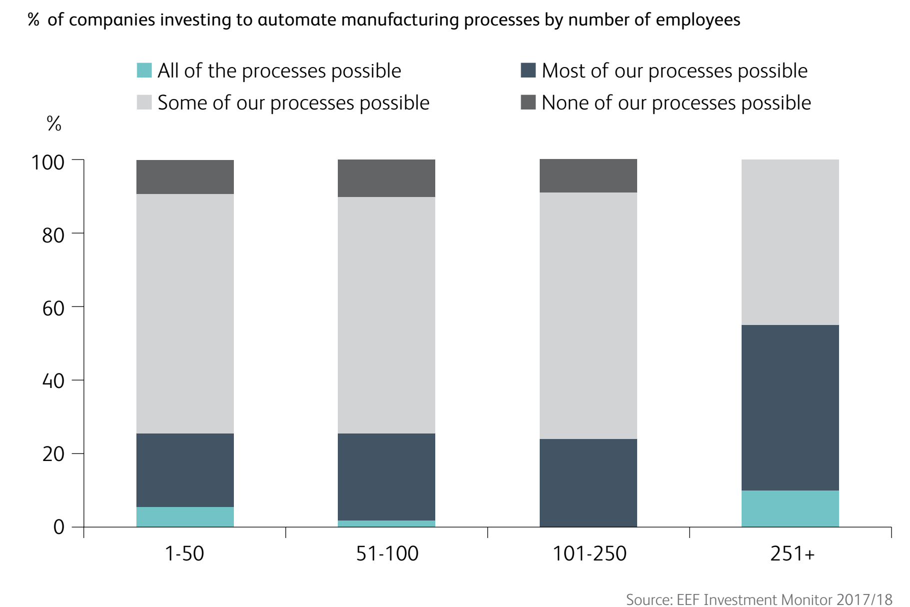
6. HOW MUCH INVESTMENT IN AUTOMATION?

We shine our spotlight in this year's survey on automation. Automation is potentially the solution to problems with skills availability and stuttering productivity – both of which are in evidence in the UK. And yet the international data – as we've just shown – indicates that the UK has not yet taken a leading position in investment in new automation technology.

What do we mean by automation?
The application of machinery, such as robotics, to perform routine tasks. These can be low-complexity functions or programmable machines which can adapt to new tasks.

Chart 10: Process automation has some way to go

% of companies investing to automate manufacturing processes by number of employees



Source: EEF Investment Monitor 2017/18

Our Investment Monitor 2017/18 looked to test this evidence with UK-based manufacturers, to discover which companies were ahead of the pack and what, if anything, was impeding progress.

Indications from international sources which suggest that the UK has comparatively low levels of investment in robotics and automation technologies appear to be borne out by our survey respondents. Almost nine in ten manufacturers had identified some aspects of their product processes that were suitable for automation. Less than a quarter of our respondents stated that 'all or most' of their processes could be automated and that they had already invested to automate most or all of these processes. Throughout the rest of this report this group will be referenced as 'lead automators'.

Progress of sorts

When it comes to putting new automation technology in place, manufacturers in our sample are further divided. A good proportion – around two-thirds – of those able to move to highly automated process have done just that. And looking at how those companies are distributed across different size bands, many are concentrated in the largest size bracket; with more than 250 employees (see chart 10).

Elsewhere in the sector, progress on automation is more subdued, with a majority of SMEs having made partial headway on process automation. And it does appear to be size rather than other firm characteristics, such as manufacturing sub-sector, that is in the

driving seat when it comes to the pace of automation.

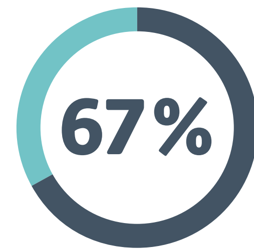
Strategy or struggles?

Whether companies would describe their investment in process technologies as a little or a lot, there are some bigger differences in terms of whether this is planned or impeded by hurdles and challenges that need to be overcome along the way.

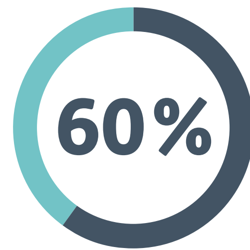
Barriers

And there is a spectrum of hurdles facing different manufacturers at varying stages of their automation journey, as illustrated in chart 11. Moreover, these can evolve as manufacturers learn from past investments, with some challenges to past investment clearly surmountable and others that are more persistent.

