

REPORT

Riding the wave of uncertainty

*How process manufacturers are
planning for a brighter future*



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Methodology

On the Edge:

The Changing Role of the Manufacturing Industry



Maggie Slowik

Senior Research Analyst,
Manufacturing Insights, IDC

“Manufacturing is the engine room for a healthy economy and, according to the industry organisation Make UK, contributed 11% to the UK’s gross value added (GVA) while accounting for 45% of total exports. Governments realise that an economy based on service industries alone cannot survive in the long run. Manufacturers themselves are going back to basics, returning to their manufacturing roots, and putting a renewed premium on production knowledge.

This means the manufacturing industry has been forced to reinvent itself. Fueled by disruptive forces such as digital transformation and Industry 4.0, a major overhaul of key business processes is needed — across product innovation, production, and supply chain. At the same time, the shift from products to services and the need to bypass traditional sales channels to exploit the value-added activities of the digital economy are blurring the lines between industry players and contributing to the formation of business ecosystems. This is particularly critical for process manufacturing — including players in food and beverage, chemicals, metals, and pulp and paper — where the digital mission is centred around collaborative innovation.

Addressing this reinvention is fundamental because manufacturers are facing tough competition from industry peers and pressure from governments to alter compliance through USMCA (formerly known as NAFTA) in the US or Brexit in the UK. During a period of prolonged and heightened macroeconomic and political uncertainty this is an industry that needs to prepare itself at an organisational level.

IDC sees two main initiatives that are driving process manufacturers forward, enabling them to rise to the environmental challenge and embrace the opportunities ahead of them.

Making Business Digital: Smart Manufacturing

At the core of IDC’s definition of smart manufacturing is the “factory of the future,” which is “data hungry” due to the widespread deployment of connected assets, the need to inform decision makers, and to seek further process improvements. IDC forecasts that by 2020, to increase speed, agility, efficiency, and innovation, 80% of manufacturers will need to extensively restructure, placing data at the centre of their processes.

In practice, this means that data will permeate key processes across the supply chain, from input (where raw materials are come with embedded information) to output (data-centric or smart/connected products). Manufacturers that want to thrive need to position their smart factory at the centre of their value proposition, as this defines who and what they are and, most importantly, demonstrates their digital credibility and readiness to deal with disruption.

Another key element of the data-centric factory is the shop floor workforce who, augmented with the right technologies, provide the necessary levels of creativity and technical ability to manufacturing processes through their decision-making capability.

The Direct to Consumer Opportunity

Manufacturers are increasingly recognising the importance of delivering not just a product but an experience to make them stand out from their competitors. Most process manufacturers and consumer packaged goods (CPG) players, however, are by nature trading business-to-business, so they have limited visibility of how end consumers perceive their products. Deploying a direct-to-consumer model enables manufacturers to address a new generation of social-media-empowered consumers who are more demanding than ever with an obsession with variety, customisation, and quick delivery.

At the same time, it also offers the opportunity for new revenue generation by collecting data including product feedback, behavioral patterns, and preferences that in turn generate new tailored offerings. Interestingly, this does not only apply to process manufacturers that go to market via retailers, but also to companies that sell into the industrial space, resulting in an unprecedented push in the value chain.

One of the capabilities that is crucial in this convergence is traceability. As manufacturers move closer to the final customer, their accountability for quality increases as well. This requires the ability to access the complete product

history, including handling and production steps, in case any quality, safety, or sustainability questions are raised throughout the manufacturing supply chain. Being able to respond to such potential issues both internally and externally is what drives reputational value.

Manufacturing is best positioned to influence every downstream industry, so long as the industry can set a positive example for digital evolution. In IDC's definition, this means transforming decision making with technology by enabling individual line-of-business leaders to make actionable decisions based on the right data at the right time. This is mission critical in creating new business models and helping to ensure the industry is fit for purpose in the face of increased globalisation and regulatory changes — giving manufacturers the security of a healthy brand and an increasing profit line. But this requires that digital transformation doesn't happen as an isolated initiative. According to IDC's Worldwide Manufacturing 2019 Predictions, pushed by the success of early adopters, over 40% of manufacturers are expected to have enterprise wide digital transformation initiatives in place by 2021."



Executive summary:

How process manufacturers are staying ahead of the curve

Opinions around the state of the manufacturing sector are never short. The public and politicians on both sides of the Atlantic can be regularly heard lamenting the 'decline of our industrial sector' or saying things like 'we don't make things in our country anymore'.

Too often though, those opinions are based on hearsay and come from the outside looking in. To gain an uncensored view from the factory floor, we invited over 900 of your fellow professionals from mid-sized manufacturing businesses in the UK, US and Canada to share their thoughts and plans on business strategy, access to talent, technology adoption and how environmental factors are impeding their opportunity to grow. A look from the inside out.

We were interested to hear how in an uncertain world, the people that make some of the world's most widely used and important products such as pharmaceuticals, food, beverages, gasoline, oil, plastics — and let's not forget wine — are coping as we step into the third decade of the 21st century. What challenges and opportunities are keeping them awake at night, such as how Brexit and USMCA might impact them? How are they preparing for Industry 4.0 in an ever-globalising world, what are they forecasting for their industry, and how are they planning for this change?

Our research showed that rather than putting the brakes on and waiting for governments to make the big decisions, process manufacturers are actually taking control of their destiny with 99% telling us they are preparing for growth — investing in tools to help them remain in the driving seat, and selecting technology that keeps their feet on the ground and their eyes on the profit line.

In every industry, finding the right skills is a challenge. As millennials meet baby boomers in the work place, we are for the first time seeing a multi-generational workforce that wants and needs to be motivated and rewarded in very different ways. This is even more prevalent in a workforce that heavily relies on immigrant talent to fill skills gaps and keep the production line moving. You told us that process manufacturers in the majority of cases value technical skills over creative ability, but in an industry where more than half of companies state they will be impacted by a declining talent pool due to regulations affecting immigration, there is an urgent need to address the war on talent now, in order to win the fight for continued productivity and efficiency.

Walking down the aisle of any supermarket today you will see a vegan section, a gluten-free shelf, or a sticker that proudly states 'nut-free', 'does not contain shellfish', and/or 'locally sourced'. As consumers become hyper-aware of what they are consuming, their demands to understand food provenance are increasingly being met by process manufacturers, who take safeguarding against contamination incredibly seriously. Over half the process manufacturers we spoke with said that a lack of traceability meant a risk to their brand, and around a third went as far to say there was a risk to life.

Industry 4.0 and emerging technologies are transforming our approach to the authentication and traceability of products, with the Internet of Things (IoT) digitising supply chains and artificial intelligence (AI) providing faultless analysis. Technologies like automation, robotics, and blockchain, as they rise in prevalence, are proving to be more than a point of focus in Hollywood's next blockbuster. These technologies are making a difference today by increasing productivity, and freeing manufacturers to focus on the important stuff.

The most striking outcome of our research was just how confident this industry is, in both its own ability and the future it's carving out for itself. By taking back control, understanding how current affairs will impact their profit lines, and looking at the bigger, longer-term picture — the process manufacturers we spoke to are firmly in the driver's seat. In fact, 85% of you told us that you believe your home country will be considered an industry leader by 2025. Let's take a deeper look...

Part 1:

Opportunities created by regulatory change

As process manufacturers grow, globalisation becomes a factor. Interacting with the world offers lucrative opportunities, creating a higher demand for products and sources of cheaper raw materials that often impact the entire supply chain.

But globalisation also means complex challenges. A crowded global market means more competition and a rapidly accelerating rate of change.

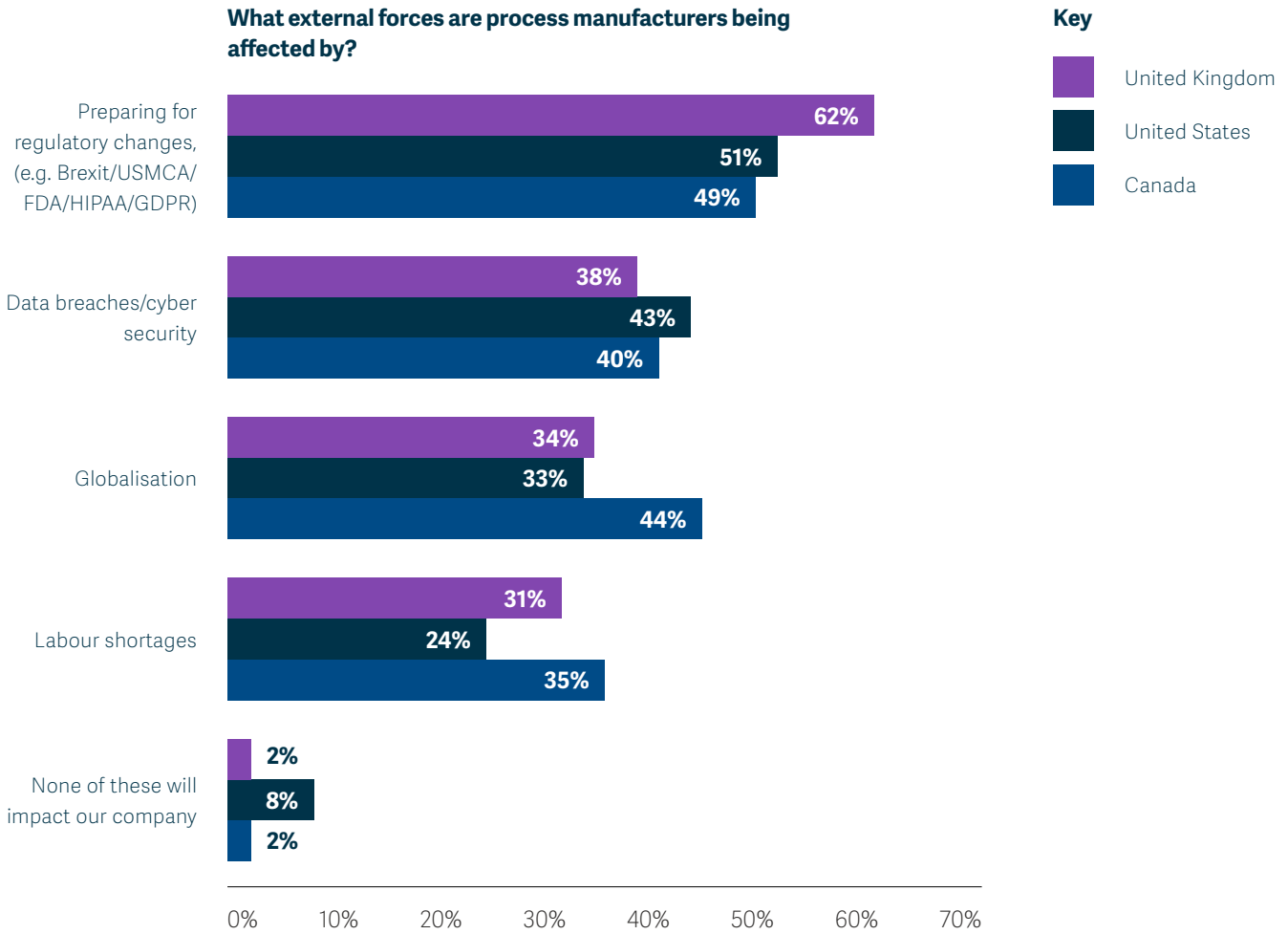
For example, Brexit will surely mean changes in trade agreements between the UK and the European Union, which will carry implications given Europe is by far the UK's largest export market at present. In the US, process manufacturers are also seeing bilateral and renegotiated trade agreements, as well as corporate tax reform. These changes could also impact supplier networks and sources of supply, which will undoubtedly push up the cost of raw materials, and will ultimately have to be absorbed by the manufacturer or be passed on to the consumer, neither of which is an easy choice.

