



cutting through complexity

Global Manufacturing Outlook

Performance in the
crosshairs

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Foreword

The 2014 *Global Manufacturing Outlook: Performance in the crosshairs* report examines the continuing evolution of the strategies that manufacturers are deploying to drive value and performance across the enterprise.

As evidenced in the survey results, explosive developments in technology, material science, advanced manufacturing and synergistic operating models are clearly beginning to redefine 'the art of the possible' and are changing the way manufacturing companies compete and succeed.

Underlying this year's survey results, we see a powerful theme – 'Disruptive Complexity' – that we believe will be a major force for all manufacturers to reckon with. The challenges of the past five years (largely characterized by global uncertainty, economic volatility, geo-political instability, shifting markets and natural disasters) have resulted in massive changes to the manufacturing landscape and there is every indication that these macroeconomic winds of change will continue to blow.

However, these may seem tame compared to the new forces created by the proliferation of data, scientific discovery, robotics, technology and artificial intelligence... just to mention a few. These new and powerful forces will intensify and forever change the dynamics, risks and success factors for global manufacturing companies.

Based upon this year's survey and our view of the marketplace, there are numerous strategies and tactics that global manufacturing companies intend to deploy to capitalize on market opportunities and stay ahead of their competition, including:

- predictive analytics that monitor evolving customer preferences,
- new OEM/supplier collaborative innovation models,
- 3D printing and new additive manufacturing capabilities,
- technology platforms that support real-time business intelligence, and
- resilient/transparent supply chains that create virtual vertically-integrated manufacturing networks.

The pervasive pressure of an accelerating pace of change is one of many indications that 'Disruptive Complexity' is here to stay. What is also quite clear is that great opportunities await those companies willing to envision and embrace this complex but opportunity-rich environment.

We hope that this year's global report offers both practical and provocative insights to help organizations evaluate their future strategies for competing and succeeding in this new world order.



Jeff Dobbs

Global Sector Chair
Industrial Manufacturing

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Executive summary





Manufacturers are still overwhelmingly focused on profitable growth. And this year's Global Manufacturing Outlook (GMO) identifies a wide variety of strategies to achieve it. Increasing levels of supply chain transparency and visibility; improving use of data, analytics and business intelligence tools; integration of new technologies; and a continuation of the trend towards greater partnerships and collaborative business models are at the forefront of these strategies.

But new strategies also bring new challenges and complexities. Based on this year's report, there is clearly much work still to be done to leverage the power of these business models, tools and technologies to ultimately overcome the complexities of data proliferation, the accelerating pace of change and disruptive innovation across the sector.

Key findings from the 2014 report include:

- **Manufacturers are focused on understanding their product cost and profitability.** Only 12 percent of respondents said they were 'very effective' at determining product profitability. Many suggest that they plan to commit either moderate or significant investment into enhancing their systems and processes for profit and cost information. More than half say that – over the next two years – they will place either a moderate or high priority on to adopting processes and systems to achieve the real-time measurement of product cost and profitability.
- **Organizations are rethinking their product development strategy.** Respondents are increasingly focused on enhanced spending, shifting towards breakthrough innovation objectives and exploring new collaborative business models to create competitive advantage. Seventy percent of respondents said they would double their level of spend in R&D. Yet at the same time, 88 percent said that partnerships, not in-house efforts, would form the future of innovation. Technology is also coming into play; three-quarters of respondents say they are better leveraging decision-support technology in their R&D function.
- **Supply chain transparency and visibility remain a key challenge for manufacturers.** Forty percent of respondents admit they lack visibility across their extended supply chain, with 33 percent saying it was due to either inadequate IT systems or a lack of skills. Our research suggests that many of the gains in supply chain visibility have resulted from stronger relationships between manufacturers and their top-tier suppliers and the willingness to share more real-time data across the value chain.
- **A majority of respondents think that they could achieve a globally integrated supply chain within the next three to five years.** More than half say that they use global demand planning and global capacity planning technologies in their supply chain enterprise-wide. More than three-quarters say that their relationship with top tier suppliers is now strong enough for them to share real-time capacity and demand data.



Looking for profitability

Only 12 percent consider themselves to be very effective at determining their profitability.

It should come as no surprise that growth tops the agenda for manufacturers across all sectors and geographies. Yet few think they are very effective at determining the profitability of their existing product lines. Manufacturers need to better align their cost and revenue data to help drive decision-making and enhance profitability.

Manufacturers around the world will want to focus on increasing visibility into their profitability and costs. Indeed, when asked how effective their organizations are at determining their profitability, more than half of all respondents believe themselves to be 'effective'; only 12 percent consider themselves to be 'very effective'.

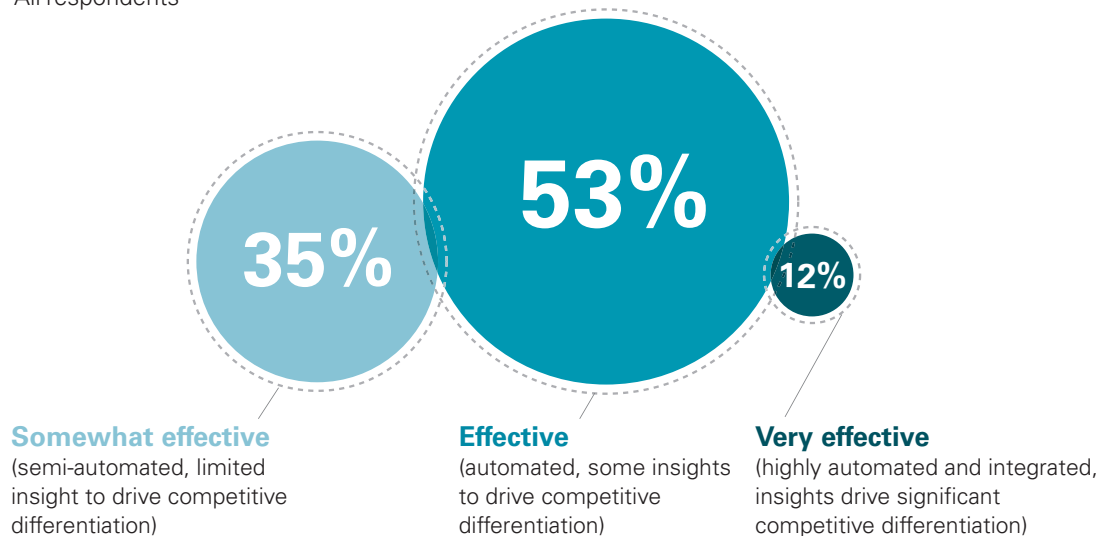
"This isn't simply about getting data and making spreadsheets; it's about having the appropriate information, at the right

level of granularity and – maybe most importantly – with the right speed and frequency to generate timely insight to help people make better business decisions," noted Jim Scalise with KPMG in the US. "The reality is that insights around profitability and costs drive today's competitive advantage."

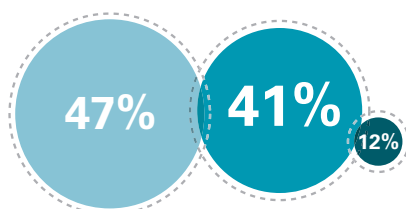
Interestingly, those respondents from the aerospace and defense (A&D) and automotive sectors rate themselves among the least effective at determining

How effective are you at determining profitability?

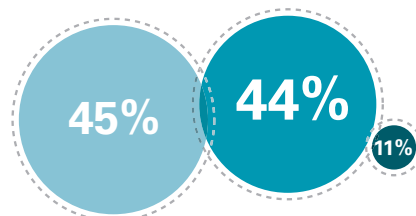
All respondents



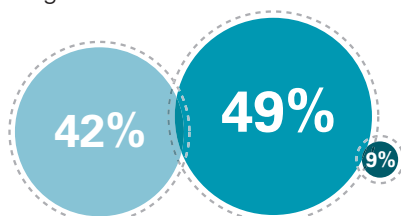
Aerospace and defense



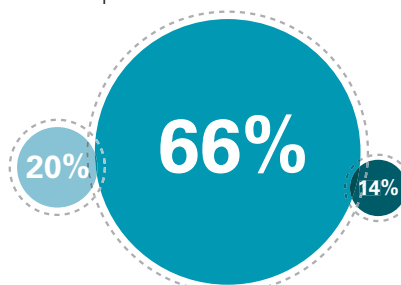
Automotive



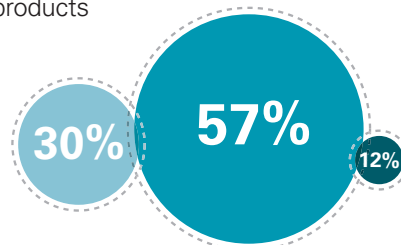
Conglomerates



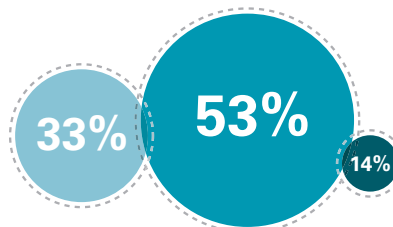
Consumer products



Engineering and industrial products



Metals



Note: Percentages may not add up to 100 percent due to rounding.
Source: Forbes survey, January 2014.

their profitability: 47 percent of A&D respondents admit to only being 'somewhat effective' while 45 percent of automotive respondents admit the same. "A&D and automotive manufacturers tend to be very effective at determining

their costs against a set forecast, but face significant market uncertainty and demand fluctuations," noted Doug Gates, KPMG's Head of A&D. "Ultimately, this means that they struggle to determine overall profitability."

Even with all the best data in the world, those sectors with longer cycle-times are going to find it tricky to forecast where the market will be ten years from now.

Not surprisingly, consumer products respondents are the most bullish about their visibility, with 80 percent categorizing themselves as either 'effective' or 'very effective' (versus an 'all sector' average of 65 percent). "Manufacturers who have exposure to the retail side are getting pretty close to real-time pricing and consumer insights, but for those with longer cycle-times – defense, energy and automotive, for example – progress has been much slower," noted Bruce Rogers, Chief Insight Officer at Forbes Insights. "Even with all the best data in the world, those sectors are going to find it tricky to forecast where the market will be ten years from now."

However, our survey suggests that few manufacturers feel that their data is meeting their needs. In fact, more than half of our respondents say that they have no data that they would deem 'highly reliant'; almost a third reported that they can't rely on their pricing data and around a quarter say they can't rely on their profitability data.

