



AUTOMOTIVE REPORT 2015

Institution of
**MECHANICAL
ENGINEERS**

IMechE Services Ltd

BDO



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INTRODUCTION

The UK automotive industry is one of the nation's success stories. 2014 saw a return to pre-recession levels for new car registrations (2.5m) and growth of 9.3% over 2013. Car production is rising strongly and is set to pass the 1972 high of 1.92 million cars in 2017. UK automotive manufacturers export around 80% of production; equal to 10% of total UK exports.

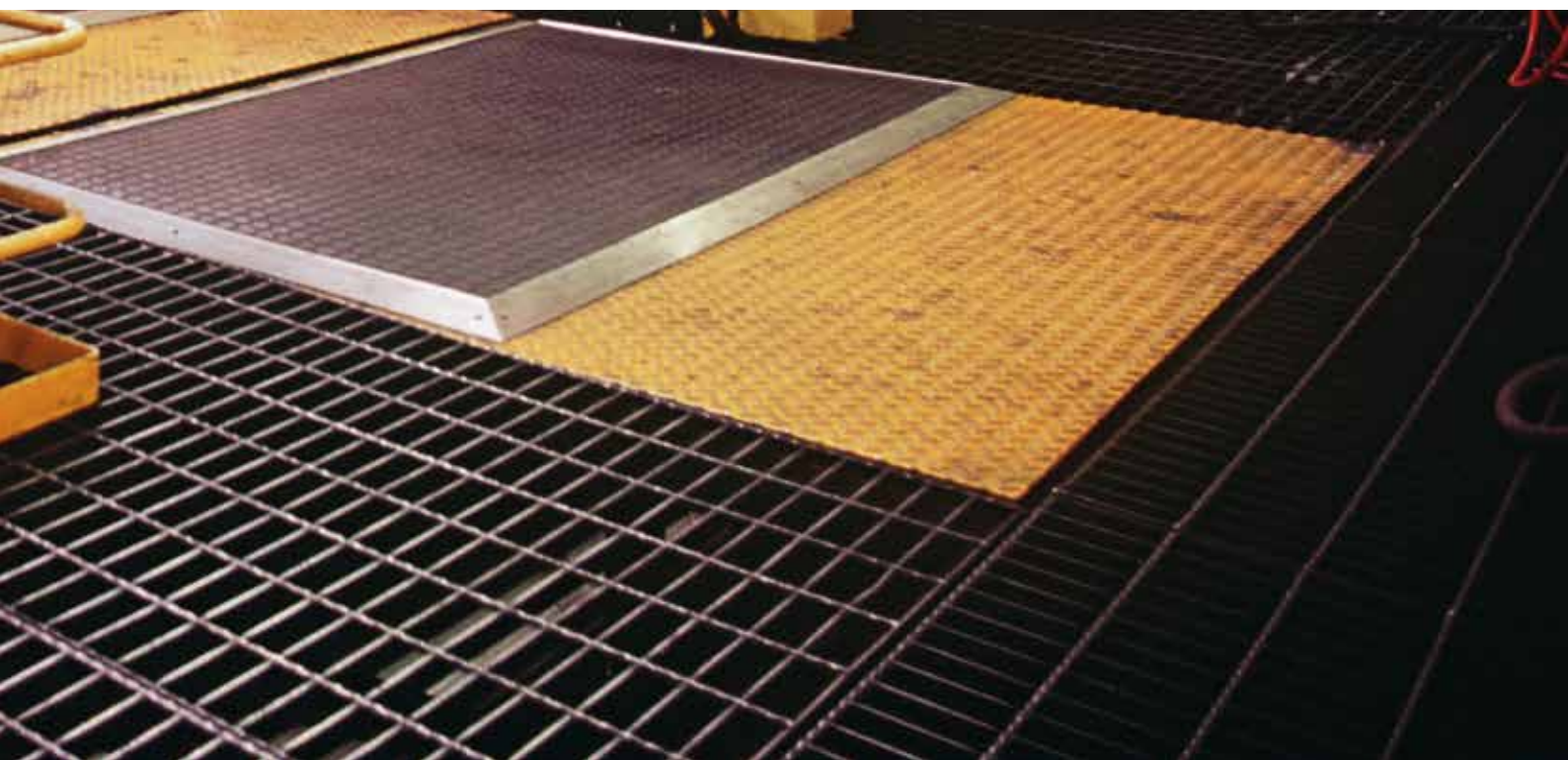
But automotive success is not just linked to manufacturing and sales volumes. The UK is the global hub for the multi-billion dollar motorsports business; it has world-leading technology companies developing low-carbon vehicles and alternative powertrain concepts; and government-led initiatives have been actively strengthening the links between academic research and the automotive industry with the aim of bringing innovation to market faster and more reliably.