Our research shows that there are a range of external forces impacting process manufacturers, with preparing for regulatory changes ranked ahead of data breaches, cyber security and globalisation.

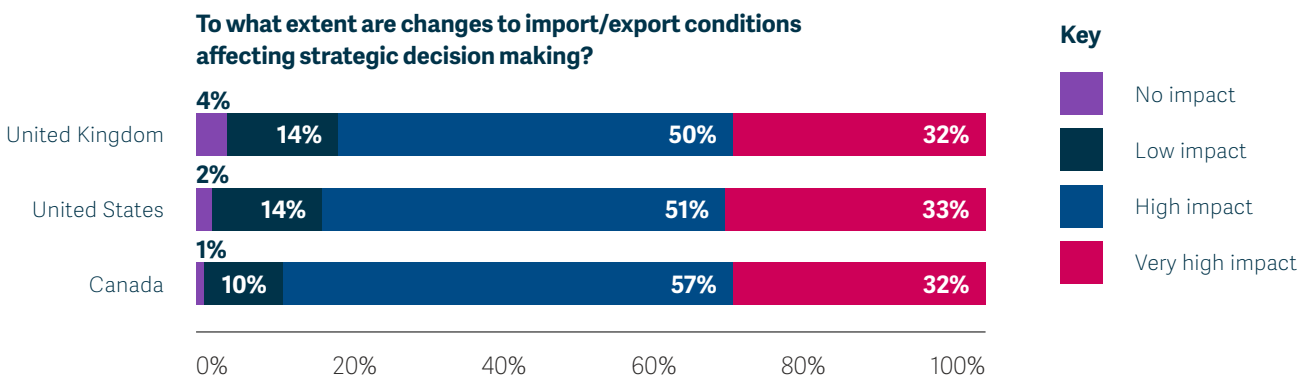
In the UK, 62% of process manufacturers said regulatory change is one of the biggest external factors impacting their business. Globally, more than 80% of process manufacturers report that import/export changes are affecting their strategic decision making, with a third saying import/export changes are having a 'very high impact' on strategic decision making.

These figures suggest that regulatory upheaval due to Brexit and changes in US trade/tax policies are having a significant impact on the real time business planning for process manufacturers.

What external forces are process manufacturers being affected by?



To what extent are changes to import/export conditions affecting strategic decision making?



Due to regulatory change, process manufacturers are looking at onshoring.

Driven by these uncertainties and challenges around importing and exporting, many of your colleagues in the industry have said they are looking closely at onshoring.

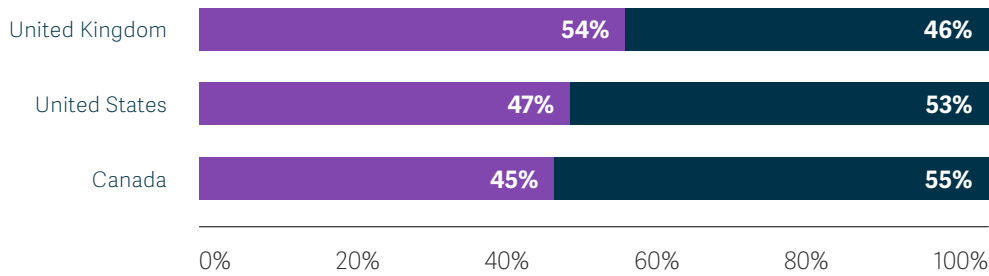
In the UK, process manufacturers saw more business opportunity in creating local, artisan goods with higher prices than goods that were cheaper due to mass production or that used cheaper raw materials. Although in the US and Canada more process manufacturers saw slightly more opportunity in cheaper international products, more expensive locally-produced products were still considered a better opportunity by nearly half.

In the UK, US, and Canada there is still a view that product being made locally is regarded as a badge of quality. This may be why higher pricing does not seem to be a concern for locally-produced products, which will be especially true if the quality of the product is indeed better.

In addition, consumers want to support their local economy, reduce environmental impact with goods that don't need to be shipped globally, and in food and beverage manufacturing, understand the provenance of what they buy. 59% of chemical manufacturers in particular see customer demand for locally-produced goods. There is also value in not having to cross international boundaries where currency fluctuations could impact their profit margins.

It certainly shows an opportunity for new suppliers and partners to emerge, which could dramatically alter international and domestic sourcing strategies and supply networks.

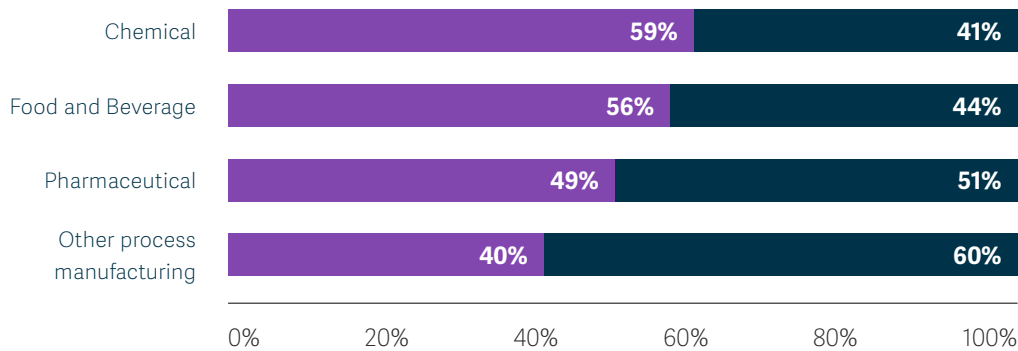
What creates the greater business opportunity?



Key

- Customer demand for locally produced goods, despite higher prices
- Customer demand for reasonably price goods regardless of origin

What creates the greater business opportunity? (by subsector)



Key

- Customer demand for locally produced goods, despite higher prices
- Customer demand for reasonably price goods regardless of origin

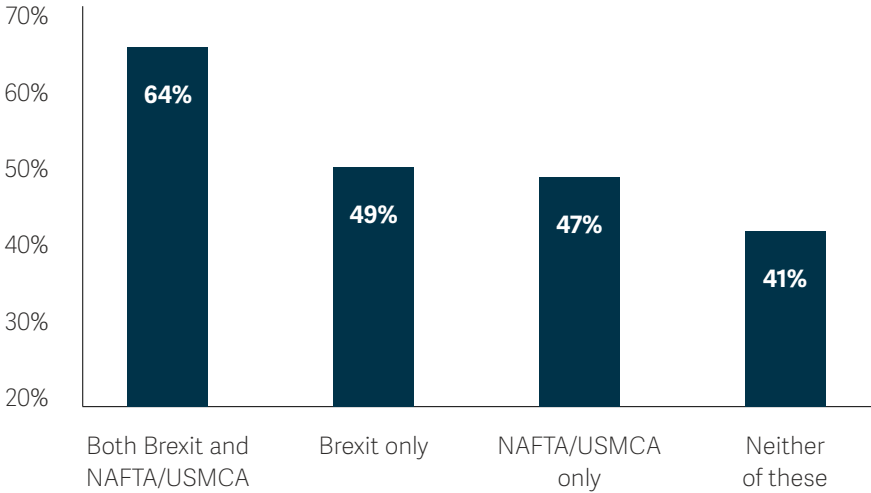
“These research findings are encouraging in that they show that most manufacturers are aware of the impending ‘global’ challenges (regulations, trade wars, immigration, etc.) and are doing something about them.”

Predrag Jakovljevic, Principal Analyst, Technology Evaluation Centres

An uncertain regulatory landscape also increases the likelihood of process manufacturers investing in technology solutions. Around half of UK, US, and Canadian process manufacturers told us they were more likely to invest in technology to get ahead of changes.

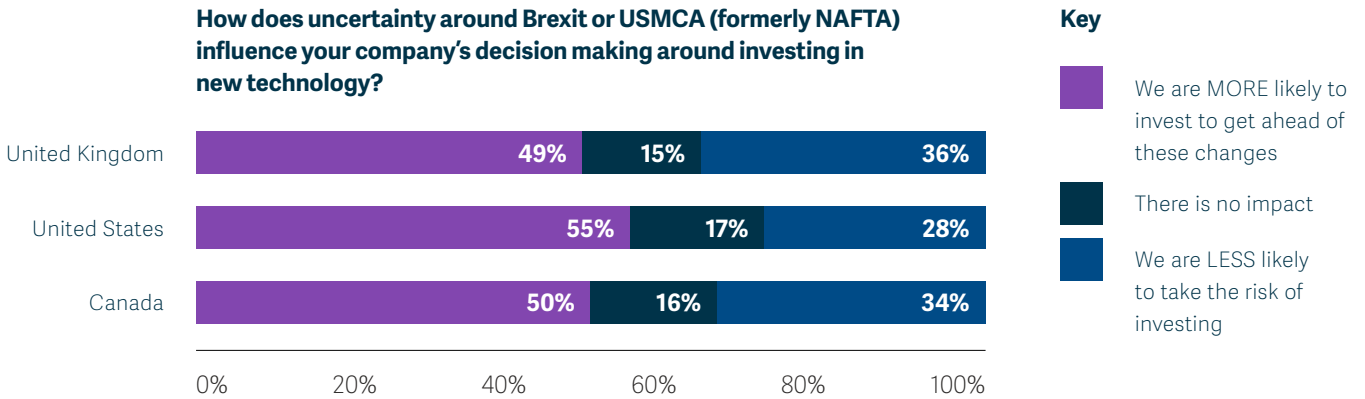
And this wasn't just country-specific — 64% of process manufacturers in all three countries we polled said that both Brexit and changes in US trade and tax policy influenced their decision making around investing in new technology.

How does uncertainty around Brexit or USMCA (formerly NAFTA) influence your company decision-making around new technology?



This correlation between changing business strategy and technology investment shows that process manufacturers are investing in strong, digitised global trade and supply chain operations that will enable them to meet customer and industry demands, as well as use technology to create efficiencies in both people and process.