"Clearly, there is a big difference between knowing where your data comes from and knowing that it is the right data to inform better decision-making," noted Jeff Dobbs, KPMG's Global Sector Chair of Industrial Manufacturing. "This isn't about getting

Bruce Rogers, Chief Insight Officer, Forbes Insights

KPMG Insight



Jim Scalise
Partner in Management Consulting
KPMG in the US



Ralph Canter
Advisory Managing Director
KPMG in the US

What this year's GMO clearly shows is that manufacturers are investing in new products and new markets. Innovation and collaboration are clear bywords of a trend that – once the impact of new technologies such as 3D printing are overlaid – is adding new complexity to the measurement and understanding of profitability.

Statistics around the reliability of data tell a clear story. It's not that manufacturers don't trust the data; but rather they feel that they don't have the right data to make accurate business decisions. In other words, the old data is not providing the new insights they need. What is also clear is that those that are able to focus on improving the outputs of their analytics (versus the inputs) will be well positioned to leverage the opportunities emerging in this new environment.

Not surprising, then, that respondents say they are trying to use every possible combination of analytics to achieve greater insight and granularity into their profits and costs and, in doing so, create a more reliable version of the truth.

Indeed, as manufacturers move into new markets, partner with new suppliers and customers and focus on accelerating their development and R&D life-cycles, sharing data between partners and collaborative networks will be a critical capability.

the most data, it's about having access to the right data at the right time to drive financial decision-making."

Many of our respondents suggest that they now plan to commit either moderate or significant investment into enhancing their systems and processes for profit and cost information. In particular, respondents suggest that their biggest investment priorities are in 'product or service cost improvements' (cited by 85 percent of respondents) and 'forecasting and planning' (77 percent).

To support these investments, more than half of respondents say that – over the next two years – they will place either a moderate or high priority onto adopting processes and systems to achieve the real-time measurement of product cost and profitability. More than

a third of respondents suggest this is their highest priority overall.

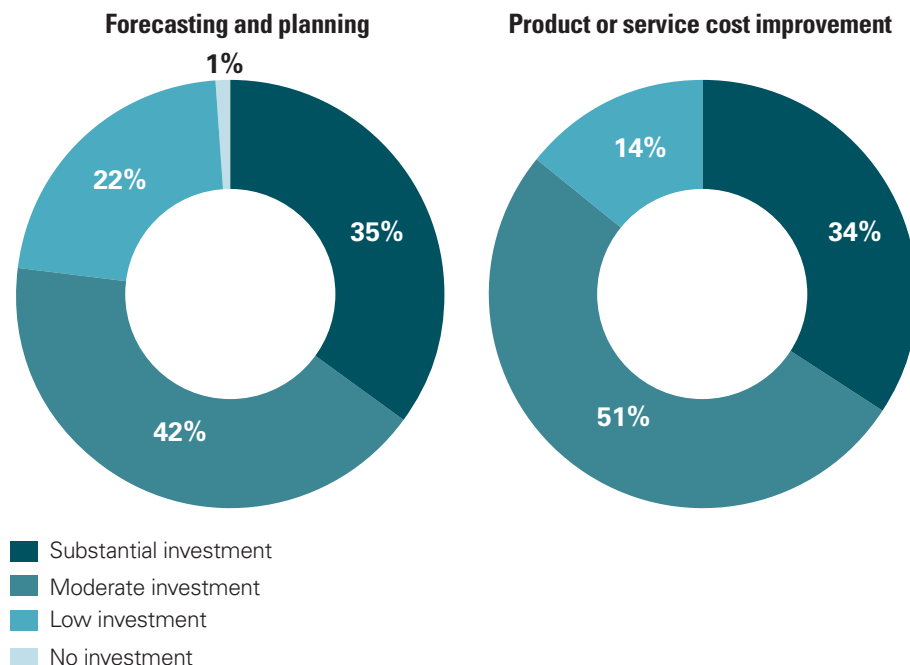
"Given the ongoing shifts that we continue to see in product lines, technology and supply chains, it's not surprising that organizations are prioritizing a wide variety of analytics and data-driven investments in an attempt to get a better handle on their costs and profits," noted Jim Scalise. "Many manufacturers are looking for any way they can to get more insight into their business."

Illustrating this point, our respondents seem to suggest that they are prioritizing a number of different profit and cost analytics practices simultaneously; around a third of all respondents selected one of four practices for prioritization: dashboards

85 percent cite product or service cost improvements as the biggest investment priorities.

Measurement becomes an investment priority

What is your organization's level of planned investment?



Note: Percentages may not add up to 100 percent due to rounding.
Source: Forbes survey, January 2014.

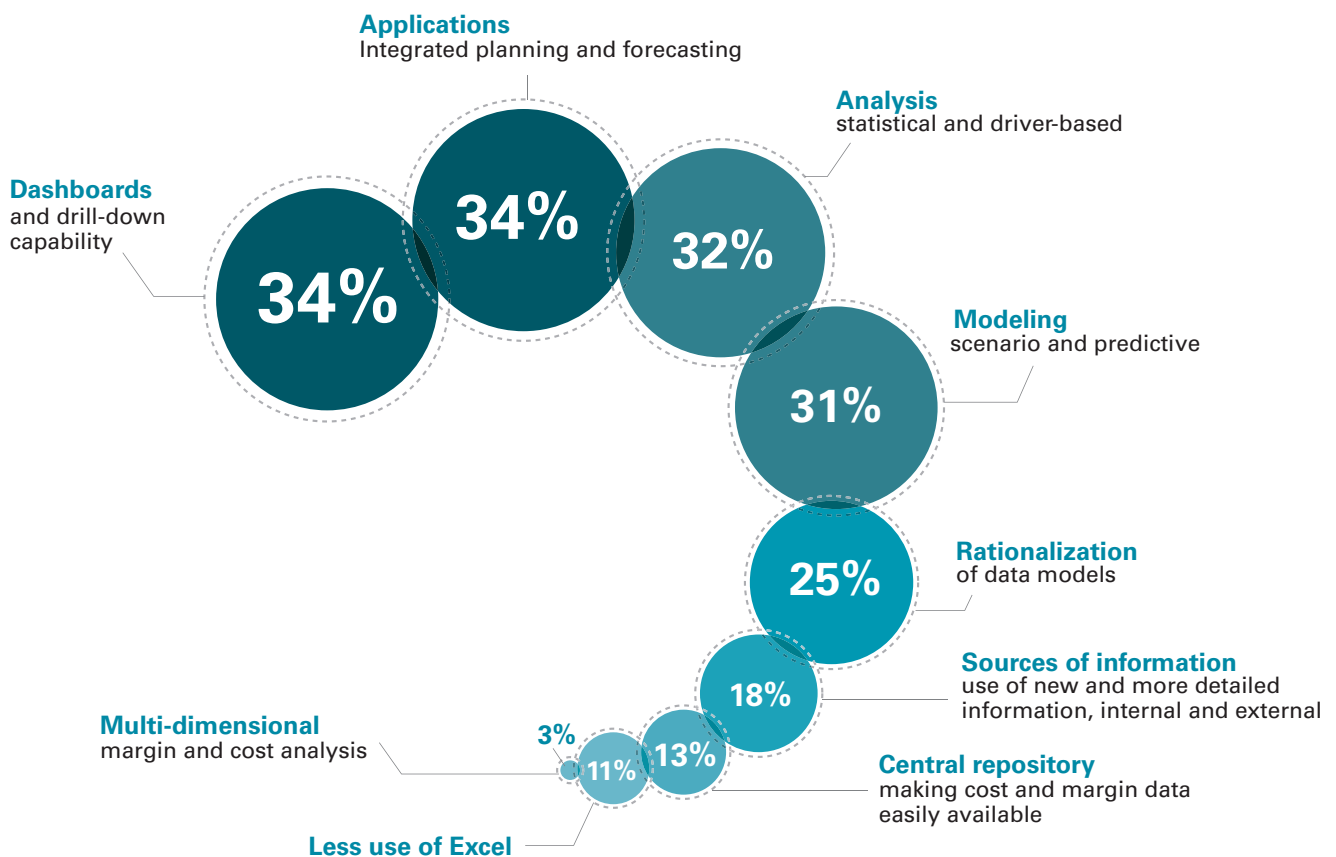
and drill-down capability (identified by 34 percent); integrated planning and forecasting applications (34 percent); statistical and driver-based analysis (32 percent); and scenario and predictive modeling (31 percent).

“Many of the strategies that we are seeing being deployed in the market today are focused on breaking down the data and systems barriers within highly siloed matrix organizations to deliver a clearer view of the business,” noted Bruce Rogers, from Forbes

Insights. “Technology is really forcing organizations to identify and break down the artificial barriers between their organizational structures.”

The survey results suggest that the journey to better understand profitable growth is moving from standard monthly reporting to dynamic analytics. The importance of driver-based analysis and scenario and predictive modeling suggests a new management focus on what will or could happen, rather than what did happen.

Which of the following profit and cost analytic practices are your organization's top priorities in the next 12 to 24 months?



Note: Percentages may not add up to 100 percent due to rounding.
Source: Forbes survey, January 2014.

Case study

Achieving greater visibility into revenue, costs and profits

As the competitive landscape becomes increasingly more intense and the challenges more complex, many organizations are recognizing the need to significantly enhance their ability to measure and manage revenue, cost and profit.

For one automotive Original Equipment Manufacturer (OEM), an era of steady and continued expansion resulted in a more complex scale and offering which in turn, has impacted the business ability to manage this growth from a systems, process and organizational perspective.

Coupled with significant external challenges related to product recalls, geo-political events and other factors, it was determined that strategic

action was required to enhance their internal capabilities. Particular focus would be placed on sharpening their ability to measure and manage performance at lower levels of detail, with greater accuracy, and delivered to the decision-maker's desktop with fast turnaround times.

To achieve this, the organization worked with KPMG in the US to launch a multi-year project aimed at synchronizing information systems, processes and controls from around the world with the intent of reporting on revenue, cost and profit for every vehicle produced on a daily basis.

Using this capability to aggregate and analyze information both within and across the strategic

dimensions of their business also delivered the power to assess and modify conditions that will improve performance. As a result, the organization is now better prepared to make significant decisions – both for the short-term and the long-term – that will allow them to increase their profitability across their portfolio.