Engineering and technology are central to the UK's automotive future and BDO recently enlisted the aid of the Institution of Mechanical Engineers (IMechE), the principal UK professional body for technical people engaged in the automotive sector, to get the inside story on the issues that are shaping the industry as seen by those at the heart of the action. Members of the Institution hold senior positions in the automotive industry both in the UK and internationally and were surveyed alongside BDO clients and contacts in December 2014. We are thankful to all those who shared their opinions and have no doubt that 2015 will be another superb year for the UK automotive sector.



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Head of BDO Manufacturing

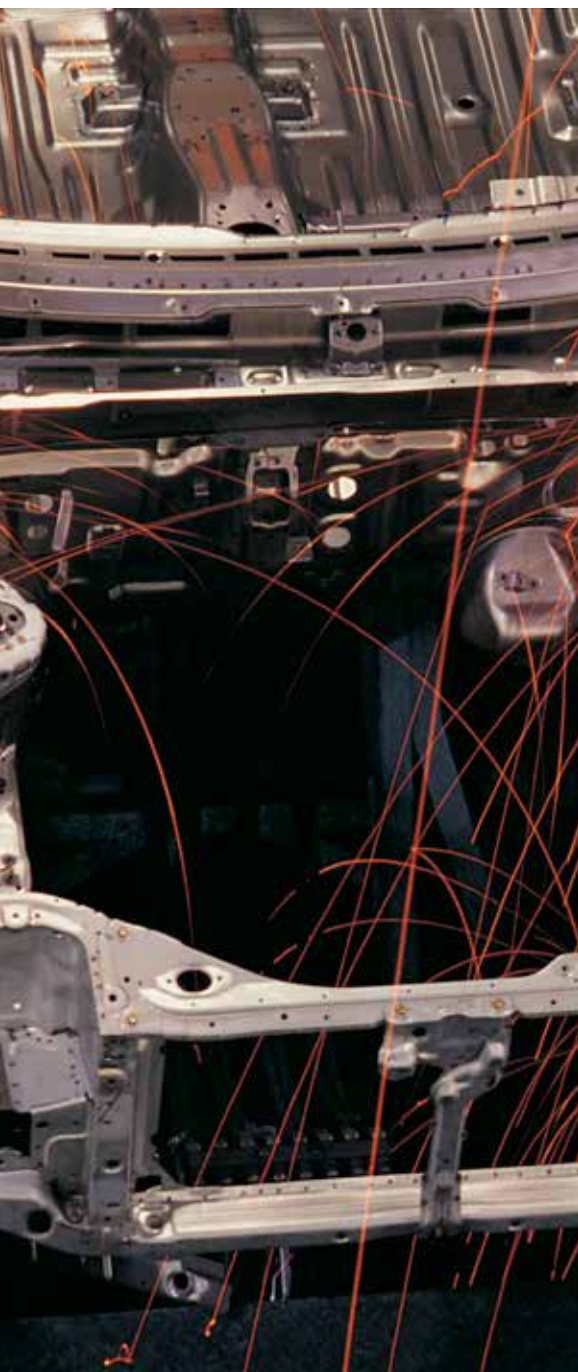


EXECUTIVE SUMMARY

- The UK automotive industry is spread very widely across the whole country, with concentrations in the West Midlands and the South East.
- Vehicle registrations in the UK rose by 9.3% in 2014 and the technical managers surveyed by BDO and the Institution of Mechanical Engineers are optimistic for continued single-digit growth in 2015.
- The majority of growth anticipated for 2015 will come from overseas sales in both existing and new markets. The current percentage is 80%.
- UK suppliers account for less than 50% of the UK automotive sector's supply chain; there are prospects for growth if suppliers can prove competitiveness on quality, cost and logistics.
- UK automotive companies on average invest around 6% of turnover on research and development, with a small increase expected in 2015.
- Electric and low carbon vehicles are the highest priority for research spending in coming years, and other powertrain efficiency improvements also feature strongly.
- The Government's industrial strategy for the automotive sector has passed much of the industry by, with only a third aware of it.
- Skill shortages are a real issue in the automotive industry at both professional engineer and technician levels.
- Automotive groups have been enthusiastic about taking up apprenticeship schemes.
- The industry believes the Government is not doing enough to encourage entrants into careers in engineering and technical disciplines.



HEADLINES



AUTOMOTIVE ENGINEERS
ARE CONFIDENT OF
FURTHER GROWTH FOR THE
UK INDUSTRY IN 2015

ELECTRIC AND LOW
CARBON VEHICLES, WITH
OTHER POWERTRAIN
DEVELOPMENTS, ARE THE
INNOVATION PRIORITIES