The next sections look at those barriers, which we've categorised into three groups, (cash, certainty and capability) and considers some of the characteristics of those experiencing challenges and ways in which they might be supported.

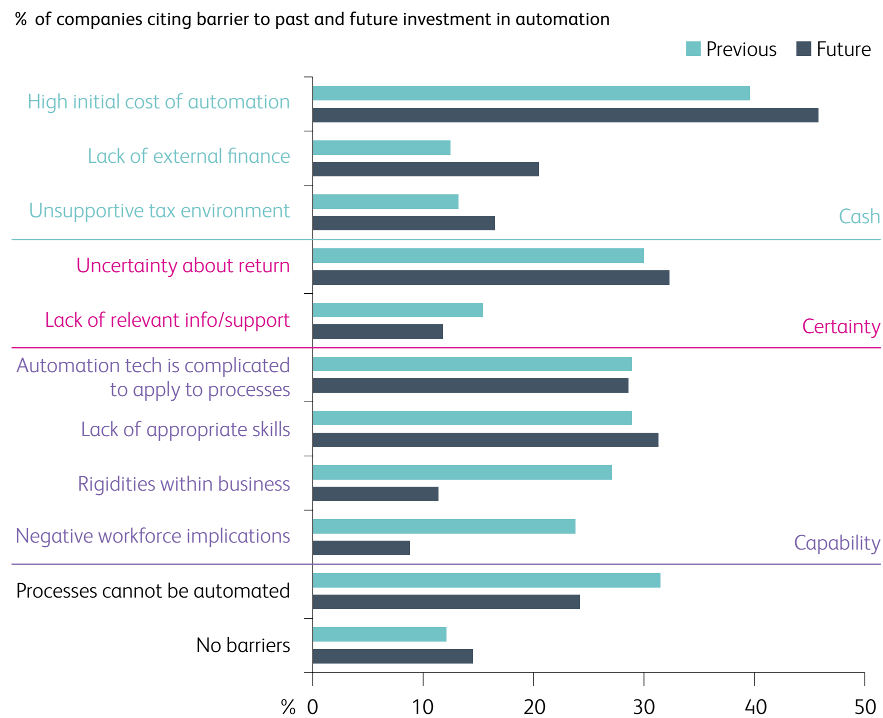


of 'lead automators' say strategy dictates the pace of automation



of the rest – the automating majority – the prevalence of barriers, and ability to overcome them, is most important in driving investment levels.

Chart 11: Automation faces a number of barriers



Source: EEF Investment Monitor 2017/18

7. AUTOMATION HURDLES
CASH

All investment decisions – involving both tangible and intangible assets – require companies to resolve issues around financing, balancing short-term need with long-term returns and effective utilisation of skills and capabilities within the business. Investment in technology in support of greater automation of manufacturing processes is no exception, but the manifestation of the issues is different from investment in other assets, such as intellectual property.

Cost of automation

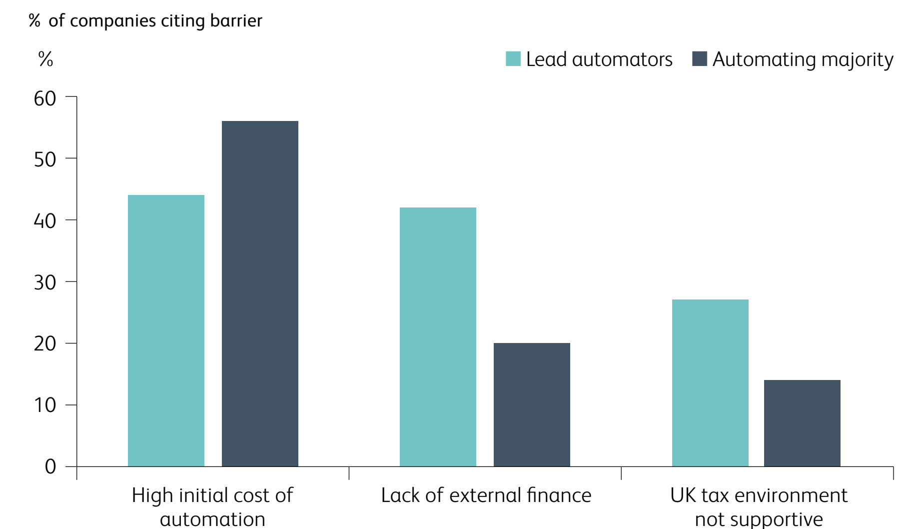
As we saw in the previous section, the most cited barrier to investment in automation equipment is cost; specifically the high initial upfront cost (see chart 11 in previous section). From the cost of capital equipment (the price of which may have just increased significantly if it's imported due to the depreciation of sterling), tooling, testing, and any associated training, the shift to automated processes can be expensive.