The organization has already started to see significant success for key platforms through better insight into the impact of choices related to mix, volume and the application of incentives which, once fully implemented, will ultimately drive substantial financial performance across all of their platforms.

KPMG Insight



Mark Toon
Global Leader of
Data & Analytics

The findings in this year's GMO suggest that most organizations are currently focused on just a fraction of the benefits that data and analytics could offer. Few organizations fully understand the huge potential that resides within their data. Fewer still are making the right changes to their business strategy to take advantage of that potential.

For example, the emergence of the 'internet of things' allows most manufacturing, supply chain and other equipment to become sensor-enabled

which, in turn, generates huge amounts of new data on everything from the performance of the equipment through to its timing and location.

Organizations that manage to harness that data and then use sophisticated predictive and prescriptive analytics to optimize their processes in near real-time will reap significant rewards, such as dramatically reduced working capital and lower exposure to risk. Those that are not able to harness their data in this way will be at a major competitive disadvantage.

KPMG Insight



Joerg Strater
Global Head of
Tax for Industrial
Manufacturing

While respondents to this year's GMO were primarily non-tax professionals, the topic of tax clearly remains on the minds of manufacturers. For instance, almost a quarter of respondents cited the prospect of tax increases as one of the three biggest challenges they expect to face over the next two years.

Given that the OECD is making significant progress on implementing a Base Erosion and Profit Shifting (BEPS) framework, this is not entirely surprising. A wide range of business decisions may well be called into question under BEPS including transfer pricing, tax structures of multinational companies and the use of preferential tax regimes. The demand for country-by-country tax reporting will increase the visibility of the countries' share of the worldwide tax payments of manufacturers.

As such, it is just a matter of time before tax audits become more aggressive.

That being said, the survey also suggests that many manufacturers believe that they already have fairly efficient supply chain tax structures. In our experience, however, there remains much room for improved efficiency in this area. The reality is that – while tax may not be the highest priority when selecting locations and suppliers – there may be significant opportunities to help or manage the total tax payable if proper preparation and arrangements are made at the outset.

Indeed, those that incorporate tax implications into their supply-chain decision-making processes will likely find a range of benefits including reduced cost, clarity on tax compliance and fewer market uncertainties going forward.

KPMG Insight



David Frey
Head of Strategy
and Operations
Consulting
KPMG in China

While many headlines around the world relating to China have tended to focus on falling growth rates, the reality is that China's economy today is nearly twice the size it was in 2007. Pundits should remember that slower growth off a bigger base is inevitable in any economic development path.

In reality, the more impactful elements of China's next phases of economic transformation sit below the surface. One example with a potentially far-reaching impact on manufacturing is the recently announced reform program calling for private investment in China's state-owned enterprises.

As with many reforms in China, change will occur gradually and progressively (a path aptly described by Deng Xiaoping as "Crossing the river by feeling the stones"). But the reform direction is nonetheless ambitious and potentially far-reaching. In lieu of a traditional privatization path for

state-controlled assets, China is moving toward a mixed share ownership structure by allowing – indeed, even encouraging – private company ownership in those state-owned enterprises not deemed to be of national security interest.

The plan is to create an equity structure with many investment entities, each holding a relatively small percentage of total assets. This management structure has already been proven globally to enhance competitiveness and strengthen company performance; it would certainly be a positive contributor to China's quest to improve the technical sophistication of the manufacturing industry.

How this plays out practically in China's manufacturing sector remains to be seen. But the mixed-share ownership structure can be a very positive step in the continued march toward building a more open, competitive and dynamic manufacturing sector.



Collaborate to innovate

Many manufacturers are focused on increasing their investment into R&D.

Manufacturers are rethinking their product development strategy and are increasingly focused on enhanced spending, shifting towards breakthrough innovation objectives and exploring new collaborative business models to create competitive advantage.

According to our survey, manufacturers are seeking to catalyze a 'step-change' in their growth prospects. Many are clearly focused on increasing their investment into R&D. Indeed, whereas the majority of respondents say that they spent just one percent or less of their revenue on R&D and innovation over the past two years, the findings suggest a doubling of their spend over the next two years. More than one in ten suggests that they would spend up to five percent of revenues over the next two years.

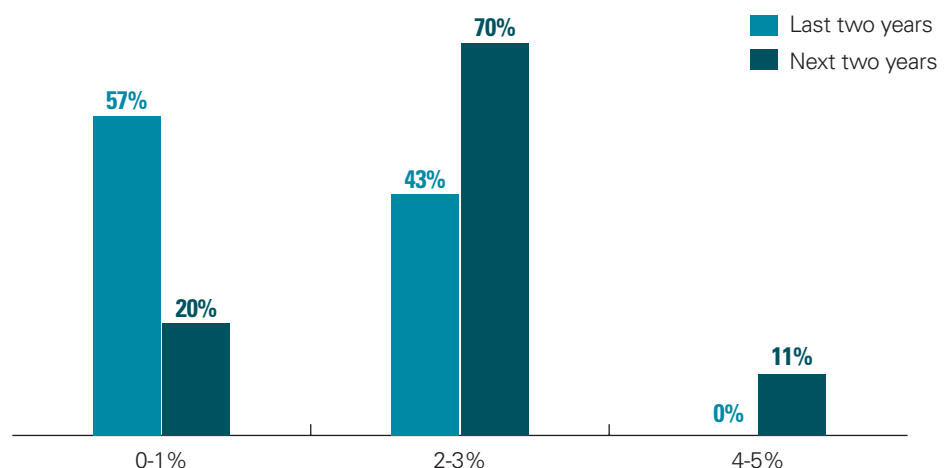
Smaller companies (those with less than USD5 billion in revenues) seem set to make the biggest investments, suggesting that they are more than twice as likely as their larger

counterparts to spend between 4 and 5 percent of revenues on R&D over the next two years.

Manufacturers also seem to be increasingly interested in investing in 'breakthrough' or 'disruptive' innovation alongside efforts to enhance existing product lines. Thirty-six percent of respondents across all sectors report that they are now focused on breakthrough innovation versus just 31 percent of respondents in our 2013 survey.

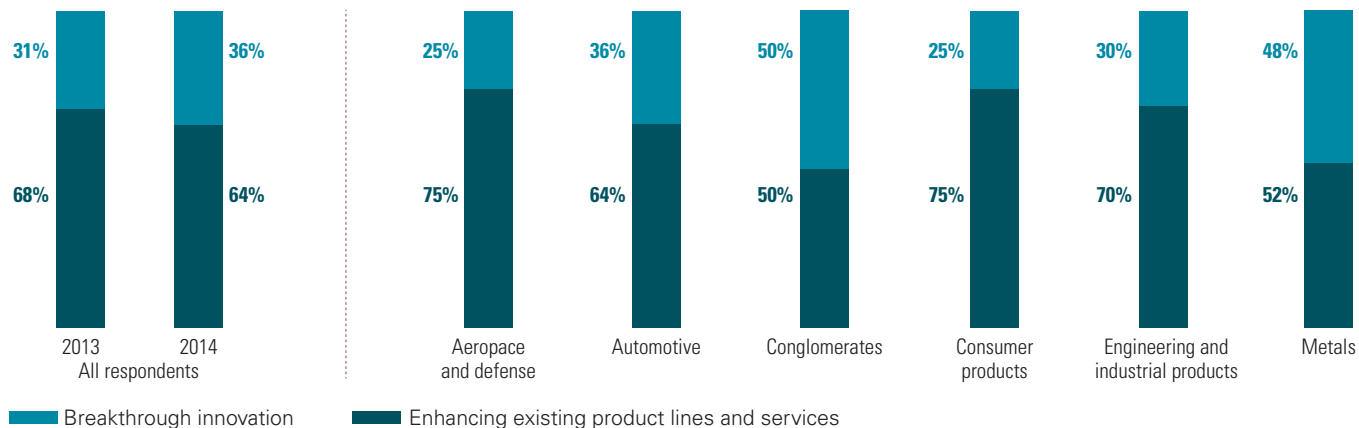
"The manufacturing world is entering an era of hyper-innovation where advances in technology and material science are rapidly changing what we consider 'possible' and creating new business opportunities along the way," noted

Spending on R&D set to increase



Note: Percentages may not add up to 100 percent due to rounding.
Source: Forbes survey, January 2014.

What is your primary innovation strategy?



Note: Percentages may not add up to 100 percent due to rounding.
Source: Forbes survey, January 2014.

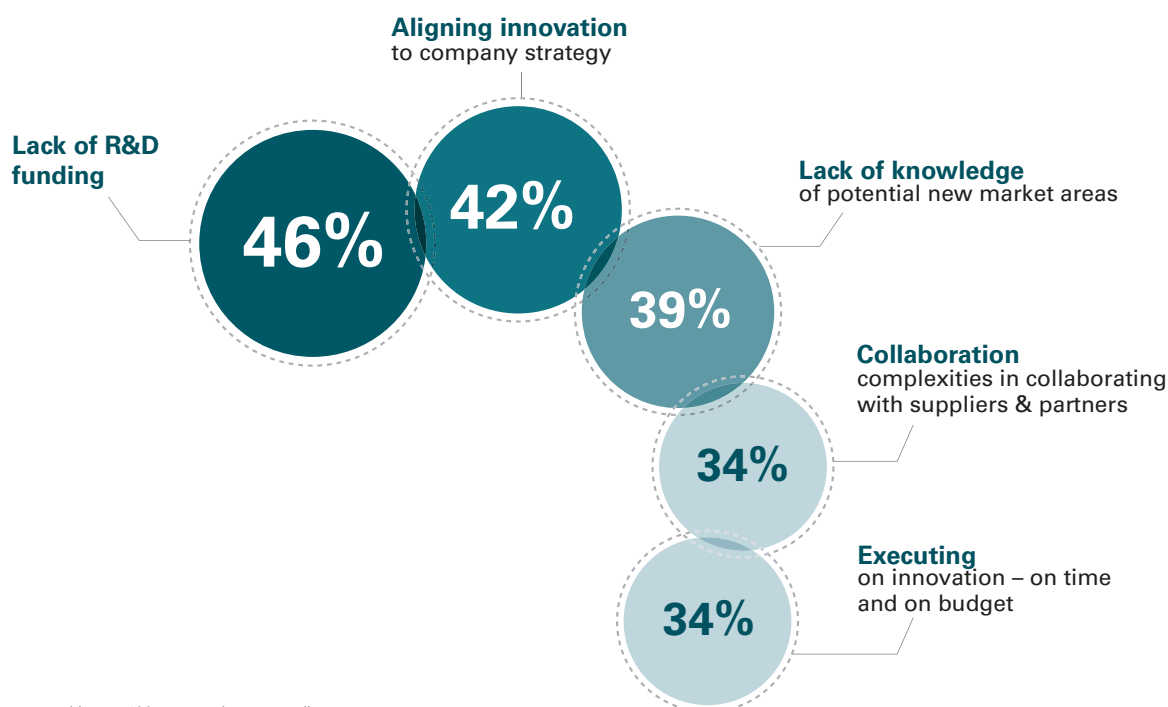
Jeff Dobbs, KPMG's Global Sector Chair of Industrial Manufacturing. "Ultimately, those organizations that do not balance investment in 'incremental innovation' with investment in 'breakthrough innovation' may find themselves left behind technologically."