FOR THE NEXT FEW YEARS

SKILL SHORTAGES AT
QUALIFIED ENGINEER
AND TECHNICIAN LEVELS
ARE IMPACTING ON
MANY COMPANIES IN THE
AUTOMOTIVE SECTOR

THE UK AUTOMOTIVE
SECTOR IS VERY MUCH PART
OF AN INTERNATIONALLY
COMPETITIVE INDUSTRY
AND HOME-BASED
SUPPLIERS WILL ONLY
WIN MORE BUSINESS BY
PROVING THEMSELVES
ON COST, QUALITY AND
LOGISTICS

THE UK GOVERNMENT'S
AUTOMOTIVE STRATEGY
IS UNKNOWN TO TWO-
THIRDS OF THE TECHNICAL
MANAGERS WITHIN THE
INDUSTRY

GROWTH AND PROSPECTS

The figures for 2014 from the Society of Motor Manufacturers and Traders (SMMT) attest to the good health of the UK automotive sector, and the respondents are confident that the good times are set to continue. The survey asked them how they felt about the future of automotive manufacturing in the UK and 85% said they felt either very positive or quite positive. Only 4% felt negative to any extent.

UK vehicle registrations in 2014 were 9.3% higher than in 2013, and this is the kind of growth that the survey respondents expect to see in the next year. In all, 34% expect to see sales growth of between 0.1 and 5%, and 31% are more confident, expecting growth of between 5% and 10%. A significant minority, 18%, expect sales to rise by 10-20%. At the far end of the scale, 4% expect to more than double sales in 2015, while 2% see sales declining.

Questions about the expected source of future growth – and about the current supply chain – indicate the degree to which the UK automotive industry sees itself as part of an international business. Asked where they expected the majority of growth in 2015 to come from, 86% cited increased sales to international markets and only 14% thought growth would come from the UK market. Of those seeing international sales as the source of future success, 54% expected the greatest gains from increasing sales to existing customers, while 46% thought new international customers would stimulate growth.

Business efficiency within the automotive sector is very much to do with the management and co-ordination of complex supply chains, and survey questions in this area also illustrate the international nature of the industry. The survey recipients were asked what percentage of their supply chain was based in the UK. The results show wide disparities: from a few companies whose entire supply chain is UK-based through to a rather larger proportion where less than 20% of supplies are sourced from the UK: see Figure 1, below.