How does uncertainty around Brexit or USMCA (formerly NAFTA) influence your company's decision making around investing in new technology?



“Having access to the latest global trade data to make informed decisions is the starting point. With the potential changes that may be coming, keeping up with the volume of new trade agreements alone may be a show stopper for some companies without proper access to trade data.”

Bryan Ball, Research Director for Supply Chain and Supplier Management at Aberdeen Group



Part 2:

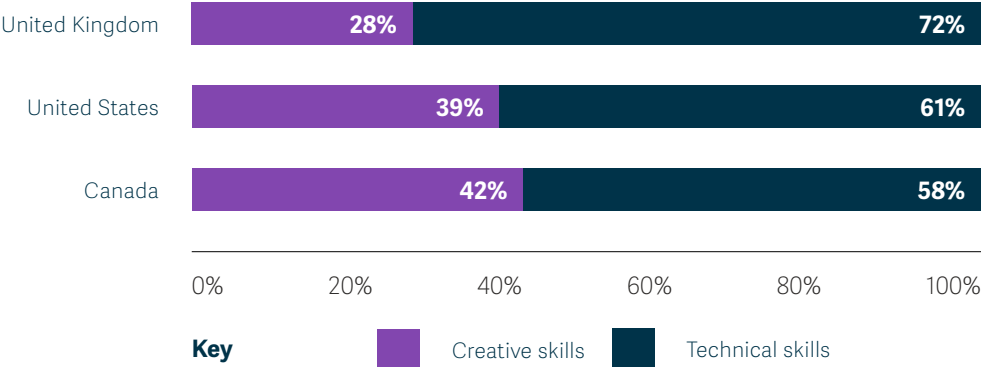
Facing the war for talent to embrace new opportunities

The prevalence of technology and computer-controlled machinery in the industry means that factories consisting of assembly lines employing single-skilled workers are fast becoming 'old school'.

Augmenting the skills that humans have, and using machines to complete the mundane repetitive tasks, isn't a new trend — it's what drove the industrial revolution. Today Industry 4.0 has given rise to a new era of intelligent machines and robotics.

Crucially, our research indicates that process manufacturers feel that skilled workers with technical skills are critical to their long-term future, with technical skills seen as much more important to the future of the industry versus creative skills in all three markets.

Which of the following are more important to meet the demands of the future of process manufacturing?



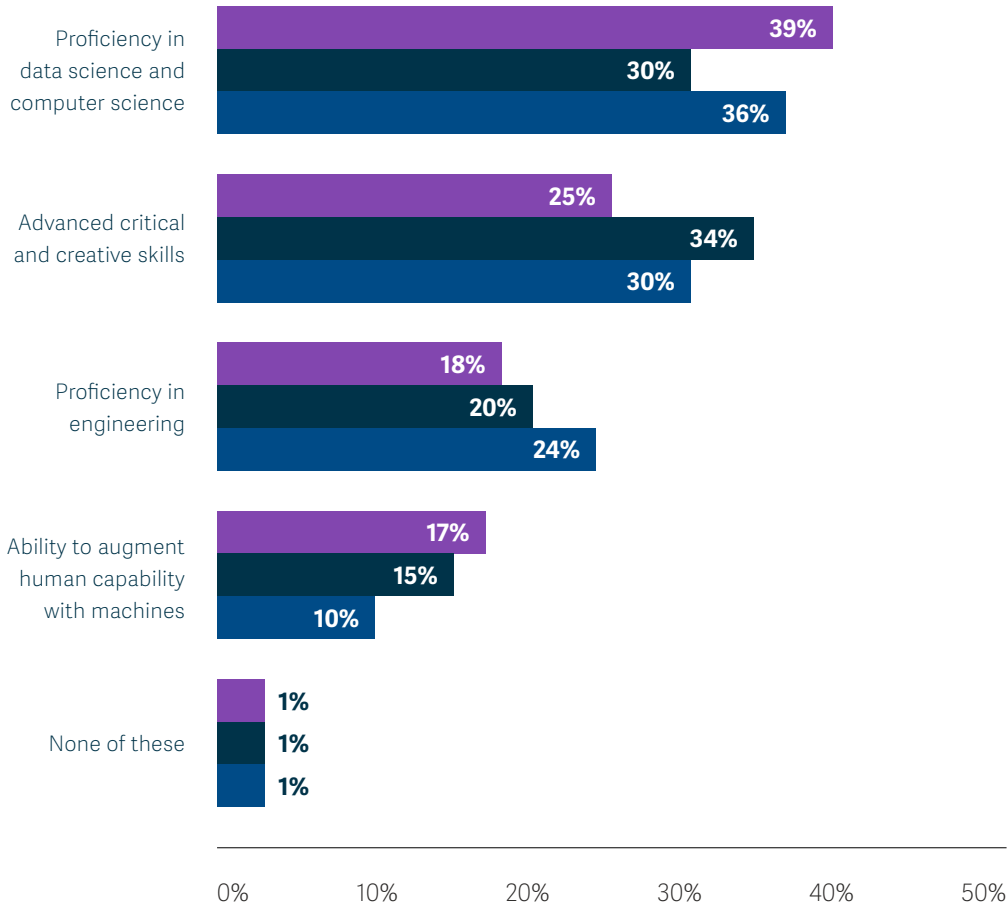
As machines automate basic tasks, people will be required to augment creative skills to complement the benefits machines can bring. Playing to the strengths of people and machines will become key to advanced problem solving.



Five years from now, which of the below skills do you anticipate will be critical for [UK/US/Canada] to be a market leader in process manufacturing?

Key

- United Kingdom
- United States
- Canada

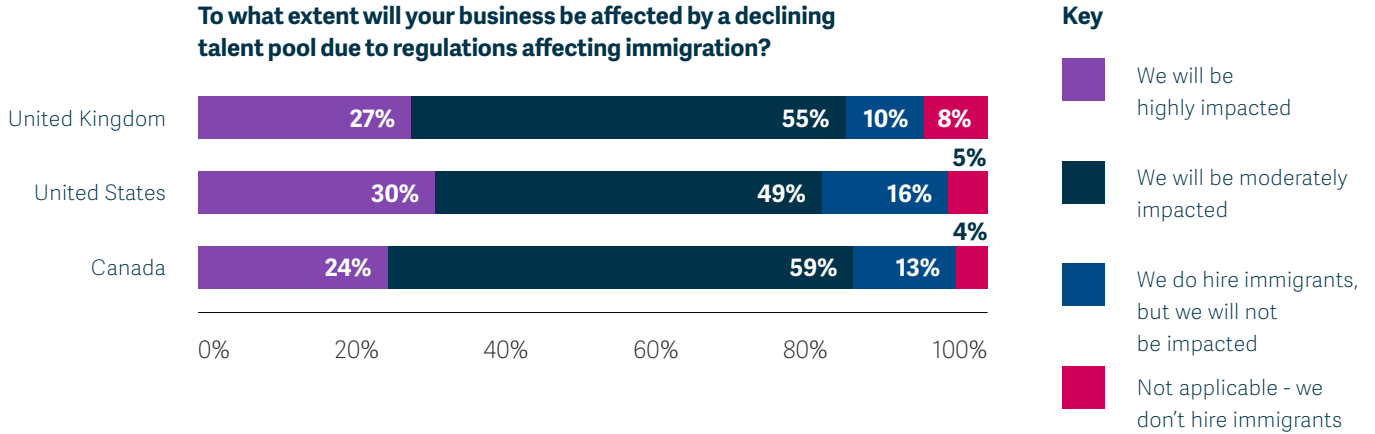


“There is continuing importance of humans in manufacturing despite the hype around robots, AI and automation — and this won’t change. What’s important is that manufacturers audit their processes and identify which low-skill, manual, and repetitive tasks can be handled by these technologies, enabling them to establish what tasks should be left to humans.”

- Hazel Copeland, CFO at Woldmarsh

The research does come with a stark warning. As well as regulatory change affecting technology investment, process manufacturers told us this is also contributing to a declining talent pool that will impact who they can hire.

To what extent will your business be affected by a declining talent pool due to regulations affecting immigration?



A declining international talent pool will mean that many process manufacturers will need to look at changing their recruitment strategies and consider finding people locally. You may need to look at groups of people found locally who may not have been focused on before or have been under-served by businesses – such as single parents, people with disabilities, young people and ethnic minorities. These demographics are all less likely to be at work than others in the working population, with much lower rates of employment than the national average.

Some businesses have already taken notice of this in making working schedules more flexible, but there’s a lot more that can be done in this area. Investment to integrate under-represented people in businesses will become more and more

important, with a need for greater investment in training for people who are not traditionally well represented in the job market, especially with the need for technical skills. According to recent global research by ManpowerGroup, 33% of companies are recruiting from outside of their traditional talent pool and 36% are adjusting education or experience requirements as a strategy to overcome talent shortages¹.

Manufacturers may also need to look at what job seekers and candidates want from jobs, and how this is changing over time. Of course, pay is important, alongside factors like company missions, values and purpose. However, it also makes sense to look at flexible work which is attractive to young parents and millennials, as well as a more mature generation of baby boomers.

“To prepare for regulatory change, companies should do their own self-assessments and identify the functions that will be most critical in managing their business when changes occur. Make sure you evaluate talent readiness in conjunction with the priorities placed on the most critical functions going forward.”

Bryan Ball, Research Director for Supply Chain and Supplier Management at Aberdeen Group

1. Solving the talent shortage: Build, Buy, Borrow and Bridge

Part 3:

The need for traceability

As process manufacturers expand internationally, commercial pressures and expectations mean traceability is vital to managing quality, inefficiency, and the threat of recalls.

International standards controlling quality and traceability impact the sourcing of raw materials. Tracing what goes into products in what can be long, and complex supply chains is crucial, as any contamination can result in serious issues — costing lives in the worst scenario.

Traceability is also a major factor for today's consumers who are much more concerned about what they put in their bodies, and where it originates from. There will be people who have specific dietary needs (such as being vegetarian or vegan), while others may shy away from food and drink which they believe causes environmental damage, like palm oil.

Our research reveals that more than 90% of process manufacturers reported risks in not having supply chain traceability, with serious concerns around incidents hitting the value of the brand and the company's ability to meet required regulations.