There are clear indications that – if they could – manufacturers would like

to spend more on innovation. In fact, almost half of all respondents say that a lack of R&D funding is one of the three biggest challenges impacting their ability to innovate.

But with challenges securing new funding, many manufacturers are instead focused on stretching their R&D investments as far as possible. And, as

What are your biggest challenges to innovation?



Note: Percentages may not add up to 100 percent due to rounding.
Source: Forbes survey, January 2014.

More than two-thirds of respondents say that they are adopting more collaborative business models.

a result, we have seen a significant shift towards the development of research partnerships, the introduction of new technologies and the adoption of more collaborative business models with suppliers and – at times – competitors.

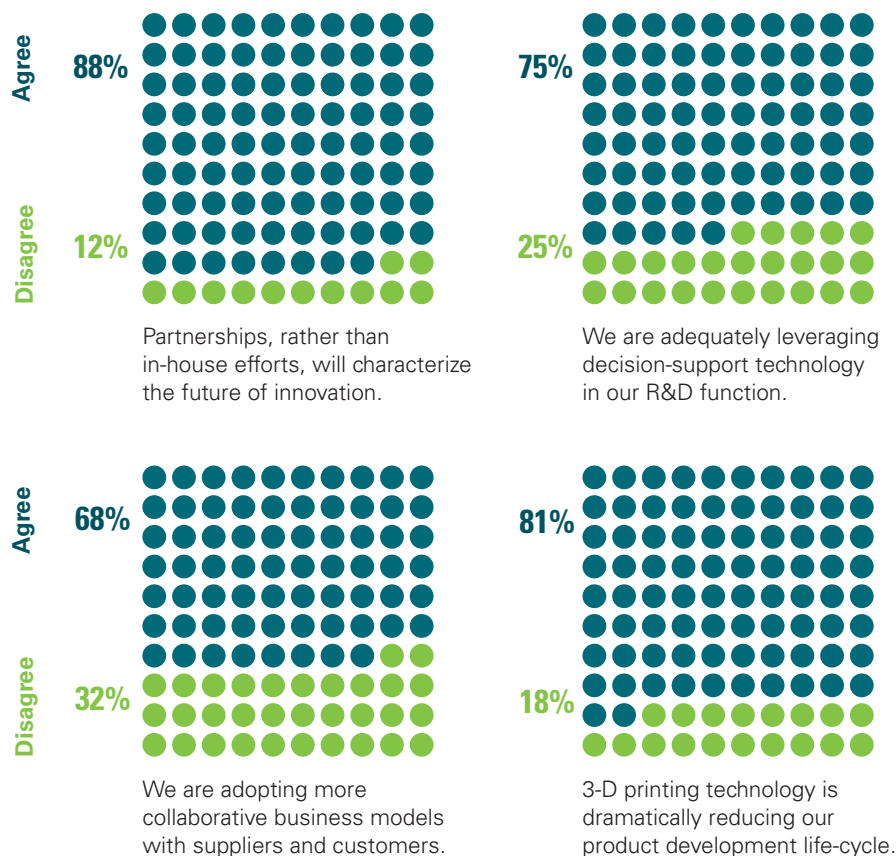
Partnerships, in particular, rose up the agenda this year. Almost nine in ten say that partnerships, not in-house efforts, will form the future of innovation, up from just 51 percent who said the same in our 2013 survey.

Similarly, more than two-thirds of respondents say that they are adopting more collaborative business models, presumably to improve growth and leverage investments. However, the majority of this activity seems squarely focused on Europe, where more than eight in ten agree versus just 56 percent in ASPAC and 61 percent in the Americas.

“While many of these partnerships may be intended to spread risk and costs, much of the increase we have seen this year is likely due to simple practicality,” noted Ralph Canter with KPMG in the US. “Entering new markets, increasing productivity, sharing technology and integrating the supply chain all require some level of partnership with outside organizations and the adoption of more collaborative business models to achieve success.”

Technology is also coming into play as manufacturers look to squeeze more out of their investments. In some cases, enterprise solutions are closing the gap: three-quarters of respondents say they are leveraging decision-support technology in their R&D function. But new technologies are also making their mark. Consider, for example, the fact that more than eight

Partnerships and technology rise up the agenda



Note: Percentages may not add up to 100 percent due to rounding.
Source: Forbes survey, January 2014.

KPMG Insight



Doug Gates
Global Head of
Aerospace &
Defense

Collaboration and complexity in Aerospace & defense

With few buyers and massive cost pressures, most aerospace and defense (A&D) organizations are now experiencing significant uncertainty. And as budgets for A&D spending come under greater pressure, many are looking for opportunities to shore up their revenues, either by establishing a stronger presence in new markets or by adapting their current product and service lines to adjacent industry sectors.

As this year's GMO illustrates, A&D organizations are more focused than ever on entering into partnerships and creating more collaborative business models to help them achieve these objectives. Already, we are seeing some of the larger OEMs setting up permanent offices in newly emerging markets, while others are working with adjacent sector leaders to create compelling value propositions.

However, as A&D organizations become more global and extend their reach

into other sectors, they will experience increasing pressure to enhance their supply chain visibility. Many will need to consider how they will fulfill offset agreements while ensuring high standards within new markets. Others will need to consolidate their multiple procurement platforms to ensure they have better visibility into the demands and expectations they are placing on their local suppliers.

I believe that the next few years will usher in an era of collaboration – around products, around R&D and around access to markets – that will fundamentally change the way A&D organizations operate. Adapting their operating models to meet this new era of change will be no easy task and will likely take upwards of five years to achieve. A&D organizations would be well advised to start their planning now.

in ten respondents say that 3D printers are already impacting their productivity.

However, it must be noted that – given the uptick in transactions and M&A activity over the past year – there is some indication that manufacturers may

be looking to buy innovation rather than create it. Indeed, it is altogether possible that these capital expenditures are still focused on achieving the same overall objective: growth through innovation.

The impact of 3D printing

3D printing (or 'additive manufacturing') isn't just a new type of technology; it's a potential business model disruptor and market-maker. The cost and efficiency benefits are clear – the ability to produce small-lot or highly customized parts in an 'on-demand' setting will no doubt be revolutionary for manufacturers. As the data shows, manufacturers across sectors and geographies agree that the impact of 3D printing can't be ignored.

But turning 3D printing into sustainable competitive advantage will require manufacturers to rethink their value chain and revise their existing strategies to understand how 3D printing will impact their business models over the long-term. So while 3D printers may not mean the immediate dissolution of the traditional manufacturing business model over the short-term, management may want to consider how they might start integrating, additive manufacturing, into their existing supply chain in order to build up their capability and exploit rapidly emerging opportunities.

Case study

Putting a value on innovation

As this year's GMO clearly illustrates, manufacturers are seeking to achieve a step-change in innovation. But with almost 70 percent of respondents saying they would at least double their R&D investments over the next two years, there are now significant concerns that spend on innovation may not be focused on the right areas; many organizations aren't even sure how to value their innovation from the bench through commercialization, let alone how to communicate that value back to investors and customers.

Take, for example, the challenge faced by one US-based manufacturer who was struggling to articulate the return on their R&D investments to their board. What the client quickly

recognized was that their organization had no standard definition of what constituted 'innovation' and very little insight into how their investments were returning value to the organization.

Significant questions needed to be resolved: How can revenue gained from innovation be separated from regular revenues? What value should be placed on an innovation that essentially cannibalizes an existing product line? What exactly constitutes innovation and what would be more accurately categorized as product improvements?

To answer these questions, the organization worked with KPMG to better understand how innovation was being evaluated, not only in their

particular market segment, but also across other sectors with a similar velocity of product innovation. In doing so, we were able to help the client better understand both their competitive positioning and the approaches that their competitors were using to communicate the value of their R&D to the marketplace.

Ultimately, by better understanding, categorizing and articulating how they would assess value in innovation, the client was in a better position to ensure that investments aligned to real revenue opportunities and that customers, investors and regulators could achieve a clear picture of how R&D and innovation were improving results.

KPMG Insight



Willy Kruh
Global Head of
Consumer
Markets

In many respects, this year's GMO report demonstrates that consumer product manufacturers have had greater success in building partnerships, achieving supply chain visibility and determining profitability than their peers across the broader manufacturing sector.

In large part, this reflects the fact that consumer product manufacturers are often much closer to the end-consumer than their peers across the sector. As such, they have much more control over profitability and tend to have developed much closer relationships with their top-tier suppliers, particularly when it comes to sharing demand signals and forecasts.

However, this is not to say that consumer product manufacturers can rest on their laurels. The reality is that, over the next five years, these companies will face massive questions around consumer preferences, channels, technologies and the value of emerging markets, which are only now coming to the fore.

The challenge for these companies will be to continuously innovate their products and processes, while achieving and maintaining a profitable balance between cost, quality and stability of supply, inputs and labor. And, as the more mature markets regain some of their lost competitiveness, we believe this balance will become much more central to manufacturers of consumer products going forward.

KPMG Insight



Dr. Gerhard Dauner
Head of Industrial
Manufacturing for
Europe, Middle East
and Africa
KPMG in Germany

Collaborative business models in Europe

Turning handicaps into advantages

Having enjoyed only moderate growth levels over the past year, the recovery of the European manufacturing industry is clearly still fragile. At the same time, Europe's manufacturers are also facing increased international competition which, in turn, has amped up the focus on efficiency and cost cutting.

The reality is that most European manufacturers are now highly specialized small-to-medium enterprises and therefore often suffer from limited operational and financial capabilities. As a result, many European manufacturers are now looking for new ways to expand into new markets and access new customer groups.