The bald figures appear to indicate that just under 50% of UK automotive industry suppliers are themselves UK-based, but more detailed analysis of the survey results shows that this is likely to be an over-estimate. Three-quarters of the respondents whose UK content is the lowest fall into the £500-million-plus turnover groups; conversely half the companies that claim

100% UK sourcing are the smallest firms which turn over less than £1m a year.

The survey asked whether UK based-automotive companies would, in the view of the engineering experts, source more components and systems domestically in the next few years. This achieved a very mixed response: 38% said Yes, UK supplies would increase, and 33% said No, they wouldn't. The remaining 29% were neutral. UK advantages were seen as cost, logistics and quality.

The implication of these results for the UK supply chain reinforces the fact that the automotive industry is international rather than national and is driven by the big groups. The UK has been successful in maintaining and developing a competitive position in this global business, and there is more to be won – if competitiveness can be maintained or enhanced.

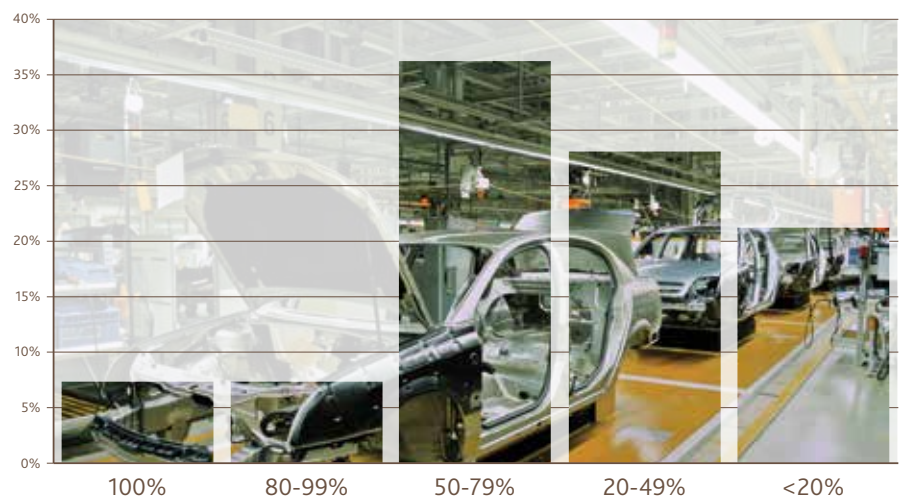
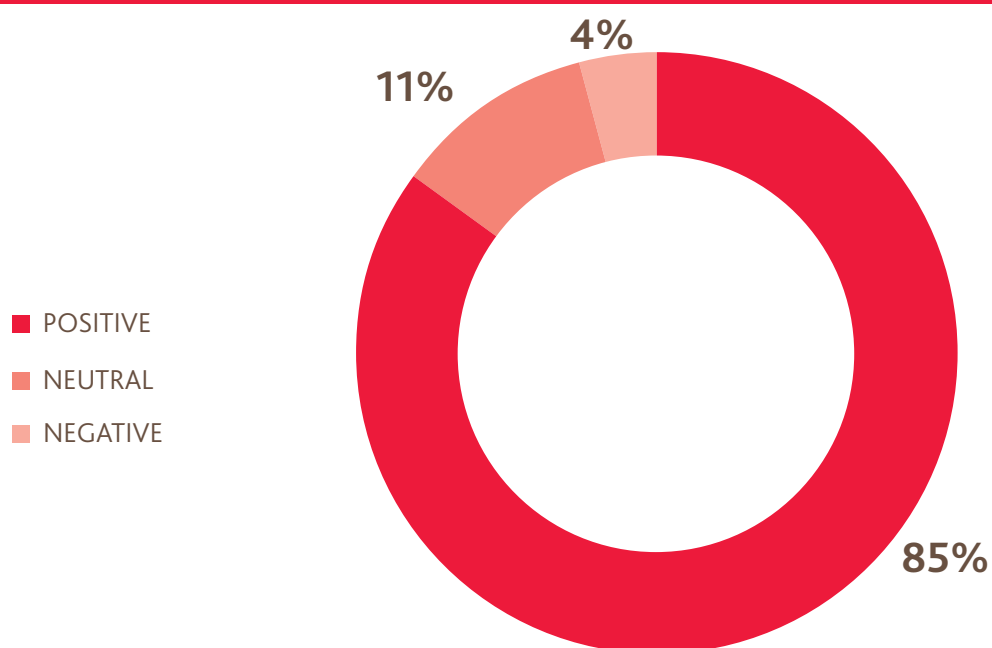
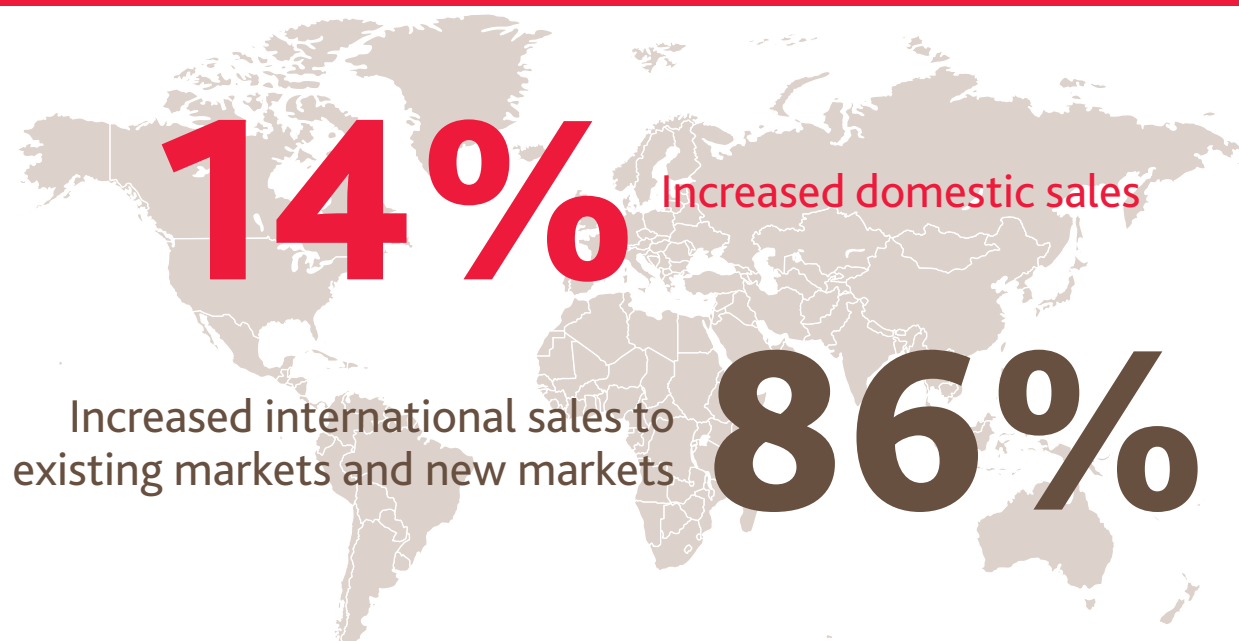


FIGURE 1: Percentage of supply chain based in UK

How positive do you feel about the future of automotive manufacturing in Britain?