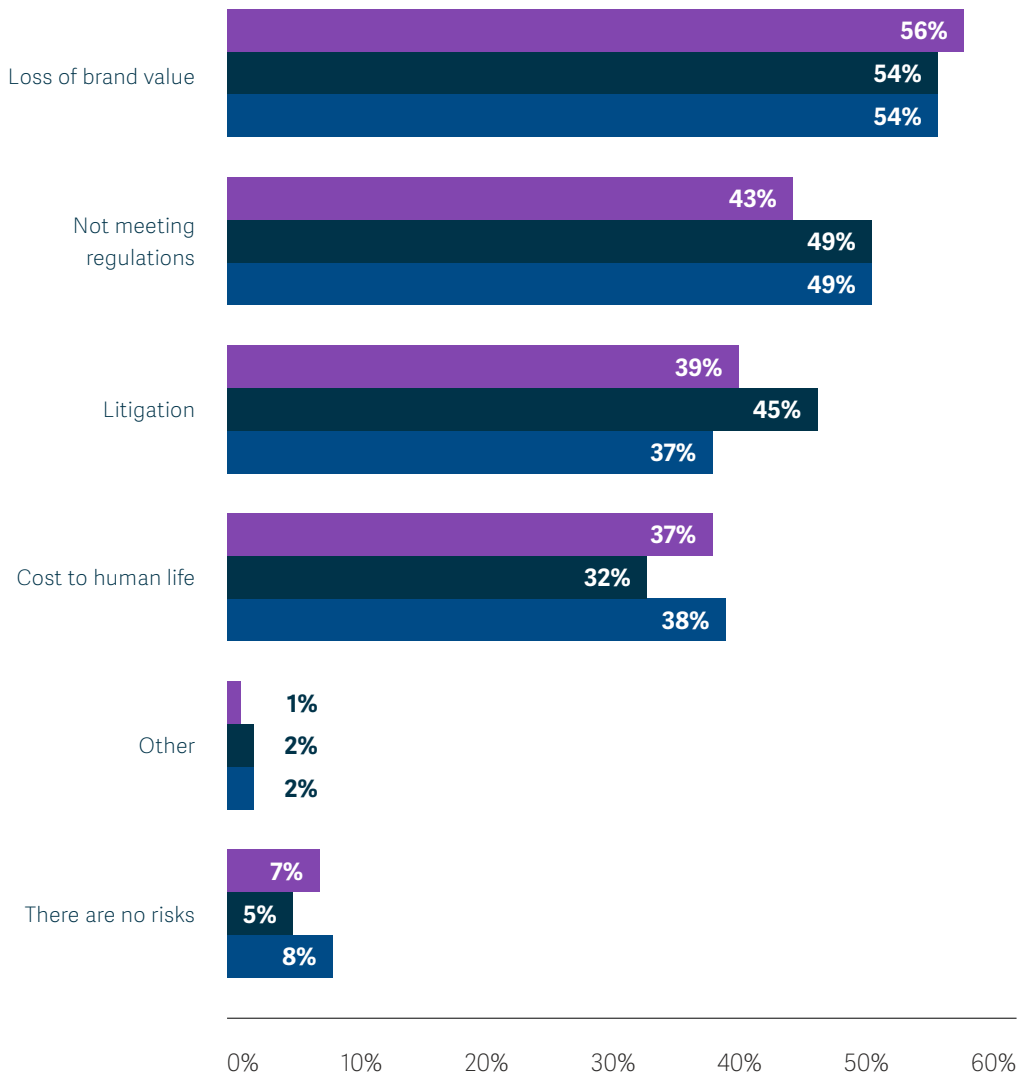
Although cost to human life and litigation as a risk came down lower than brand value and regulations, it was highest in pharmaceutical manufacturing, where contamination can directly lead to death and why its industry regulations are especially stringent.



What are the risks of not having traceability within your supply chain?

Key

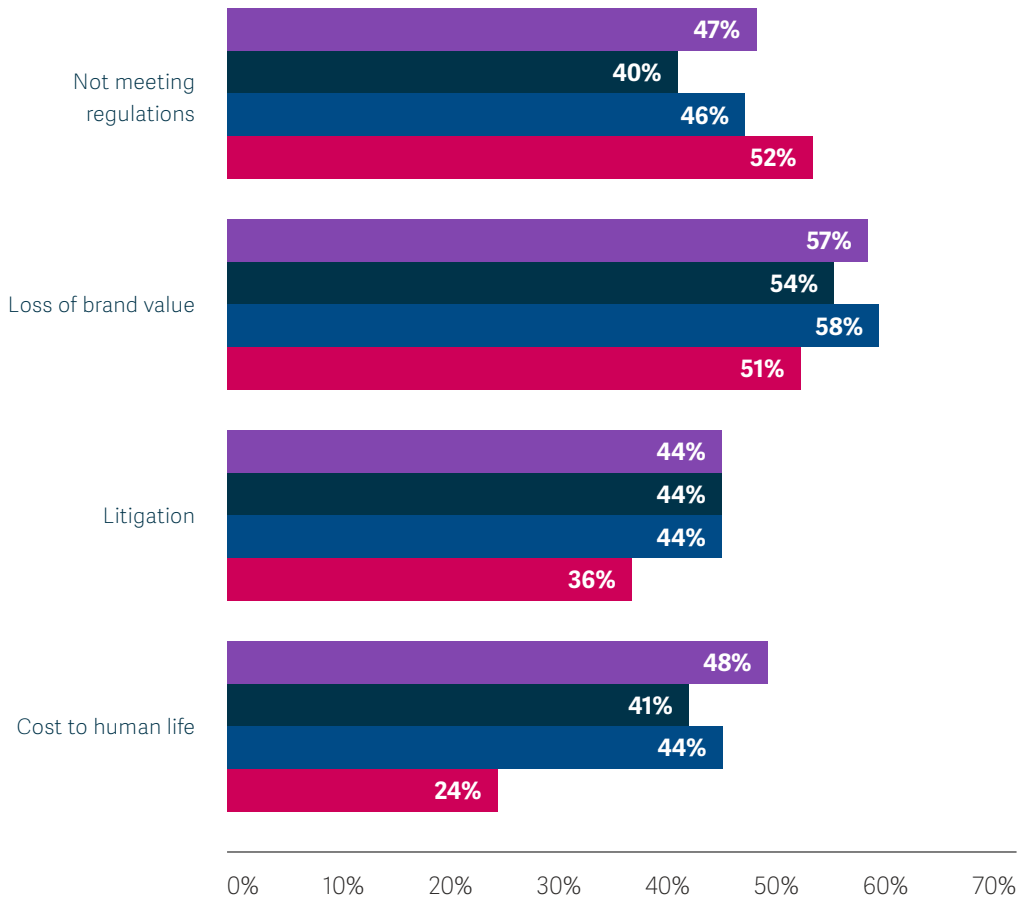
- United Kingdom
- United States
- Canada



What are the risks of not having traceability within your supply chain? (By subsector)

Key

- Pharmaceutical
- Food and beverage
- Chemical
- Other process manufacturing

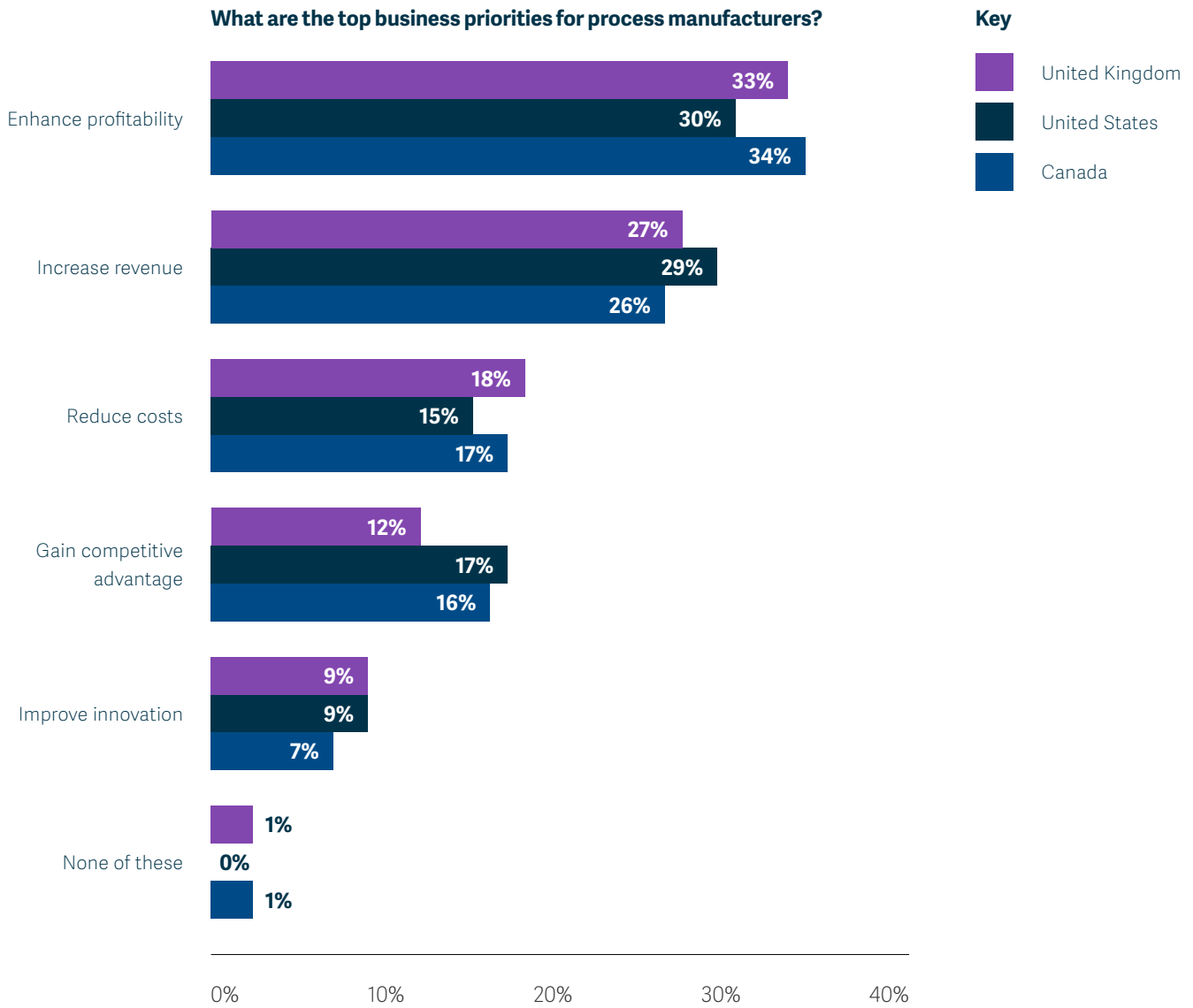


Part 4:

Preparing for change in an uncertain world

Our research shows that 99% of process manufacturers are looking to grow, indicating a confident industry that is taking control of its own future. The top business priority for a third of UK, US, and Canadian process manufacturers is enhancing profitability, followed by increasing revenue.

What are the top business priorities for process manufacturers?





What are your company's business priorities to drive short-term business growth?