Many expect to gain strategic advantage by creating collaborative business models. Indeed, over the past few years, European manufacturers have established R&D partnerships with suppliers and customers, pushed cross-sector research, joined manufacturing clusters and set up joint ventures in the hope of breaking down business risks, expanding markets, enlarging target groups, extending know-how

and accelerating innovation. For most, collaboration is less about keeping up with the pace of technological development and more about securing a leading technology position.

Even those that are focused on collaboration for purely economic necessity are finding that their drive to become smarter, faster and better through collaboration has made them pioneers in creating more integrated and connected businesses.

Indeed, it is widely recognized that the digital factory of the future will be based on these types of collaborative networks – between companies, sectors and national borders. But to achieve this, manufacturing executives will need to pay close attention to technological advances and corresponding megatrends, many of which are outlined in KPMG's recent Industrial Manufacturing Megatrends Research report, exploring the trends, drivers and impacts of 'digital' on today's industrial manufacturing organizations. We firmly believe that it is these types of opinions, approaches and solutions that will help companies adapt to change faster and more flexibly in the future.



Integrating the supply chain

“While the value associated with increased visibility is certainly alluring to manufacturers, many have stalled simply because they lack either the skills or the capacity.”

**Brian Higgins, Partner,
Supply Chain & Operations,
KPMG in the US**

Ask a manufacturer to identify their biggest supply chain challenge and you will more than likely hear the word visibility. But to achieve greater visibility, organizations will need to improve the integration of their supply chain.

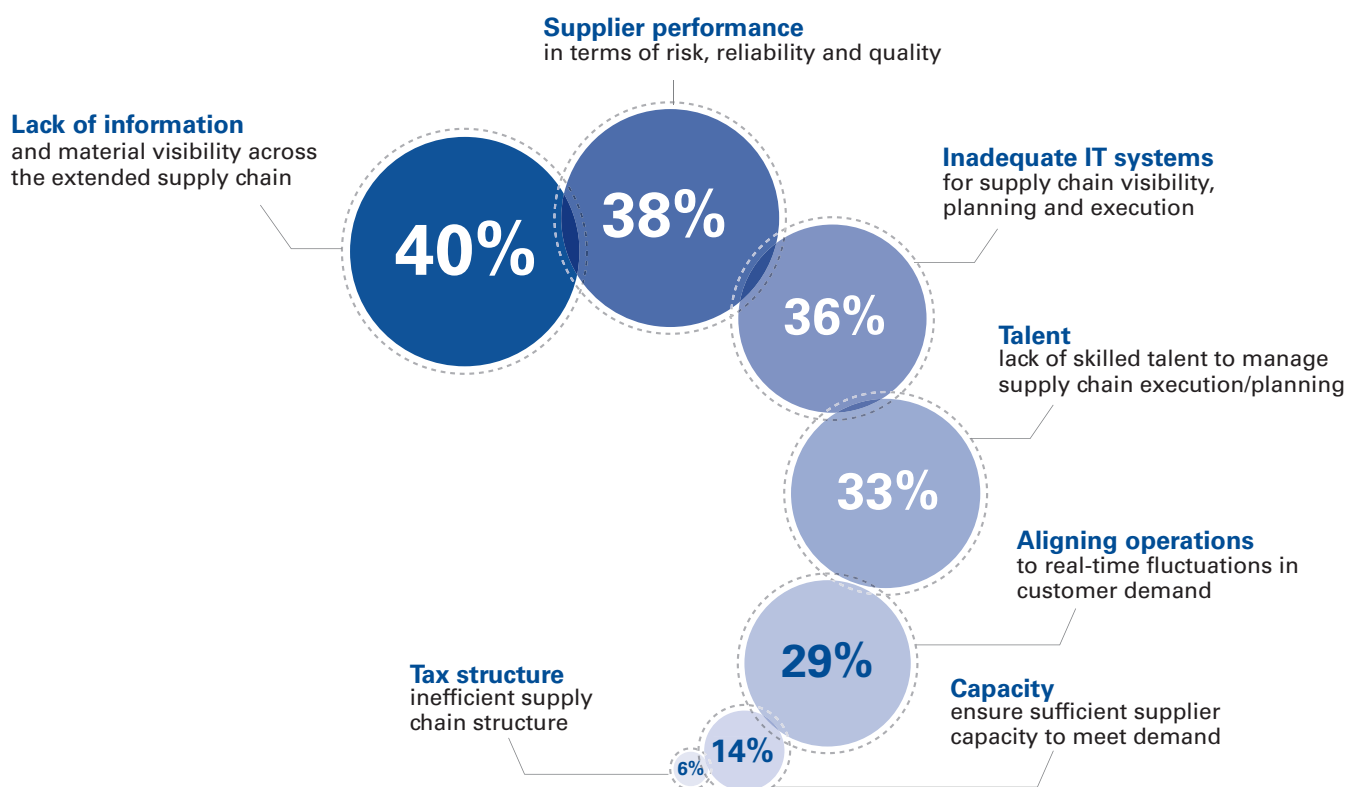
Our survey demonstrates that challenges related to visibility have vaulted up the agenda for manufacturing leaders. Indeed, respondents are now twice as likely to admit that they lack visibility across the extended supply chain as they were last year (40 percent versus 20 percent in 2013). Interestingly, a third of respondents suggested that their lack of supply chain visibility was a direct result of inadequate IT systems; an equal number pointed to a lack of skilled talent as impacting the effectiveness of their supply chain.

“While the value associated with increased visibility is certainly alluring to manufacturers, many have stalled simply because they lack either the skills or the capacity,” noted Brian Higgins, Partner,

Supply Chain & Operations, KPMG in the US. “Given that most organizations have traditionally been very focused on optimizing within their walls rather than outside of them, achieving the necessary change in skills and capacity will be a lingering problem.”

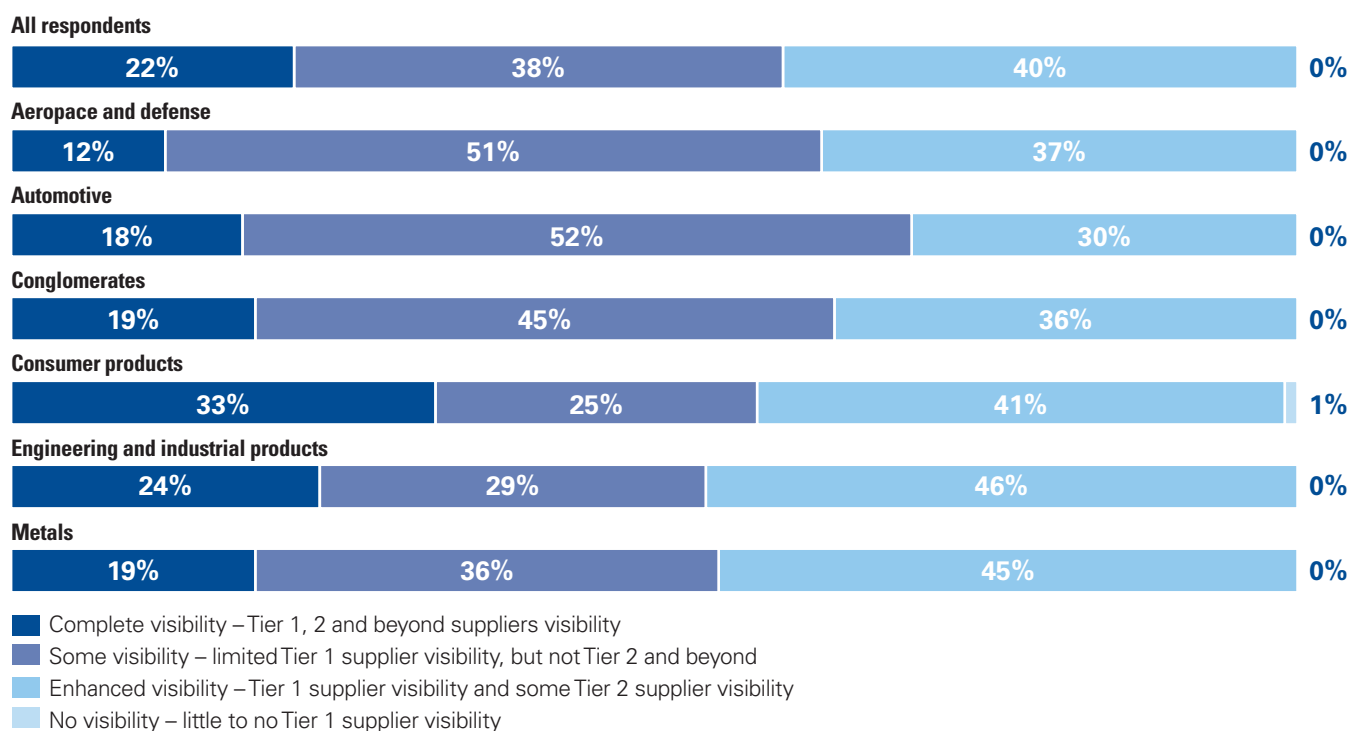
This is not to say that visibility hasn’t improved significantly over the past 12 months. In fact, our data suggests organizations have made great strides in the past year. Around 20 percent of respondents claim to have complete visibility (up from just 9 percent in 2013). “The directional trend illustrated by this data is certainly good, but our experience suggests that – while a growing number of companies may claim to have access to the right supply

Supply chain continues to face big challenges



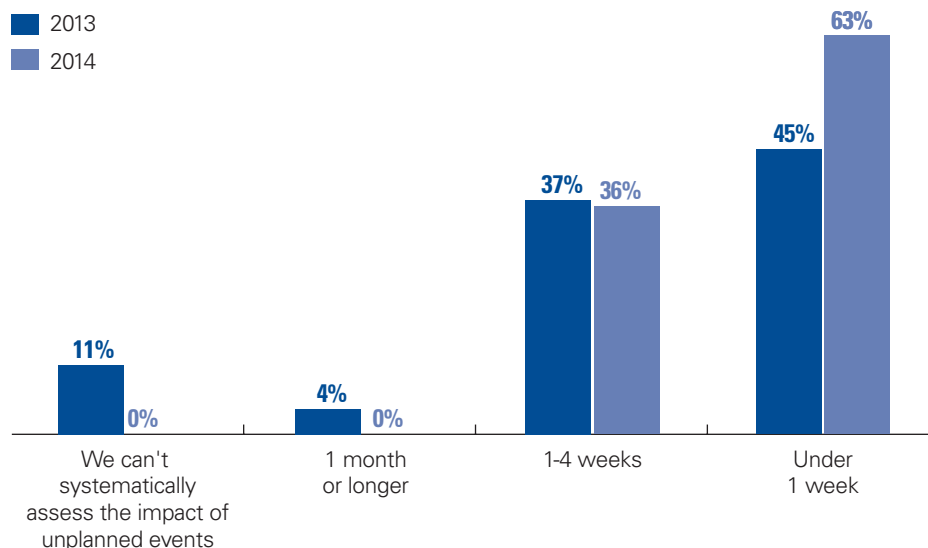
Note: Percentages may not add up to 100 percent due to rounding.
Source: Forbes survey, January 2014.