And while we see some difference between the proportion of companies in our 'automating majority' and 'lead automators' citing cost as a barrier, it nevertheless tops the list for both groups when it comes to hurdles previously experienced with automation investment and expected challenges to future decisions. And contrary to what might be expected there are only minor differences across different size brackets when it comes to cost being cited as an automation barrier.

Further dialogue with manufacturers indicates that this isn't a case of companies being unprepared to pay for the productivity and quality improvements that automation can bring. Rather, investment across a range of business functions is competing for a finite resource – whether this be retained earnings or external finance.

These pressures have come from increases in business policy costs (for example decisions on the apprenticeship levy or energy costs); the cost of meeting statutory pension requirements (such as addressing fund deficits) and the need for complementary investment in research and training. Equally, we know from our survey last year that manufacturers remain cautious with internal resources, agreeing that they are holding higher precautionary cash balances.

Chart 12: Cost tops list of challenges



Source: EEF Investment Monitor 2017/18

Separating cost from financing

‘Lead automators’ make more of a distinction between the cost of equipment, and finance mechanisms which present barriers to progress. Over 40% of companies that we have classified as making more substantial advances in automation expect their future investments to be constrained by access to external finance. This is a higher proportion than noted challenges with external financing in previous investment rounds.

We have routinely noted on-going relationship challenges between businesses and the retail banking sector since the financial crisis, with, for example, many SMEs opting not to borrow to grow[1]. But the concerns noted in our survey about future automation funding suggest that manufacturers – large and small – are less confident about their success in securing finance for advanced automation technology.

Investment need not be taxing

Another angle to the affordability debate is how investment in new technology is treated in the tax system. Again, this is more an area of contention for ‘lead automators’, with nearly one in three believing that the UK tax environment is not supportive for this type of investment, both from previous experience and expectations for the future. There are three potential explainers for this:

- The perception of the relative competitiveness of the UK tax regime for capital depreciation compared with other jurisdictions.
- The value of the Annual Investment Allowance, which allows companies to expense £200k of capital investment – likely to offer only partial write down of investment in robotics.
- The alignment of capital allowances with the more rapid depreciation of automation assets.

Getting the tax and financing landscape for investments in manufacturing right is crucial in embedding the technology that will deliver high productivity and, ultimately, long-term growth across the sector. Business and the finance community still have bridges to build even a decade after the financial crisis, but a partnership is required to ensure industry is positioned to invest at the right scale. While the next sections will touch on the need for industry to keep pace with the reality of change and how it can apply to their business, our survey points to this being equally the case for tax policy makers and external finance providers.

> “Indications from international sources suggest the UK has comparatively low levels of investment in robotics and automation technology.”