Improve on customer services



Invest in technology that will help us drive productivity



Invest in R&D to create new products and solutions



Talent recruitment and employee development



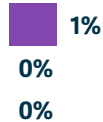
Expand into new geographies and markets



Focus on risk and fraud mitigation



We have no plans for growth



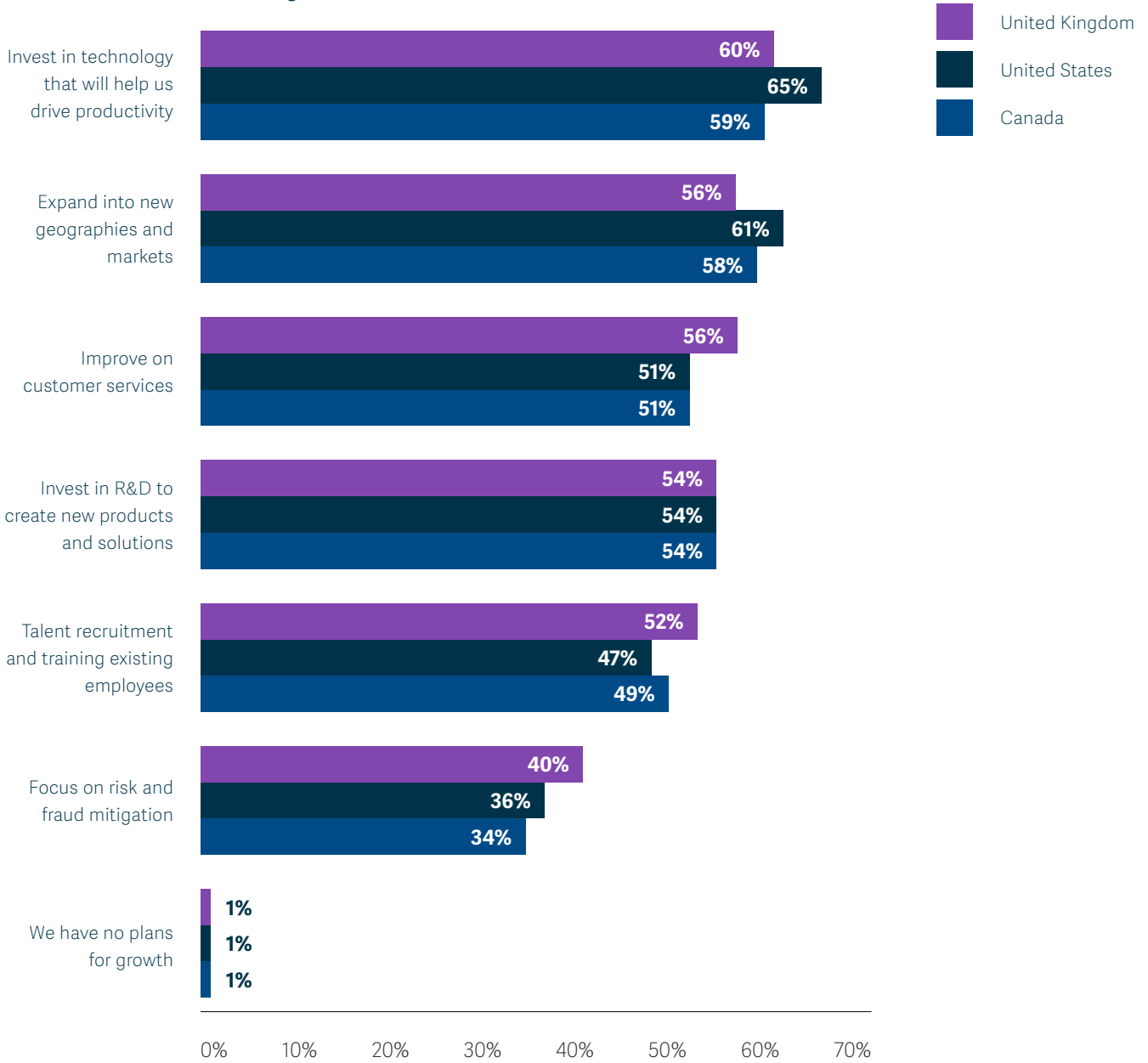
0% 10% 20% 30% 40% 50% 60% 70% 80%

Key ■ United Kingdom ■ United States ■ Canada

In the long-term, technology, research and customer services are still important, but there is an increased focus on expanding into new geographies and markets.

What are your company's business priorities to drive long-term business growth?

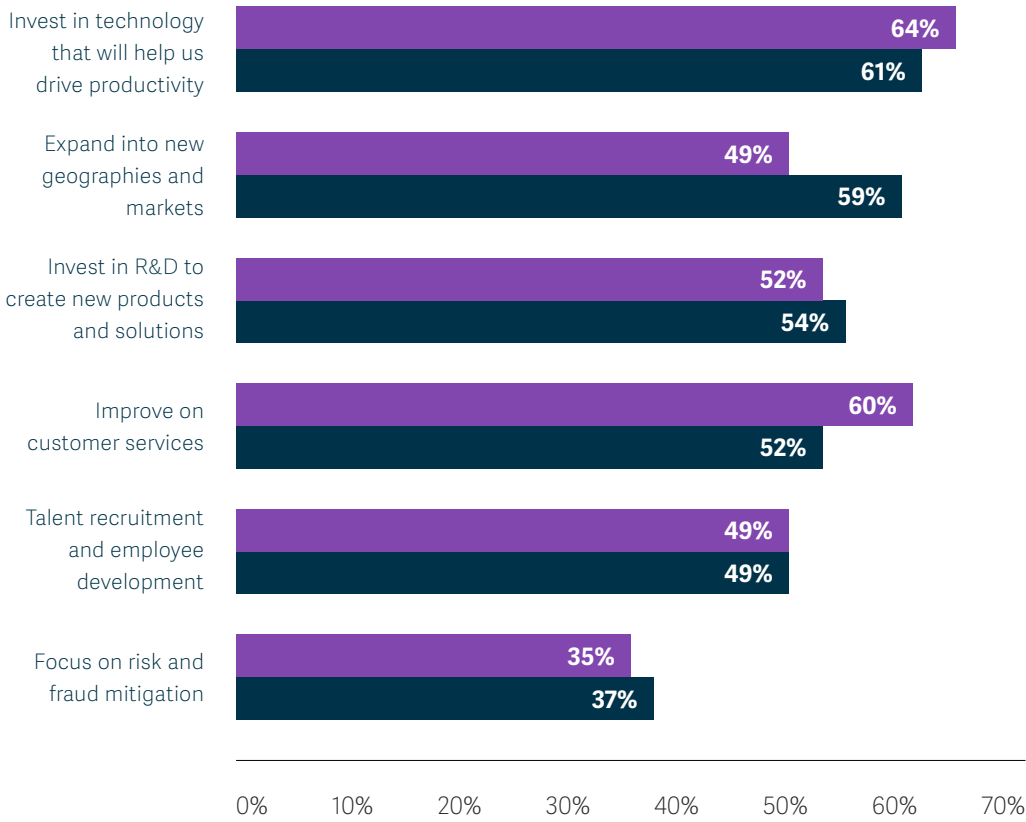
Key



What are your company's business priorities to drive short/long-term business growth?

Key

- Short term
- Long term



Although a focus on risk and fraud mitigation was ranked lower than other business priorities, those of you that did choose it as a priority were mostly senior executives. This is largely because risk and fraud mitigation are responsibilities of the C-Suite and those at boardroom level.

However, it's noticeable and should be flagged that there is more of a focus in the UK around fraud and risk, which indicates it's more of a challenge for UK executive leaders than their US and Canadian counterparts.

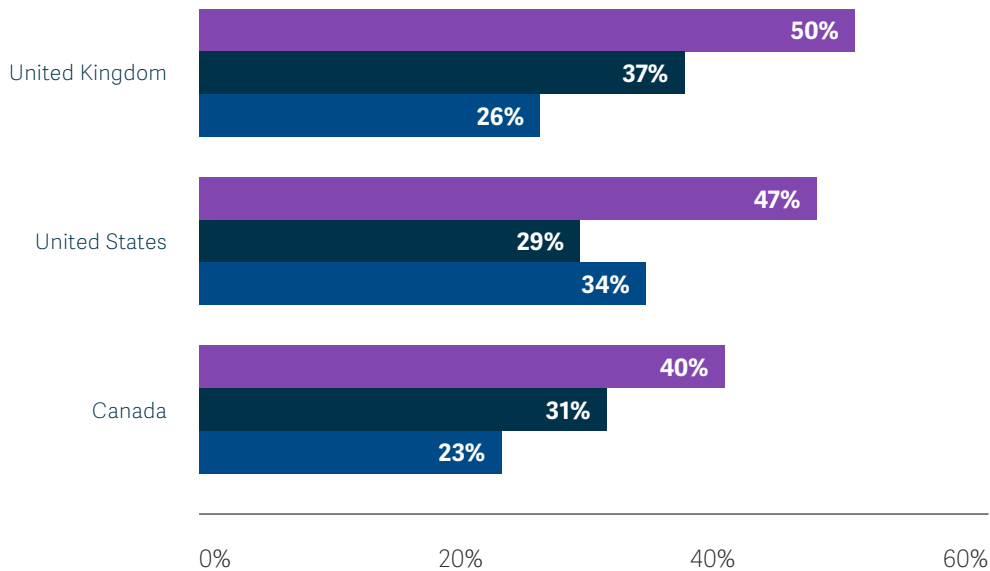




The job roles that chose risk and fraud mitigation as a top business priority were mostly executives