Visibility improves but room for improvement remains



Note: Percentages may not add up to 100 percent due to rounding.
Source: Forbes survey, January 2014.

How quickly can you assess the impact of a disruption?



Note: Percentages may not add up to 100 percent due to rounding.
Source: Forbes survey, January 2014.

and capability data – few have the right timeliness, precision or accuracy of that data to provide real visibility,” noted Brian Higgins. “Regardless, when compared to the levels of visibility seen in other adjacent sectors – around three-quarters of high-tech manufacturers could likely claim

complete visibility – there is still much room for improvement among consumer and industrial manufacturers.”

Given that most visibility programs in the past were heavily geared towards reducing supply chain risk, it is encouraging to see that resilience has

KPMG Insight



Stephen Cooper
UK Head of
Industrial
Manufacturing
and Automotive
KPMG in the UK

As this year’s survey results make clear, supply chain risk management continues to be a key issue for manufacturing companies. And rightfully so: in our experience very few companies have a fully integrated supply chain risk management process that addresses all of the elements of supply chain risk; fewer still have developed an end-to-end approach addressing all key aspects of supply.

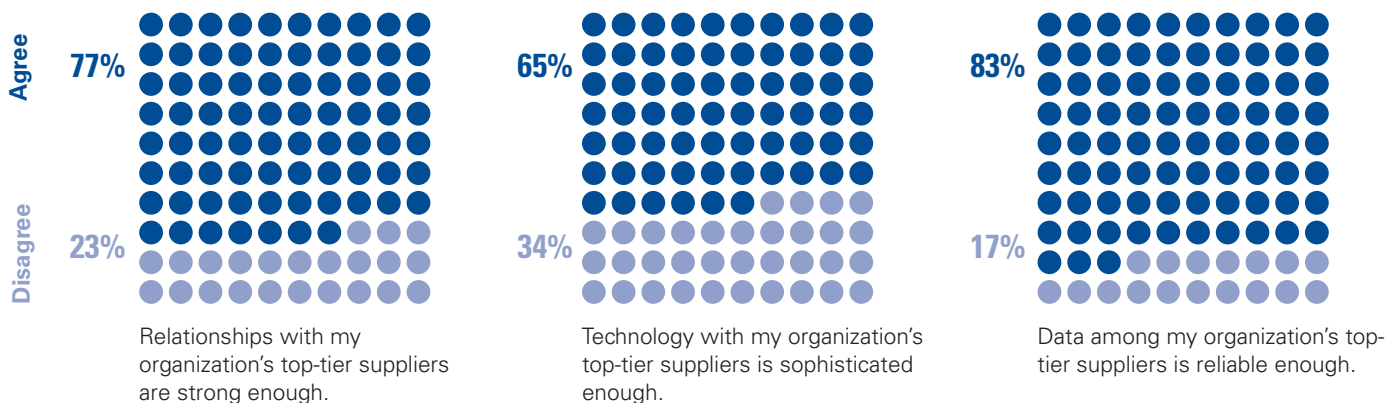
One strategy that is on the rise in the UK – as well as other more developed markets – is the near-shoring of manufacturing as a way to better manage risk. The UK Government, in an effort to encourage the return of manufacturing to the UK, recently launched a service (Reshore UK) that, amongst other things, provides matching

and location services for companies seeking to bring back production to the UK.

These efforts compliment a number of other inherent strengths found within the UK, such as competitive corporate tax rates, a good and reliable regulatory environment, strong legal frameworks, well-structured labor markets and a strong and stable economy.

The government is also working to improve national manufacturing capabilities. The recent 2014 UK budget, for example, contained a number of measures aimed at encouraging extensions to the apprentice program and the establishment of new science, technology and engineering centers for doctoral training, for cell therapy and for graphene.

Sharing real-time capacity and demand information



Note: Percentages may not add up to 100 percent due to rounding.
Source: Forbes survey, January 2014.

greatly improved over the past year. Today, all respondents say that – at the very least – they can assess the impact of an unexpected event on their supply chain operations in less than a month; 63 percent of respondents say it would take them less than a week, up from 45 percent last year.

With improvements already flowing through their risk management, our respondents suggest that the focus of their visibility initiatives has now shifted towards better managing costs. Indeed, more than half of all respondents say that costs are now their greatest motivation for improving visibility, with those in the UK and US reporting a much higher focus on costs (68 percent and 72 percent, respectively).

According to our research, many of the gains in supply chain visibility have resulted from stronger relationships between manufacturers and their top-tier suppliers. In fact, more than three-quarters of respondents say that their relationship with top-tier suppliers is now strong enough for them to share real-time capacity and demand data. An even higher proportion (83 percent)

say that they feel that their top-tier suppliers' data is reliable enough to support closer relationships; effectively setting the stage for manufacturers to move from traditional supply 'chains' to supplier 'networks'.

"You simply can't build the type of relationship you need to share real-time data without trust," noted Osamu Matsushita, KPMG's Industrial Manufacturing Leader for Japan. "Yet while there will always be an overarching issue of trust when suppliers feel they are being measured and evaluated based on their real-time data, it is encouraging to see that suppliers and manufacturers are moving forward with setting the stage for real-time information sharing."

At the same time, technology is also being leveraged to improve visibility and supply chain integration. More than half of respondents now say that they use global demand planning and global capacity planning technologies in their supply chain enterprise-wide. Almost two-thirds say that they use technology enterprise-wide to create stronger linkages between product R&D and development.

“You simply can't build the type of relationship you need to share real-time data without trust.”

Osamu Matsushita,
Head of Industrial Manufacturing,
KPMG in Japan

Technology use increases

How is your organization using this technology for the following areas?

Global procurement



Global demand planning (real-time demand signal changes)



Global capacity planning (using real-time capacity information and advanced data analytics)



Linkage to product R&D/product development



- Not using
- Using on a limited basis (e.g. single business unit or product line)
- Using enterprise-wide

Note: Percentages may not add up to 100 percent due to rounding.
Source: Forbes survey, January 2014.

"Manufacturers must remember that these technologies are more of a foundation for improving visibility and integration," noted Brian Higgins. "The magic really happens when they are coupled with the right visibility or collaboration technologies to drive serious value from the data the other systems are capturing."

Yet while these numbers suggest greater adoption of technology within the supply chain, the data also shows that 28 percent of companies have yet to start using global demand planning technologies at all, and 38 percent have limited-to-no enterprise-wide technology linkage within their R&D and product development functions.

KPMG Insight



Brian Higgins
Partner, Supply Chain & Operations
KPMG in the US



Dr. Marcus Schueller
Partner in Consulting
KPMG in Germany

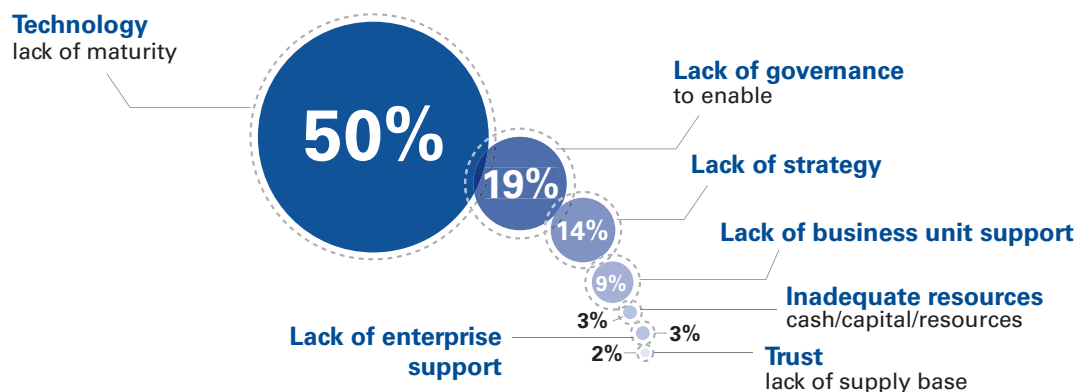
We expect to see the focus on advancing visibility and collaboration outside of the organization to continue. Specifically, we are seeing more companies looking to establish a supply chain platform that focuses on reducing information lead-times, recognizing that removing a day of information lead-time out of their planning and execution processes can drive as much benefit as removing a day of physical lead-time.

Indeed, we believe that there has been a disproportionate amount of time and energy placed on further reducing physical lead-times and, while this will continue to be important, we believe manufacturers are missing significant untapped opportunities to reduce the information lead-time as well. Given

the need for constant improvement of supply chain-related processes, it is vital that the physical and 'informational' supply chains are fully optimized.

Our work within the sector shows that industrial manufacturers are now increasingly interested in learning about the tools, methods and approaches that other adjacent industries (such as high-tech, apparel and retail) have used to dramatically improve end-to-end visibility.

Maturity of technology considered biggest obstacle



Note: Percentages may not add up to 100 percent due to rounding.
Source: Forbes survey, January 2014.

Clearly, there continues to be room for improvement.

When asked what their biggest obstacles were to adopting new technologies within the supply chain, more than half of respondents point to a lack of mature technology. Given the rapid pace of change in technologies and packaged solutions, this is not entirely surprising. However, the fact that only one in five respondents say that governance is a problem, and less than one in ten cite challenges related to securing support from either the business or the enterprise, this data suggests that perhaps decision-makers are waiting for technology to mature.

Our data suggests that business leaders may agree. Forty-five percent of respondents say that new technology would be the biggest enabler in helping their organizations communicate critical demand signals, capacity constraints and supply chain disruption data across their supply chain, whereas only 8 percent say that internal support would be the critical factor. Reading between the lines, we can infer that – once technology proves itself mature enough – decision-makers will become keen adopters, fully supported by the business.