[1] SME Finance Monitor

8. AUTOMATION HURDLES
CERTAINTY

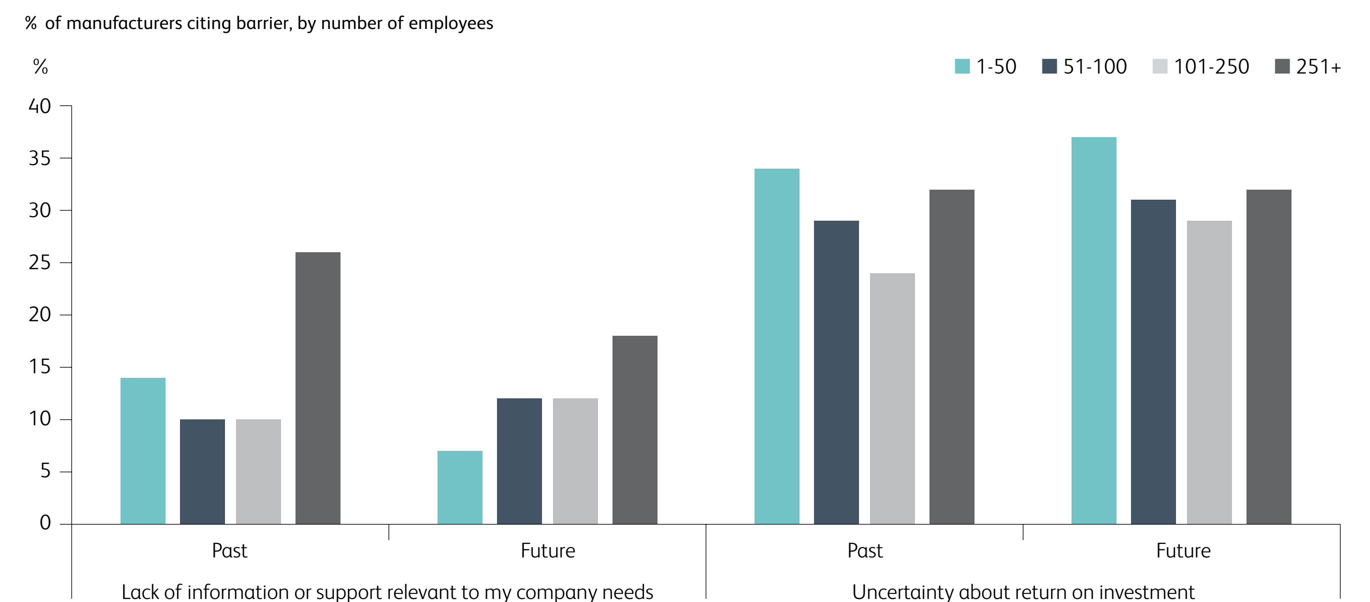
Our survey shows that, linked to cost-related barriers, are those related to certainty about returns from automation investment. Manufacturers fully recognise that expenditure of this nature brings broad based business benefits.

Only a handful of companies (2%) across our whole sample were unable to identify any positive outcomes from automation, with productivity, reduced error rates and improved quality being amongst the most cited gains. Moreover, these benefits were generally in line with or above expectations. Yet companies across all size brackets struggle to make confident financial decisions about the benefits of investment options (chart 13). This is not a new phenomenon. We saw manufacturers report similar hurdles when adoption of ICT was becoming commonplace in industry in the 1990s.

Indeed, when we explored the understanding and application of technology associated with the fourth industrial revolution (4IR), companies highlighted concerns about understanding all that was possible from 4IR investments, and whether traditional appraisal techniques would lead to the best strategic decisions for the business.

This challenge is also not a uniquely British one, with advisors to US companies noting the same challenges. Our survey suggests that in addition to the direct benefits, in

Chart 13: Support requirements extend to larger manufacturers



Source: EEF Investment Monitor 2017/18

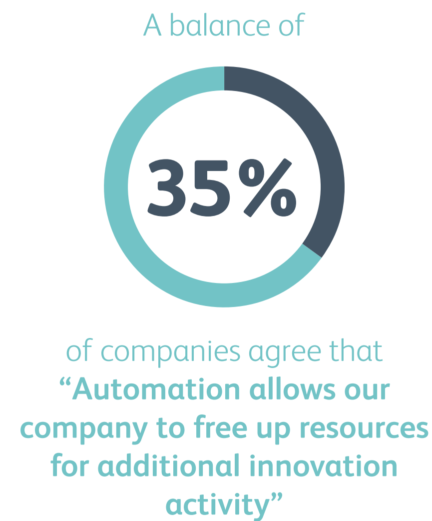
terms of productivity benefits, robotics and more highly automated processes can free up capacity in the business for higher value-added activity, such as innovation. These variables also need wider consideration when appraising investment options.