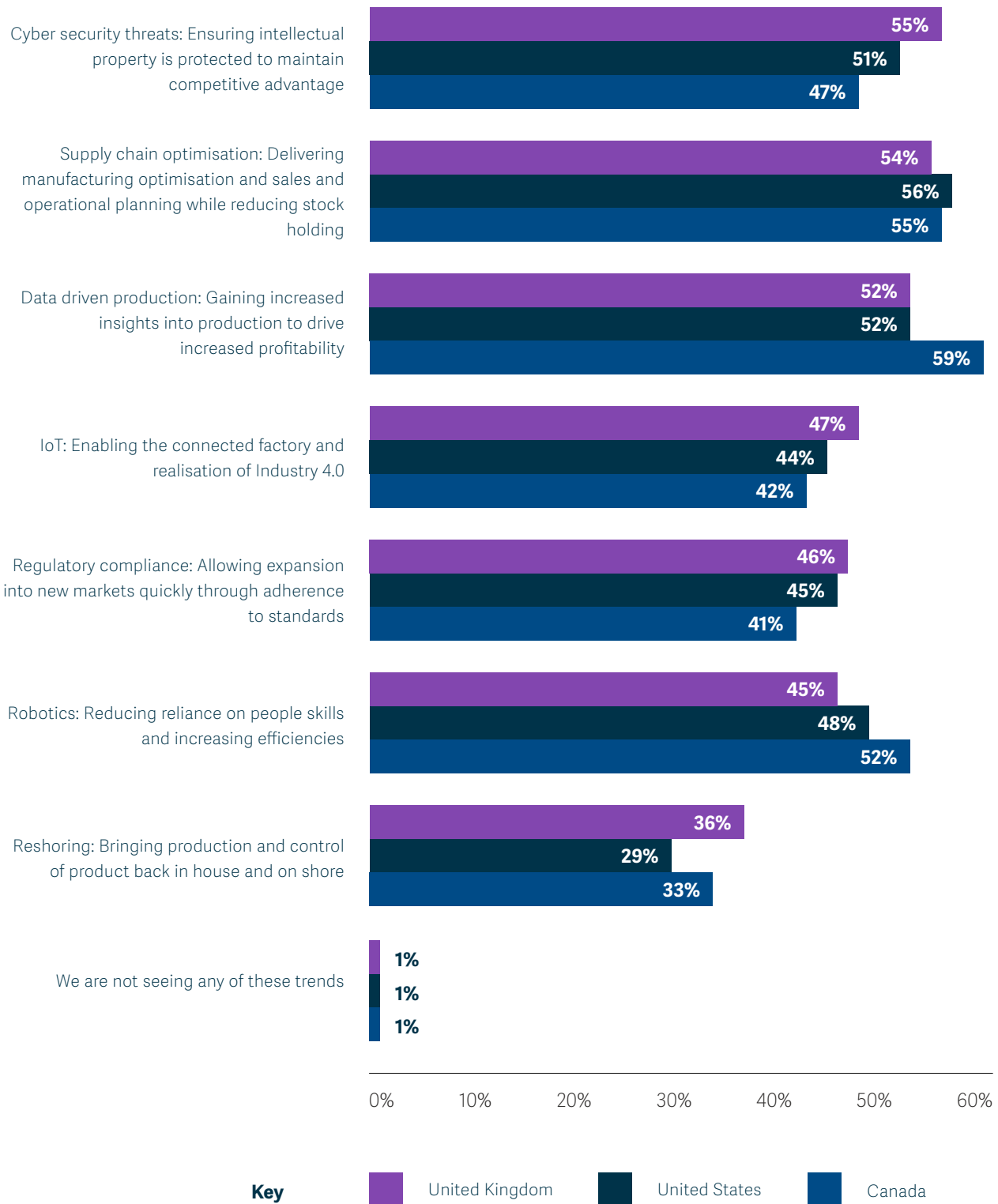
Key

- Executive
- Team Manager
- Senior individual contributor

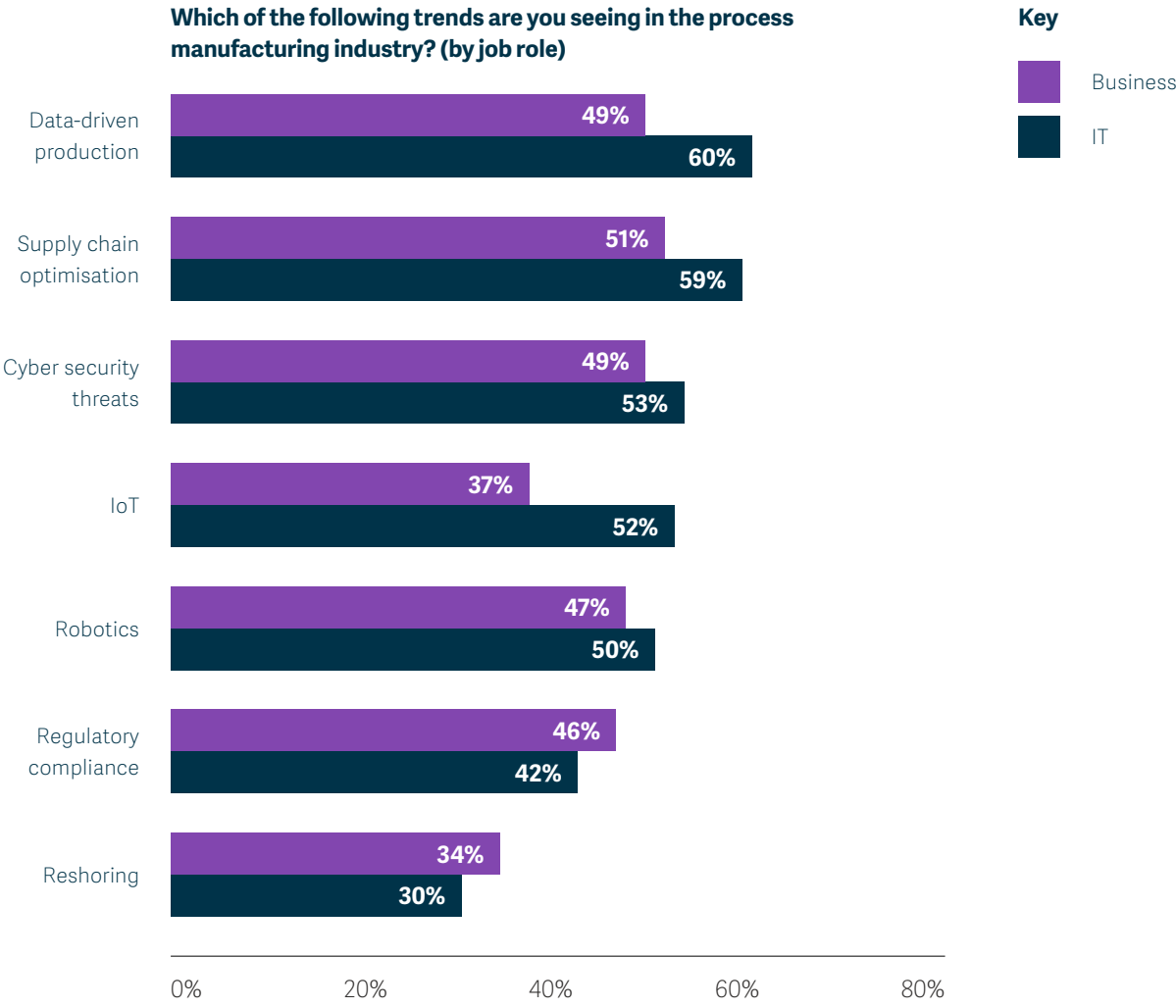


From a wider viewpoint, process manufacturers are seeing several different trends in the industry. There has been more focus on supply chain optimisation and data-driven production globally, which makes sense as these technologies can have a direct, short-term effect on profitability. Cyber security threats were also highlighted, particularly in the UK, with businesses looking to protect their intellectual property from attacks over the web.

Which of the following trends are you seeing in the process manufacturing industry?



Unsurprisingly, but important to note, there was a difference globally between the trends highlighted among IT professionals and those in business-focused roles. Those in IT-focused roles were more likely to place importance on trends in data-driven production, IoT, and robotics in the wider manufacturing industry, while those in business-focused roles were more likely to be thinking about trends like onshoring and regulatory compliance. It's great to see the enterprise dividing and conquering in terms of what they are concerned about and how they are taking action.



With increasing regulatory pressure, trade agreement uncertainties and cyber security risks all a factor, manufacturers are seeking to become nimble and effective through greater investment in technology.



Part 5:

What are process manufacturers investing in?

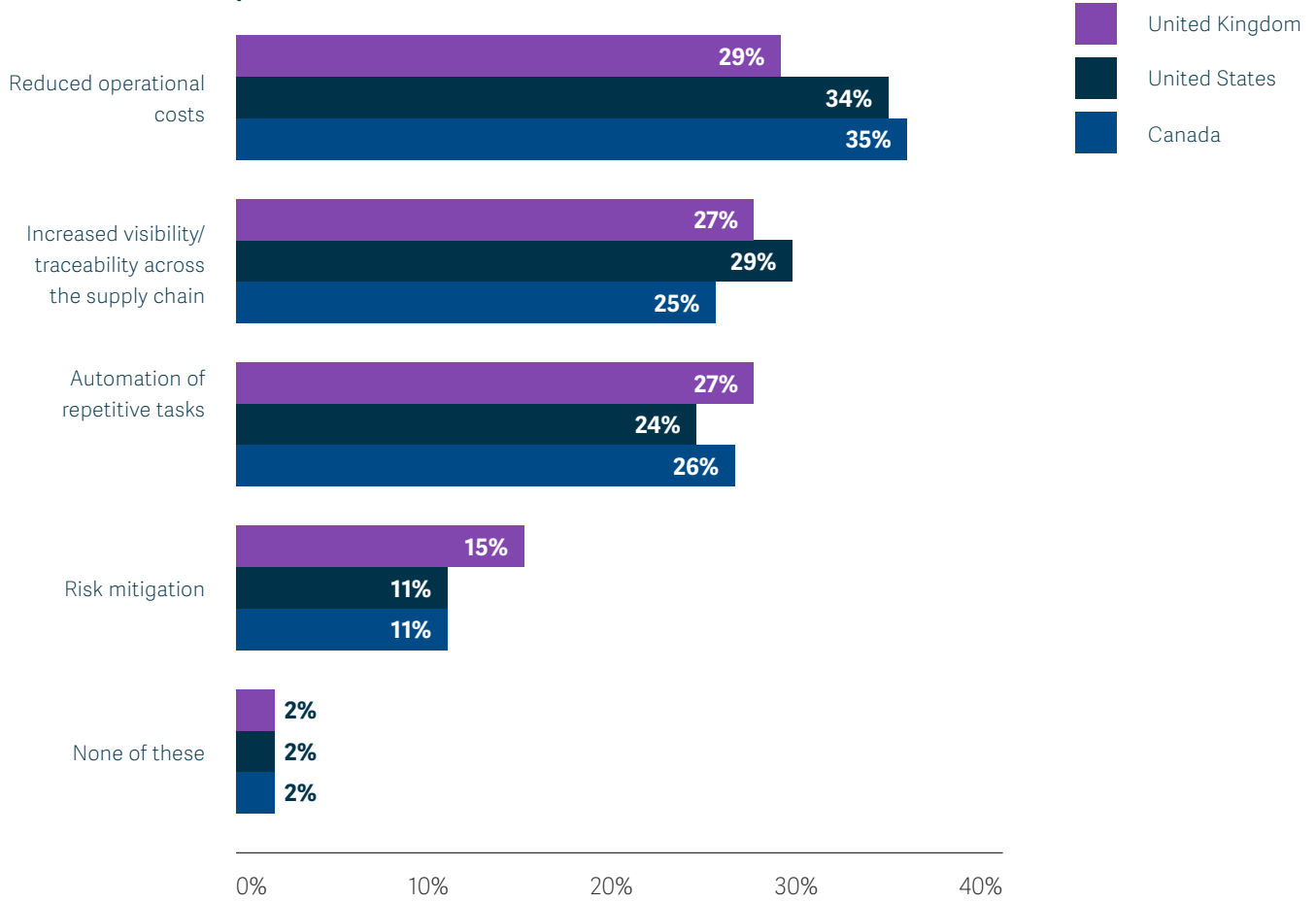
The research has highlighted the challenges and opportunities around regulatory change, traceability, and the war on talent — but how are manufacturers responding and where are they investing?