“Already, we are seeing massive benefits come from new technologies,” noted Bruce Rogers at Forbes Insights. “Those that are able to create a common stream of information, a common language and a common view of the business will see more than just incremental increases in business efficiency – they will also enjoy massive competitive advantages.”

Ultimately, our respondents seem rather optimistic about their supply chain integration efforts. In fact, three-quarters of respondents say that they could achieve a globally integrated supply chain within the next three to five years. Not surprisingly, smaller organizations are more optimistic, likely reflecting a simpler and less globalized supply chain overall.

“An efficient, effective and integrated supply chain is absolutely critical to managing the disruptive complexity that is now upon us,” says Jeff Dobbs. “This isn’t just about wringing more efficiencies or costs out of the supply chain; this is about using your supply chain strengths to improve the overall profitability of the company and to create a platform for sustainable growth.”

74 percent say that they could achieve a globally integrated supply chain within the next 3 to 5 years.

Case study

Reducing latency and automating replenishment to improve performance

When a major automotive parts manufacturer wanted to cut costs, improve communications and reduce working capital, they knew they needed to take a closer look at the way their organization's divisions and suppliers interacted.

Two key issues emerged. The first was the time it took for changes in demand information to propagate across multiple tiers of the supply chain. The second was how they aligned their replenishment processes and inventory policies to this demand information. Historically, to buffer against demand uncertainty and information latency, the company tended to hold significantly more inventory than was needed which, in turn, was soaking up working capital.

What the company needed was to greatly improve information sharing and transparency between all of its operating divisions and suppliers. And, in doing so, the company hoped to reduce information latency from weeks to days. Ultimately, the organization's leadership wanted to make sure everyone across the extended supply chain was working from the same information at the same time.

The second thing the company needed was to design and implement demand-driven replenishment processes that would better align supplier replenishment schedules with actual demand and near-term consumption, thus reducing working

capital through better demand and supply alignment.

Leveraging a cloud-based supply chain collaboration and replenishment platform deployed by KPMG, the company completed a pilot project that demonstrated the benefits that could be achieved through improved transparency and demand-driven replenishment. The pilot demonstrated the company could reduce their working capital by as much as 20 percent, while also improving supplier delivery performance. Now the company is in the process of deploying the new capability across all of their 60+ manufacturing sites and 3,000+ suppliers.

KPMG Insight



Eric Damotte
Global Head of
Metals

Over the coming years, we expect to see a reduction of structural over-capacity through restructuring and consolidation, particularly in China and Western Europe. Ultimately, this should lead to more global and regional stability for participants, suppliers and customers. We also expect to see some of the more traditional issues – rising energy costs, scarcity of resources and the need for new talents, for example – move back onto the metals agenda as the focus on increased regulation, as well as on cost and price, moves into its next phase.

Given the cyclical nature of the metals sector, it is hardly surprising that respondents are now feeling the pressure of delayed investment into technology. Yet it will be innovation through technology that will ultimately help these

same organizations respond to stricter regulation, smooth out market turbulence and better manage their supply chain.

Key to this will be the adoption of better integrated planning and forecasting applications, as well as more accurate scenario planning and predictive modeling approaches. With cost consciousness as high as ever, metals organizations are now starting to recognize the value that new technologies – particularly data analytics – could provide in an uncertain environment.

Very much like other sectors in this survey, the metals sector is already placing a greater focus on partnering and collaboration, in an attempt to reduce risk, share costs and achieve greater returns on their R&D investments.



Innovation is the watchword in the Brazilian market

Over the past few years, Brazil's manufacturing industry has lost some of its previous global market share, largely due to price and productivity pressures which have impacted exports.

To reverse this situation, **the industry is now looking at new models** with a particular focus on innovation and development. It is telling that – while respondents said that they spent less than 3 percent on R&D over the past two years – 81 percent say they now plan to invest anywhere from 2 to 5 percent into R&D.

Brazil's manufacturing sector also hopes that investments into enhancing existing products and services, and revamping models will boost growth. **Clearly, there has been a change in mindset.**

However, it is worth noting that, while Brazil's manufacturing sector hopes innovation will help change recent trends, it is largely looking to the local market as the solution to many of its current profitability challenges.

Charles Krieck

Partner in Charge, Audit, KPMG in Brazil

Picking up the pace

I believe that, over the next decade, we will see dramatic reductions in the time it takes organizations to get their products into market because of advances in three areas: 3D printing technology, collaboration and supply chains.

First, let's **take the multiplier effect of technology**; if a company can design and build a component or new product three times as fast and at a lower cost using 3D printing and other technologies, it stands to reason that they will not only beat their competitors to market, they will also be more responsive to customer demand and customization and enjoy higher margins.

Next, I believe **collaboration – in the right circumstances – will also slash time to market**. Manufacturers will soon find that, by partnering with technology firms, for example, they can reduce their development time and their risk. We are already seeing the likes of Microsoft and Google partnering with industrial manufacturers so that each partner can focus on what they do best.

Lastly, greater focus on optimizing supply chains will also help manufacturers capture first-to-market advantage. Particularly for conglomerates and those with diverse product offerings, the ability to consolidate suppliers across various business lines will provide efficiency and potential cost savings. **Greater visibility across the supply chain and better sharing of demand signals will also speed up production time.**

While the full impact of these advances are not yet fully known, what is clear is that the world of manufacturing is about to become much faster and much more competitive.

Ken Seel

Global Head of Conglomerates

High growth emerging markets account for an increasing share of global GDP and are one of many factors in a company's growth strategy equation. In KPMG's recent High Growth Markets survey, 84 percent of C-level executives say these countries are at the top of their corporate agenda – and for good reason: I believe that high growth emerging markets are critical to capturing growth and unlocking new business models for global manufacturers.

Companies with a multi-year strategic planning process supported by strong, dedicated global/local leadership and a significant allocation of mergers and acquisitions (M&A) and research and development (R&D) funding tend to be the best placed for success in these markets. However, I think an additional element, information technology, can be a true disruptor in the planning and execution of emerging market strategies. Capturing and assessing the true cost and profitability information – right down to the product level – of operating in a particular market **gives companies the time-sensitive decision-making power** they need to adjust their business models as cost and profitability factors change. And they will change often as volatility isn't an 'if', it's a 'when' for emerging markets.

Mark Barnes

Global Head of High Growth Markets

Expert localization or modularization?

There is no doubt that manufacturing remains a cornerstone of national economies, yet defining exactly what role the sector should play has become increasingly complex. What is the right amount of manufacturing needed to sustain economic growth? What are the most optimal locations for manufacturing and do they vary by sector? How can manufacturing investment be encouraged by regions, cities or countries?

I believe that we will see an increase in the trend towards **'expert localization' where pockets of expertise are clustered in geographic locations creating a microcosm of expertise**. For example, largely due to the dominance of the City of London in the UK's economy, there has been increasing pressure across the UK to create expert areas in other parts of the country. This could provide appeal for both domestic and foreign investment by certain sectors, such as A&D, giving companies access to the European market while sharing experiences and resources from a home-base in the UK.

That being said, it is worth noting that the corollary of 'expert localization' – **modularization and the use of universal technology to consistently replicate manufacturing in almost any jurisdiction – can also deliver advantages**, especially in the area of R&D. This approach may be particularly valuable to the automotive or consumer products sectors.

Both approaches offer clear opportunities and have differing merits. Regardless, manufacturing organizations will need to be adaptive and 'fleet of foot' to survive in an environment where success is increasingly being driven by a company's agility rather than its ability to execute a prescribed strategy.

Andy Williams

Head of UK Industrial Manufacturing Management Consulting,
KPMG in the UK

The automotive industry is currently experiencing a pace of innovation unlike anything seen before in the sector. With ever-more electronic parts being integrated into vehicles each year, **OEMs are now forced to manage two life-cycles**: one for the technology and another for the end-product. Consumers, eager for the latest technology, are adding new pressures on manufacturers' time to market.

But with limited resources and potentially high technology costs, today's OEMs are struggling to prioritize their technology investment between multiple promising innovations, such as: new propulsion technologies; greater insights from big data and analytics; advances in self-driving technology; or the development of new service-based products.

What is clear is that **technological leadership will continue to be a key success criteria for the automotive sector** and central to their ability to remain independent.

Mathieu Meyer

Global Head of Automotive

Innovation has been a major theme for manufacturers in the emerging markets. But, whereas much of the focus was once on product innovation (particularly in creating global products with local flavor), today's manufacturers are **now looking at innovation across other management spheres such as cost optimization, feature addition and partnership value programs** which aim to generate innovative ideas in collaboration with suppliers and business partners. In India, for example, companies are keenly focused on collaborating with supply chain and logistics providers to improve reliability, enhance capacity and reduce costs by identifying and maximizing process and business practice innovation.

Richard Rekhy

Chief Executive Officer, KPMG in India

Five key

Take-aways for manufacturers

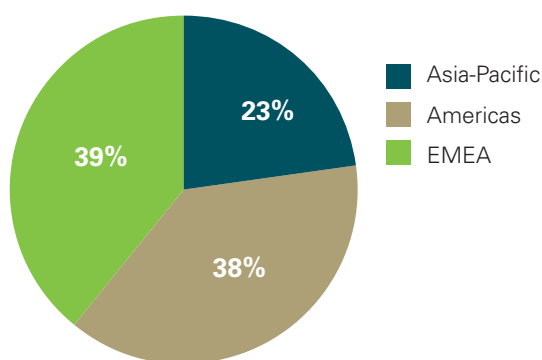
1	Understand your product cost and profitability to support growth and performance across the enterprise.
2	Continuously evaluate your model for innovation for effectiveness and return on investment.
3	Leverage partnerships and collaborative business models to create synergies across the value chain.
4	Utilize technology and build trust to create better visibility and transparency across the supply chain.
5	Create strategies to address the 'disruptive complexity' caused by the accelerating pace of change, advances in manufacturing process, material science, decision-support tools and break through innovation.