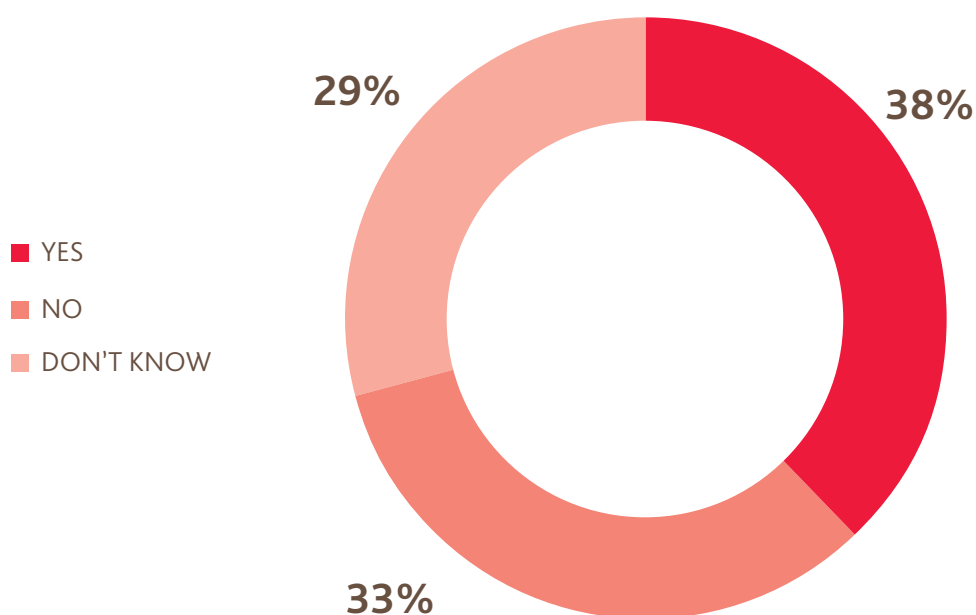


If growth is expected, where do you anticipate the majority of this sales growth to come from?

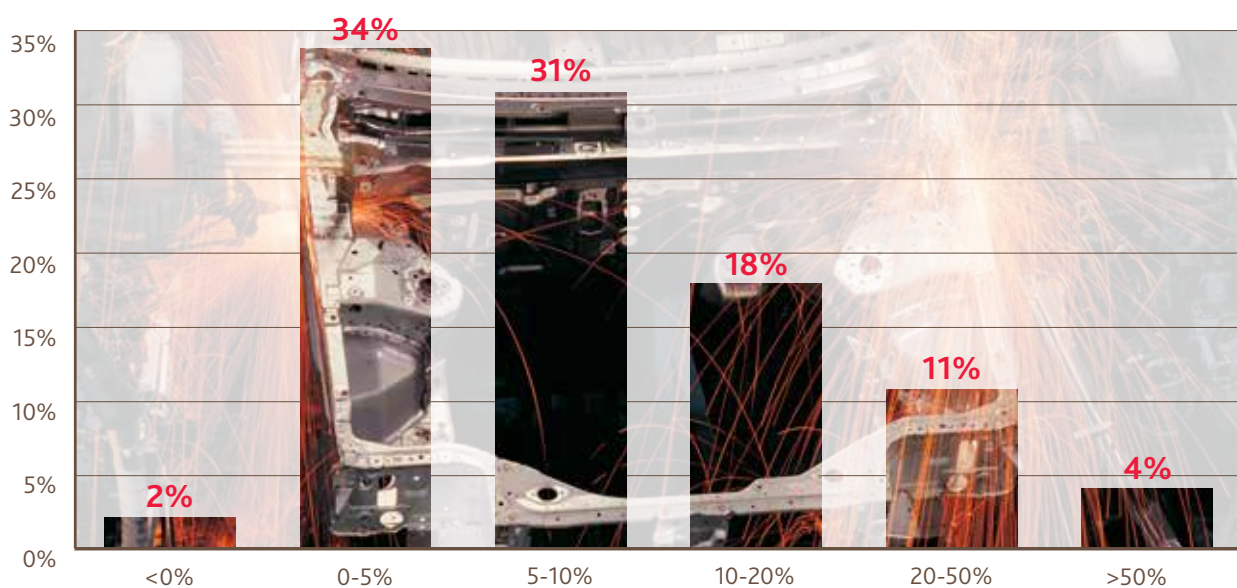


GROWTH AND PROSPECTS

Do you think UK-based automotive companies are likely to source more components domestically in the next few years?