For process manufacturers the main perceived benefit of investment in emerging technology is the reduction of costs, with increased visibility of the supply chain and automation of repetitive tasks coming closely behind.

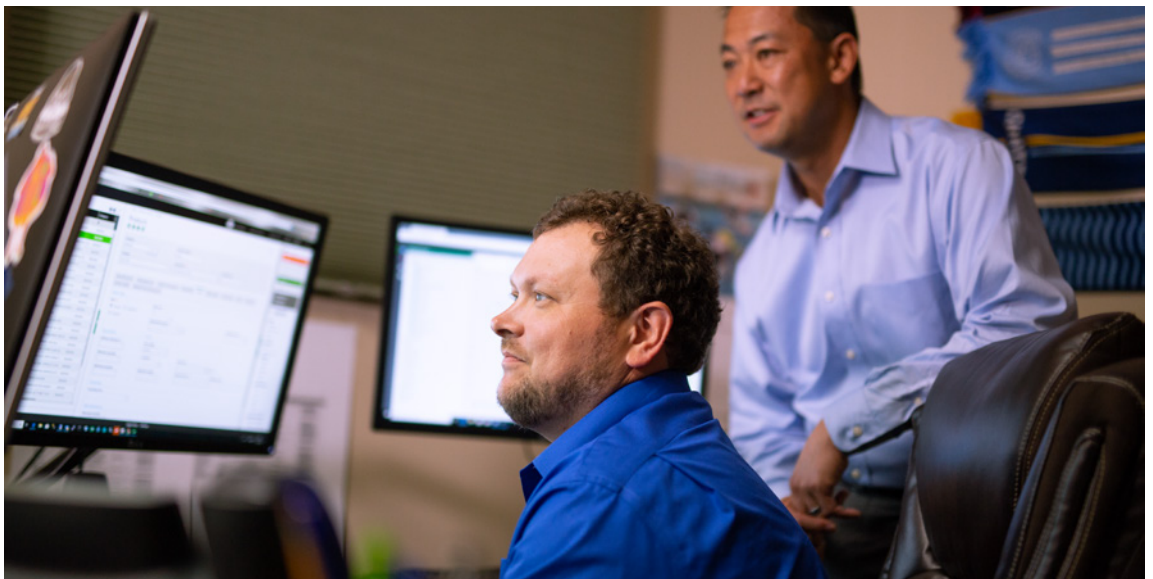
Again, risk mitigation was less of a priority, which suggests process manufacturers look at technology more as a profitability driver than as a way to reduce risk to the business. It's about doing more for less — and quickly.

What is the top benefit of investing in emerging technologies for process manufacturers?

Key

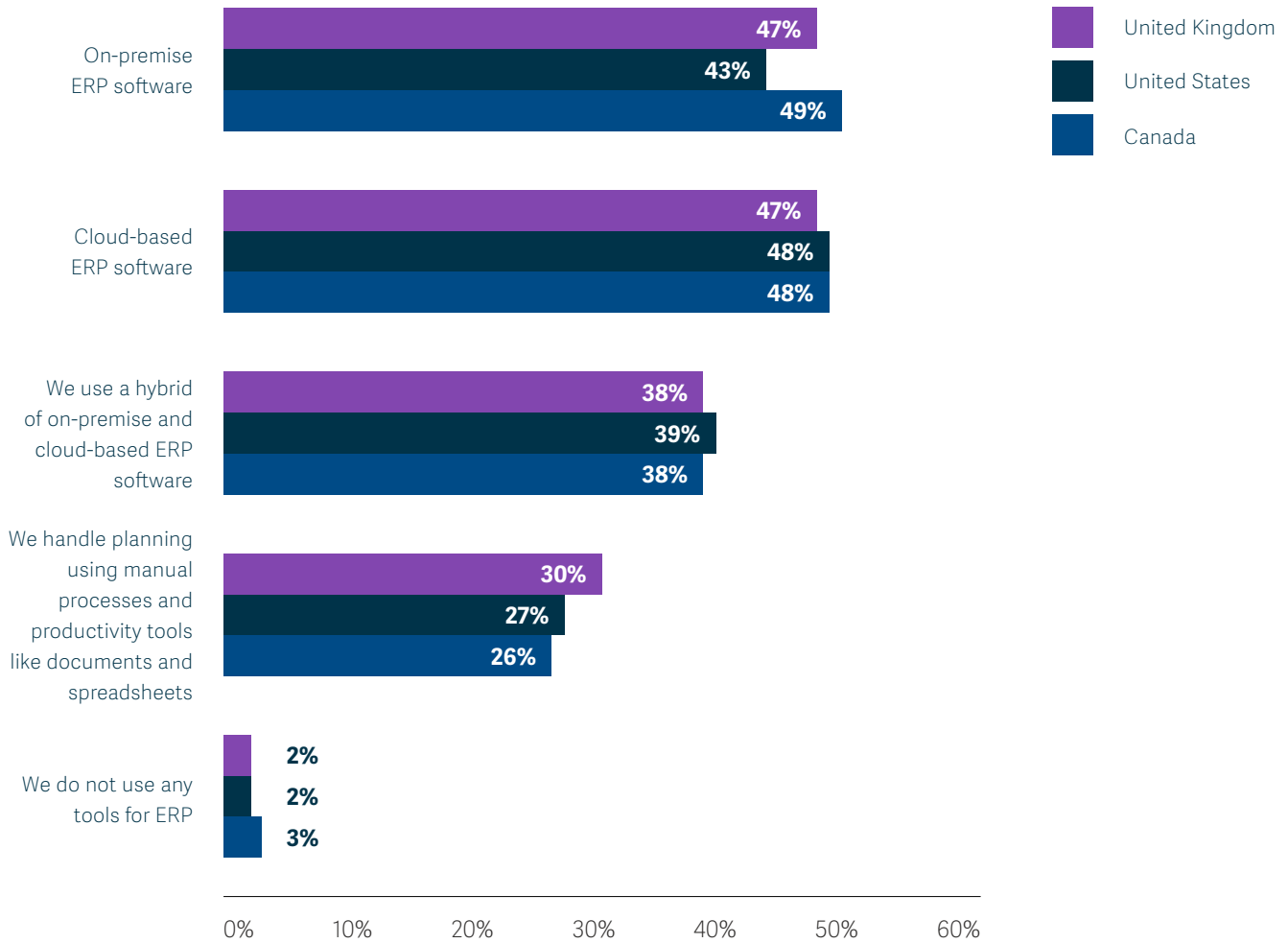


The research shows process manufacturers are working with a wide range of technologies at various levels of maturity.



How do you handle your business management needs?

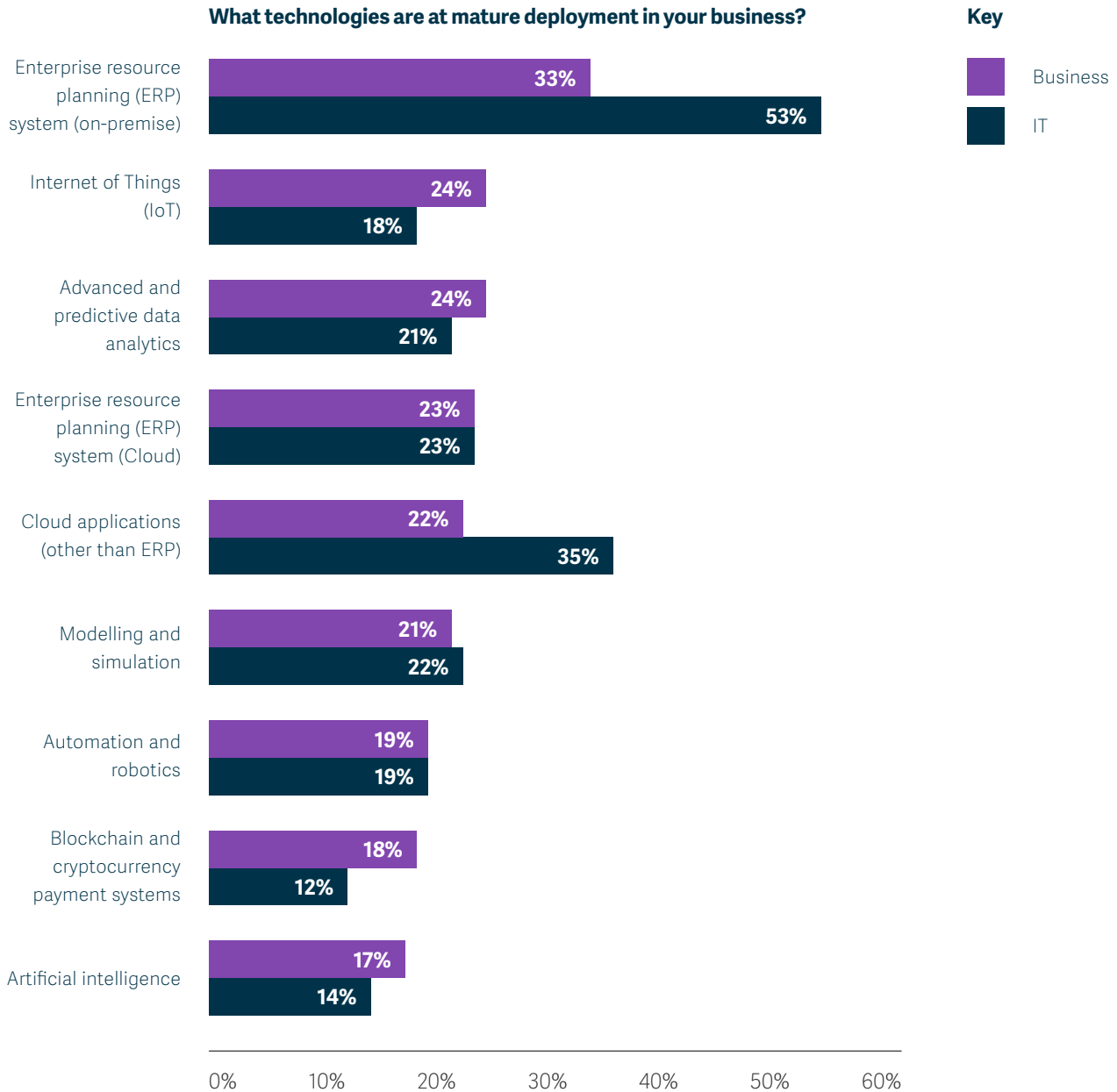
Key



There is certainly a disconnect between IT and business professionals at process manufacturers around how far along technology is, which shows that there's work to be done in bridging that gap. For instance, ERP is considered as a mature deployment by 53% of IT professionals, while only 33% of the business professionals think this is the case. 35% of IT professionals think cloud applications other than ERP are in maturity, as opposed to 22% of business professionals.