About the survey

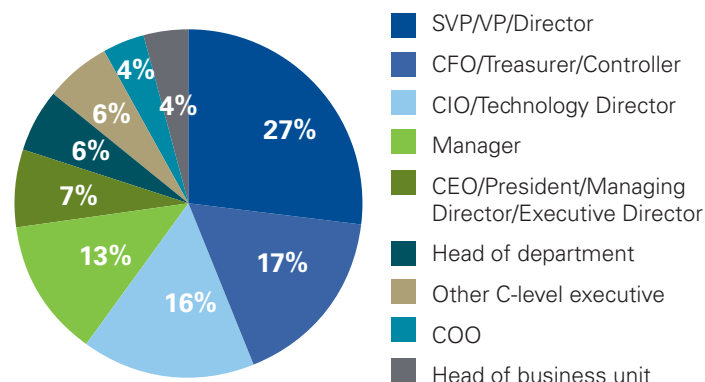
The Global Manufacturing Outlook 2014 is based on a survey of 460 senior executives conducted by Forbes on behalf of KPMG International that was completed in early 2014. Respondents represented six industries: aerospace and defense, automotive, conglomerates, consumer products, engineering and industrial products and metals.

Fifty percent of respondents held C-level positions and a third represented organizations with more than USD5 billion in annual revenue. Respondents were distributed fairly evenly between the Americas, Europe and Asia.

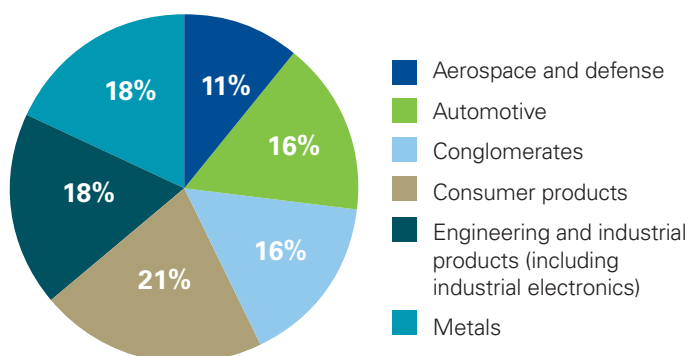
Where are you personally located?



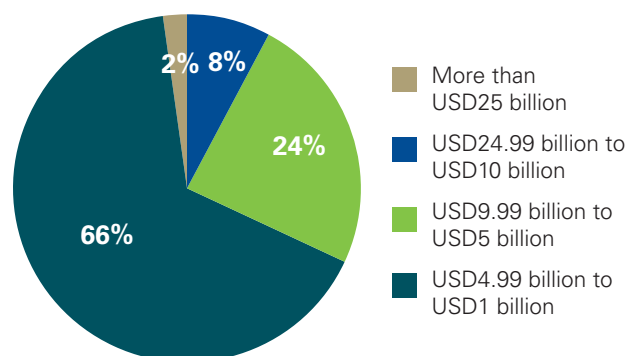
Which of the following best describes your title?



What is your primary sector within the manufacturing industry?



What are your organization's global annual revenues in US dollars?



Note: Percentages may not add up to 100 percent due to rounding.
Source: Forbes survey, January 2014.

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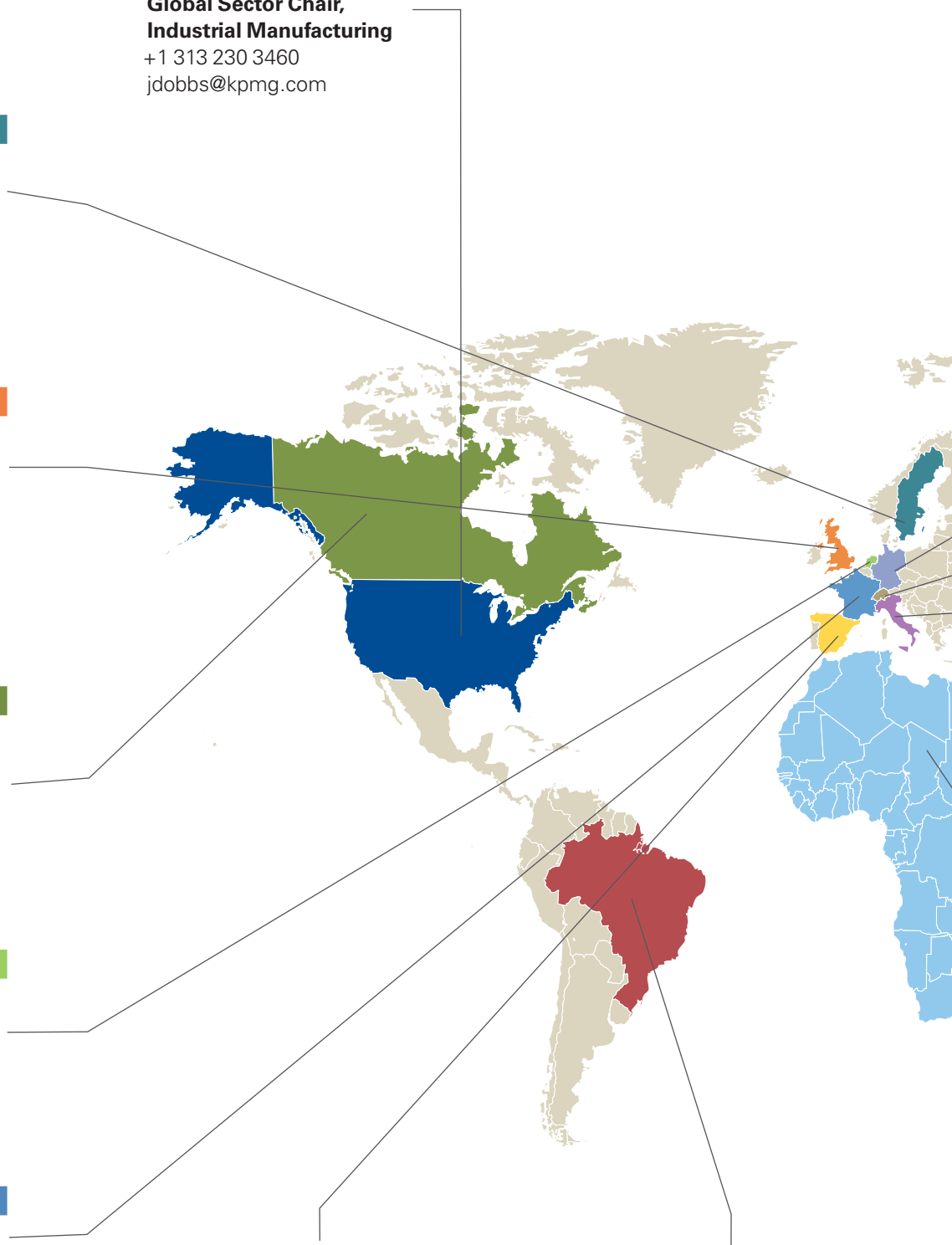
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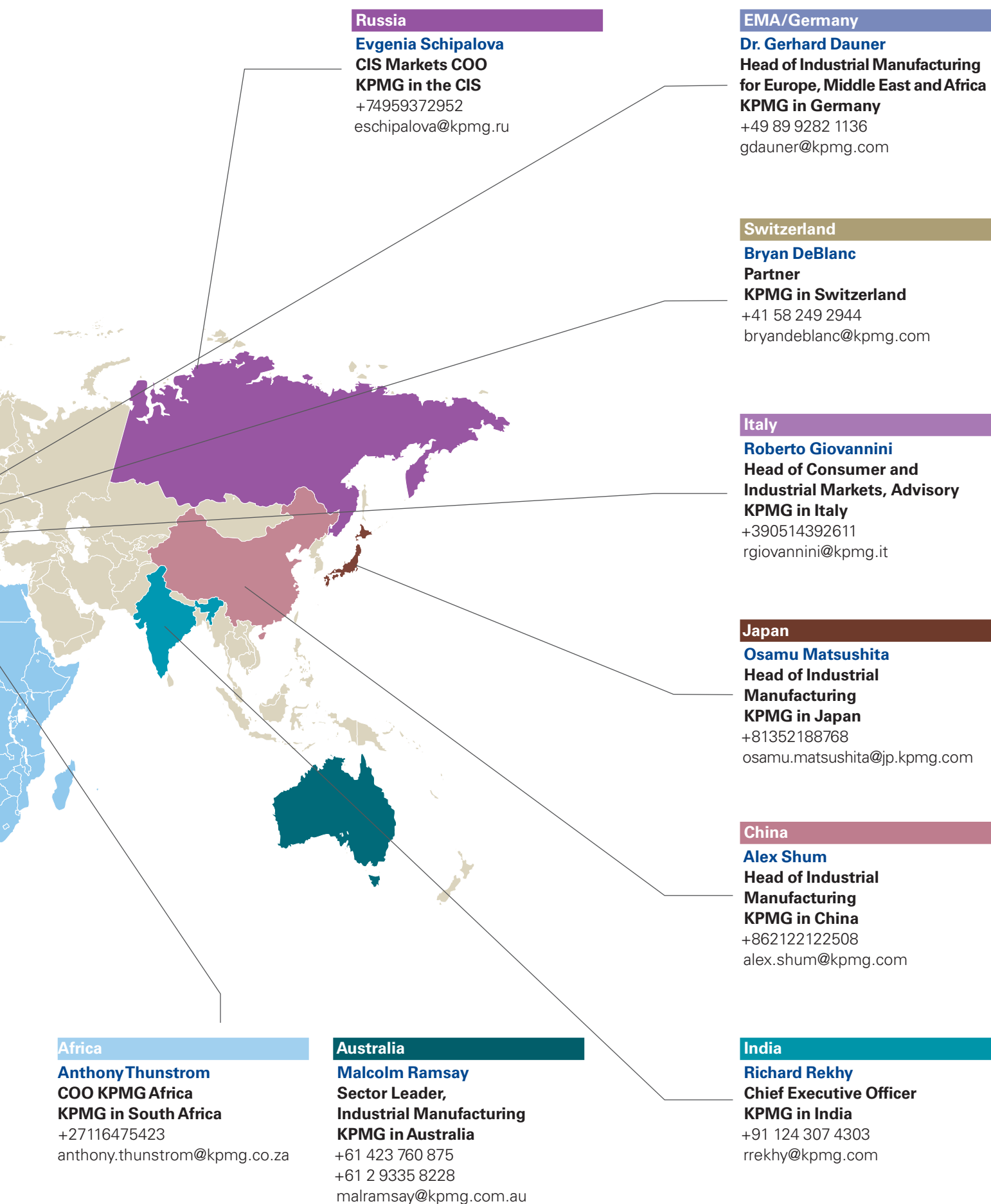
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