Information failures

Larger companies, in particular, in our survey are not finding the information and support that could enable them to straddle some of these uncertainties. Over a quarter of the largest companies in our sample indicated that a lack of such information was a hindrance to past automation investments, but despite progress with implementing technological solutions, one in six believe this will still hold them back in future.

It may be that those that are looking to support companies with automation are targeting the smaller end of the market, and business support providers may face some restrictions in reaching out to larger businesses if it has no element of government backing.

It is highly unlikely that manufacturers will ever be able to fully overcome barriers to investment rooted in uncertainties over financial returns. Perhaps a more important action is to focus on the role of technology in delivering longer term business objectives. Our survey indicates that better targeted information about real world application of technology, not simply for those just getting going but to support companies' knowledge and adoption of the latest advances in automation, could be part of the solution to improving the UK's level of automation investment.



9. AUTOMATION HURDLES
CAPABILITY

The final set of challenges inevitably cuts across those cost and certainty hurdles we've already discussed – skills and workforce capability. Our survey responses identify four prevalent issues – difficulties with the application of existing technology; business rigidities; lack of the right skills and concerns about the workforce implications of introducing automated processes.

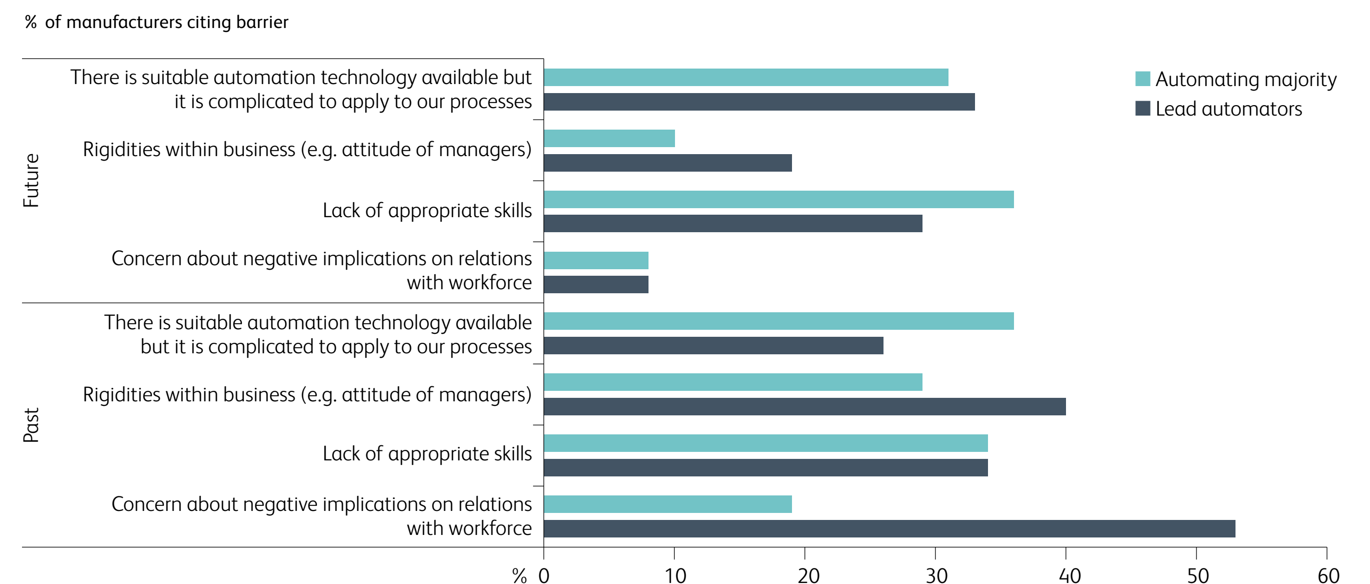
At least some of these hurdles are related to management capability, but workforce skills are a clear barrier to investment for around three in ten companies, looking at both past and future investments, and is a hurdle regardless of the stage of automation within companies.

Another angle on the skills problem

As our Monitor showed earlier in section 3, some companies are looking at more investment in robotics to reduce the labour content of their production processes – in a large part because they face a skills crunch. Yet, this crunch is holding back the pace of uptake as manufactures lack some of the right capability to implement solutions.