In a time when many businesses are undergoing a period of digital transformation, having IT in sync with other departments is crucial.

What technologies are at mature deployment in your business?



It's encouraging to see a shift towards emerging technologies, with AI, automation, robotics, and even blockchain already in use or with plans to be used in the near future. This shows that Industry 4.0 is more than a concept — with a large majority of process manufacturers choosing to take advantage of the gains it can make in terms of productivity and efficiency, even if it does require significant investment.

“Automation isn’t new but will certainly climb in popularity over the next 12 months and, eventually, become ubiquitous among manufacturers. It can relieve teams from mundane and repetitive work to focus on higher-value and strategic activities — and it’s something we experience first-hand. Moreover, it is easier to access, expand and scale than other technologies like AI.”

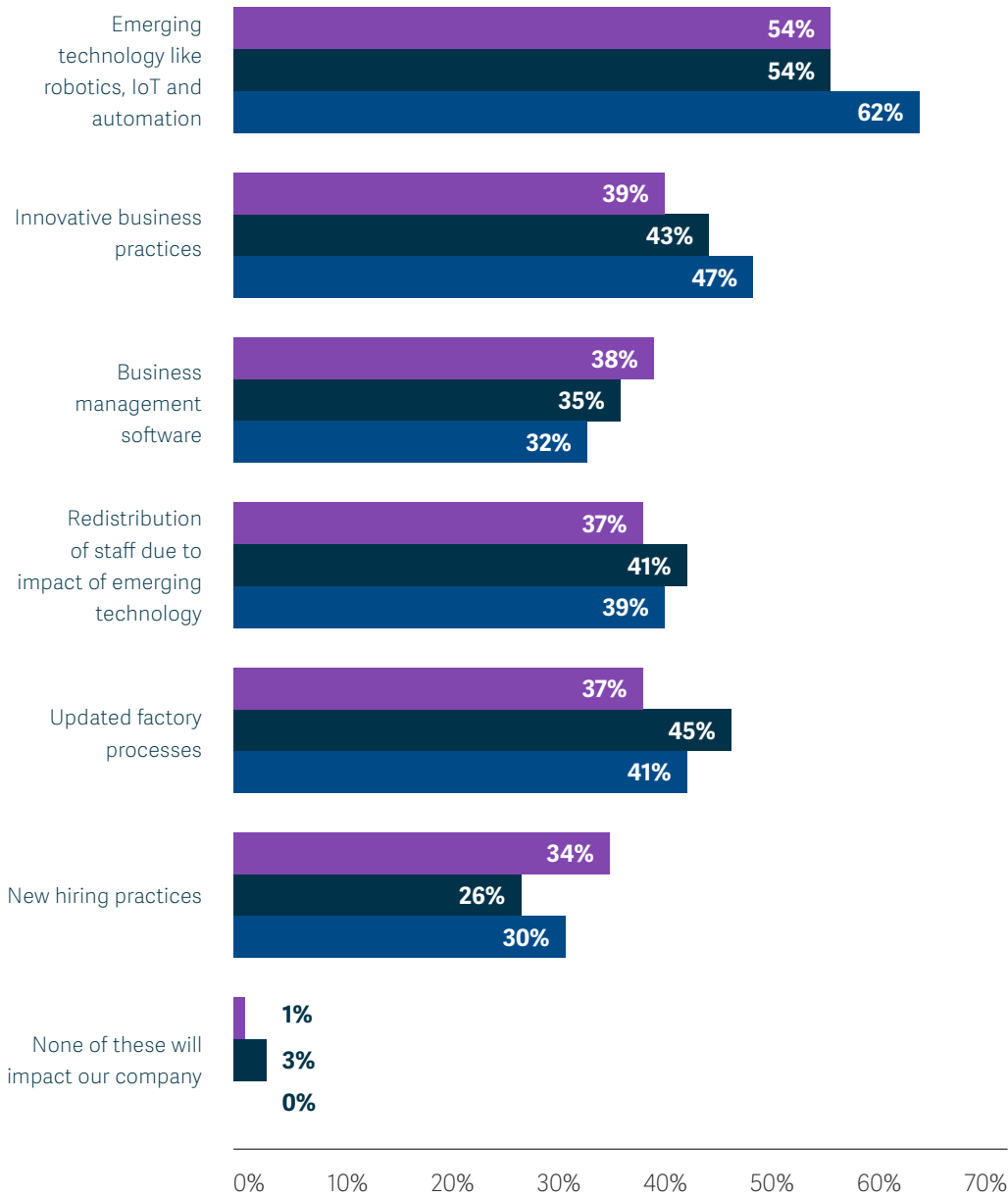
- Hazel Copeland, CFO at Woldmarsh



Which developments do you anticipate will have the greatest impact on the process manufacturing industry in the next five years?

Key

- United Kingdom
- United States
- Canada



It then makes sense that technology such as robotics, IoT, and automation came out on top — clearly these tools are beginning to make their way from the fringes of normality into the mainstream.

Our research does reveal a major point of concern around hardware investments being made in technologies such as robotics being throttled by inadequate software. The majority of US, UK and Canadian process manufacturers said that they have struggled to get value from hardware, because the software they use to monitor, operate and connect devices was insufficient.

When it comes to investing, it's important to strike the right balance. Hardware is clearly essential in process manufacturing — it's what makes or processes products. But you're not going to get the best out of those machines without having the right software in place. Software is the nervous system that tells you what's working and what's not, and gives you the insights needed to make better strategic business decisions.

Has your company ever struggled to get the most value from hardware because of inadequate software?

United Kingdom



United States



Canada



0% 20% 40% 60% 80% 100%

Key  Yes  No

“Ongoing market education about the benefits of deploying ERP and Industry 4.0 tools will still be needed, as some manufacturers still believe that outdated systems will keep them competitive in this fast-changing environment.”

- Predrag Jakovljevic, Principal Analyst, Technology Evaluation Centres

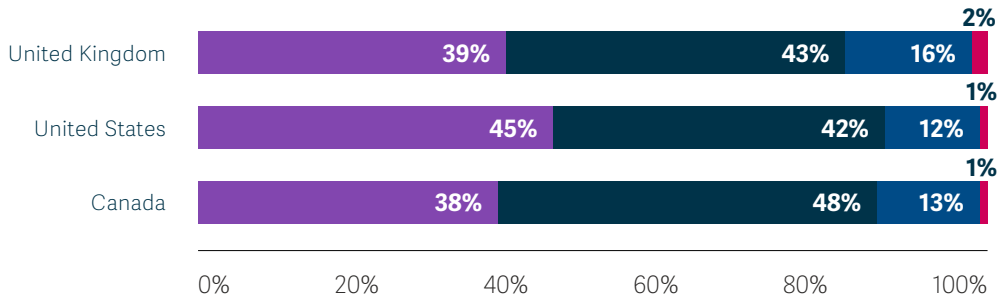
Part 6:

The future of process manufacturing

Process manufacturers are faced with significant challenges, with regulatory changes such as US trade/tax tariffs and Brexit disrupting business, forcing them to adopt new strategies, such as a deeper focus on local goods, increased investment in technology, and changes in the way they hire.

But, in spite of the big challenges, process manufacturing stakeholders are generally confident in the future of their businesses, although this is slightly more pronounced with larger businesses.

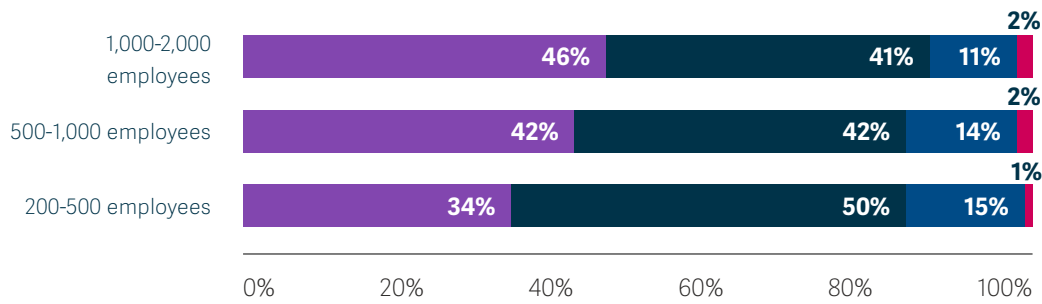
What level of confidence do you have that your industry will be considered a leader in process manufacturing in 2025?



Key

- Very confident
- Somewhat confident
- Somewhat unconfident
- Very unconfident

What level of confidence do you have that [UK/US/Canada] will be considered a leader in process manufacturing in 2025? (by company size)



Key

- Very confident
- Somewhat confident
- Somewhat unconfident
- Very unconfident



In summary

Perhaps the biggest takeaway from the research is that it shows a sector undoubtedly facing change and uncertainty, but one that is taking charge of its own destiny. Rather than standing still and waiting to feel the impact of any political and economic forces outside of their control, your fellow professionals have indicated they are pushing forward with plans that will not only mitigate issues, but also help build for a brighter future.

Yes, regulatory changes and changes in tax/trade policies are of concern, but globalisation and expanding into new markets is still very much part of the game plan — suggesting confidence and a hunger for growth is widespread. That said, with that global ambition comes a shift that does look inwards, as many are exploring more closely where materials are sourced and support a growing rise for onshoring. That trend is driven not just by the value locally-sourced goods can have on the brand, but also ties in with concerns around risk, and the importance process manufacturers place on the traceability of raw materials.

As part of the evolution, technology is seen by the majority who took part as playing a key role in shaping the industry of the future. Its impact is not just being felt in terms of helping to optimise

supply chains and paving the way for a more data-driven approach, but also shaping the workforce of tomorrow. Talent remains a key success factor for process manufacturers across the UK, US, and Canada, and among the priorities for many will be the need to find the balance between emerging technical versus creative skills. Although not often thought of as a particularly creative industry, the research shows creativity and a greater diversity in skills could be vital in driving the industry forward.

Across all three markets, manufacturing remains an economic powerhouse and seen as a critical part in advancing local economies, as well as a global one. The sector is changing, bringing with it new challenges and opportunities, sparking new innovations and new ways of working. How process manufacturers step into that bright future of possibilities needs to be thought about today. If our research is anything to go by then many of your colleagues have done just that — they've put plans in place that will help them to build on the past and prepare for whatever lies ahead.

Methodology

Manufacturing professionals from the UK, US and Canada were invited to participate in a research study to gauge their thoughts on the current state of their industry.

Questions were asked on a wide range of subjects including business plans and technology adoption, and fielded in American English, British English, and Canadian English and French. A total of 906 qualified individuals (302 in the UK, 303 in the US and 301 in Canada) completed the questions they were asked. They all had decision-making responsibility at mid-sized manufacturing businesses in an IT or business role.



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