Previous EEF surveys[2,3] consistently show that production-related technical skills are in high demand across manufacturing, and are among the occupations which companies report some difficulty in filling. This clearly leaves many companies struggling to overcome the skills challenge by introducing automation technology. And for the automating majority this likely lies behind the challenge that one in four companies face in being unable to apply current technology to their business processes.

Chart 14: Some skills hurdles can be overcome



[2] 2012 skills survey
[3] 2016 skills report

Source: EEF Investment Monitor 2017/18

Leadership, vision and communication

As manufacturers move up the value chain and seek to implement more substantial improvements in their business process, they are increasingly bumping up against challenges with management capability. Increased investment in automation is no exception.

The previous section noted that there is a need to adopt a strategic as well as financial appraisal of investment decisions. But our survey also shows that the requirements of management extend to workforce communication about the impact of investment plans and ensuring business models adapt with more automation.

In order to reap the gains from automation business models may also need to evolve. Previous waves of technological change – such as the application of ICT in the 1990s, are thought to have left the UK behind, in part as a result of manufacturing managers being less effective than their, particularly US, competitors. Results suggest that the UK may not have fully addressed the challenges of developing management and leadership talent.

The stand out challenge in chart 14 is the issue that 'lead automators' have faced in dealing with concerns about the workforce implications of automation. There is no shortage of headlines estimating the number of jobs and occupations that might be redundant in the coming decades through rapid advancements in technology.

> "The Long-Term Jobs Killer Is Not China. It's Automation."
>
> New York Times, Dec 21 2016

> "Robots to take 4m jobs over next decade."
>
> The Times. Sept 20 2017

But the reality for many manufacturers is that the journey to introduce ever more automated process has been underway for decades and research from countries out in front on investment in robotics provides evidence that robots are not replacing jobs. Rather they are replacing tasks – freeing up skilled labour for higher value activity. Nevertheless, in uncertain economic times such investment can be seen to be a threat to employment if the investment strategy is not clearly communicated to the workforce.

> "Robots have had no aggregate effect on German employment, and robot exposure is found to actually increase the chances of workers staying with their original employer."
>
> The rise of robots in the German labour market.
>
> Wolfgang Dauth, Sebastian Findeisen, Jens Südekum, Nicole Woessner
> 19 September 2017

Encouragingly, our survey shows that 'lead automators' have succeeded in this respect, with the proportion of companies in this group expecting workforce concerns to be a barrier to future automation drastically reducing. In many other aspects of business we've seen manufacturers manage change with positive employee engagement, and technological advances will increasingly need to be a part of that dialogue.

10. LOWERING THE BARRIERS
AREAS TO INVESTIGATE

Our automation spotlight confirms the trend of a more moderate pace of investment in automation and robots than the international comparisons suggest. The 'automating majority' in our survey appear hampered by a range of barriers that are holding back progress and many of these relate to internal challenges such as leadership, skills availability and resources.

For the smaller group of 'lead automators' their requirements in pushing forward with more investment relate equally to skills, but also a number of external factors, such as finance availability, the tax environment, and information and support.

For manufacturers, policy makers and those stakeholders which engage with the sector on improving process and productivity, there are some areas where collective action could start to accelerate some catch up with the international best in class.

Cost

Tax environment – Government needs to ensure that the UK tax system reflects technological change. The Office for Tax Simplification has initiated a review of moving from capital allowances to accounts depreciation, which manufacturers must engage with. Advisors should also ensure companies are fully utilising other support, such as the R&D tax credit, to encourage the necessary process and business model innovation.

External finance providers – It's not just SMEs that have concerns about external financing. Getting the product portfolio right for companies near the frontier of technical developments should also be a priority for finance providers.

Certainty

Peer to peer examples – Companies in the automating majority could benefit from networking opportunities to learn about the full potential of automation and reduce uncertainties about returns. Supply chain engagement and facilitated collaboration could start to address this.

Better information – Business support providers and other industry advisors should better segment advice – both to include those at the earlier stage of their automation journey, but also those at the more advanced end of the pack.

Capability

Management skills – Companies must make complementary investments in management and leadership to maximise automation benefits. The roles of leaders will be critical in effective deployment of technology and broader workforce engagement.

Apprenticeships – The new apprenticeship levy can offer opportunities for upskilling and retraining of existing employees, as well as bringing young people into the sector. Frameworks must keep pace with industry requirements and offer flexibility to manufacturers.

SANTANDER VIEWPOINT

Santander is delighted to be partnering with EEF to produce the Investment Monitor 2017/18. At this time of heightened economic uncertainty, intelligence into manufacturers' ability and appetite to invest is invaluable.

The good news is the Investment Monitor shows manufacturers' willingness to invest for future growth is holding up well. Despite anxieties about the UK's ongoing negotiations over the terms of Brexit – and evidence in recent months of slowing growth – more than half of all manufacturers (51%) plan to increase investment in the years ahead. And while the 6.5% of annual turnover invested in plant and machinery by manufacturers, on average, over the past two years is down on last year's 7.5%, it remains relatively healthy by historical standards.

This is encouraging. With so many Brexit unknowns to be resolved, it is inevitable that manufacturers are more reluctant to commit to investment for the future; nevertheless, the Investment Monitor suggests manufacturers remain sufficiently positive to make thoughtful investment plans.

Santander shares that sense of optimism: there are real opportunities for manufacturers that feel able to invest, even where they may currently have some spare capacity. In particular, we believe investments in greater automation can generate valuable productivity gains for manufacturers.

This is crucial. The UK's manufacturing sector is currently markedly less productive than its leading international competitors, including the US, Germany and France. Also Italy, currently standing one place ahead of the UK in the global league table of exporting manufacturers, has better productivity figures.

The case for automation is strong. While some manufacturers are concerned about how they will measure return on investment, the medium and long-term paybacks of greater productivity are enticing. And while manufacturers are nervous about claims automation leads to job losses, the evidence of those enterprises that have implemented these tools is that the real impact is job transformation; employees currently occupied by routine and monotonous work can be redirected into value-added tasks, acquiring new skills and helping manufacturers to deliver higher-quality and more productive output.

Making these gains will be crucial as British manufacturers seek to perform even more strongly on the world stage. UK exporters are already in good shape – the recently published Santander Trade Barometer shows almost twice as many international-facing businesses as domestic-only enterprises are highly confident of growth. But manufacturers able to harness productivity gains to improve their export performance – or to sell overseas for the first time – will be even better placed to leap ahead.

At Santander, we're looking forward to working with manufacturers as they seek to exploit these opportunities. Our international network puts us in a strong position to support manufacturers as their global footprint spreads. And we're developing innovative forms of financing to help manufacturers fund investment in plant and machinery, including automation; we already offer tooling funding, for example, and have invested in our asset finance capabilities.

We believe the UK's manufacturers can continue to be highly competitive in international markets and we're proud to stand alongside them. We'll be working closely with EEF members in the months ahead to understand even more clearly how we can best support British manufacturers.

Paul Brooks
UK Head of Manufacturing

We are fully committed to supporting manufacturers and we appreciate you are looking for something different from your bank. The complex nature of your business requires support from a bank that understands your industry, will deliver on its promises and believes in building long-term relationships.

We will work with you to find a finance package that meets your needs. We have a range of products available to help you manage your day-to-day cash flow, purchase essential equipment, invest for growth and mitigate financial risks when trading in both domestic and international markets.

With business customers worldwide, we have both the expertise and the reach that can help manufacturing businesses with their international expansion.

Lending is subject to status and lending policy.

Here to help you prosper

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www.santandercb.co.uk/sectors/manufacturing

EEF is dedicated to the future of manufacturing. Everything we do, from business support to championing manufacturing and engineering, is designed to help our industry thrive, innovate and compete locally and globally. In an increasingly uncertain business environment, where the UK is now on a path to leave the European Union, we recognise that manufacturers face significant challenges and opportunities. We will work with you throughout this period of uncertainty to ensure that you are on top of any legislative changes and their implications for your business.

Furthermore, as the collective voice of UK manufacturing, we will work tirelessly to ensure that our members' voices are heard during the forthcoming negotiations and will give unique insight into the way changing legislation will affect their business.

Our policy, employment law, health, safety and sustainability and productivity experts are on-hand to steer you through Brexit with rational, practical advice to help your business succeed.

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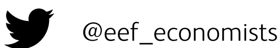
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