How much do you anticipate sales growing within the organisation you work for over the next year?



THE BUSINESS OF INNOVATION

Innovation in product and in process is key to industrial competitiveness and the survey of technical people by BDO and the IMechE asked questions about automotive industry research and their priorities for future technology developments. Automotive groups are regularly cited in government figures as being at the upper end of UK industrial investment in research and development, and the survey results confirmed that: 34% said their companies invested between 7 and 10% of turnover on R&D, and 42% invest between 3 and 6%.

Research spending is set to increase in 2015, though not dramatically. Only 15% of the respondents were expecting a substantial increase in research spending; 44% expected a small increase, while 29% felt there was unlikely to be any change over previous levels of spending. Very few companies, only 12% of respondents, are cutting research spending at present.

So what should UK automotive companies be spending their research money on? The survey asked the IMechE experts to ascribe an "importance rating" to six technology issues that have received much attention from the global automotive industry and from commentators in recent years. The overall results are shown in Figure 3 and the weighted results, showing the average importance for each technology, is in Figure 2.

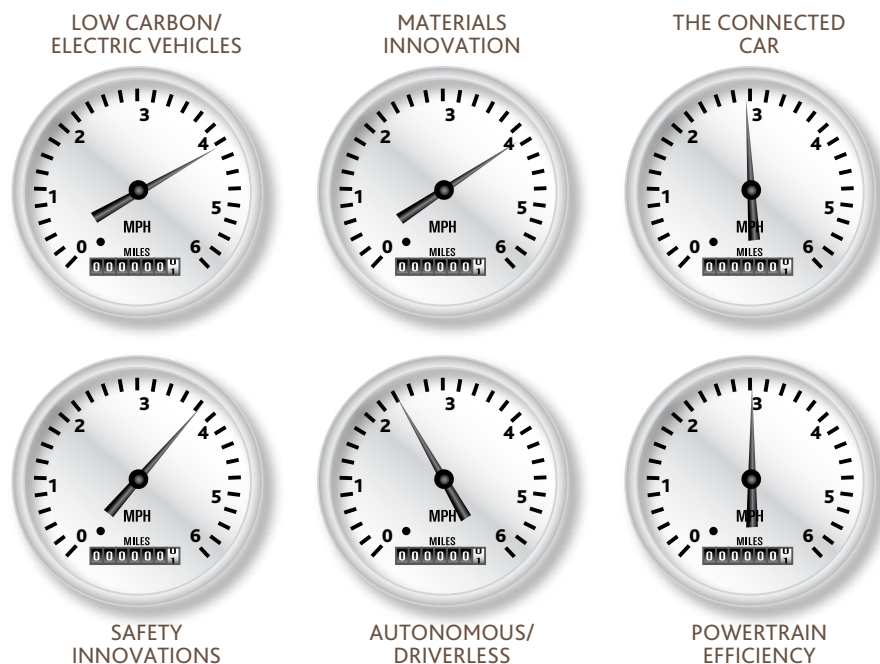


FIGURE 2: Overall 6 = very important, 1 = not at all important

There has been a lot of media attention on the development of low carbon and electric vehicles, and these are the technologies that appear to have the broadest interest among the UK auto industry's technical community, with significant weight also given to powertrain efficiency and materials engineering developments.

Overall, the top priority for research seen by the technical community is in **low carbon and/or electric vehicles** and this may well reflect the fact that this is already a defined market. SMMT figures indicate that the number of registrations for plug-in vehicles quadrupled in 2014. But if many technology challenges have already been met, then the perception among engineers is that there is still plenty of work to do in terms of

developing the market and reducing the cost to enable these vehicles to move fully into the mainstream.

The survey points to an interesting distinction between technology development in low carbon/electric vehicles and in **powertrain efficiency**. There were more respondents who gave top priority to powertrain efficiency, but also many respondents for whom this is an area of little or no interest. Low carbon and electric vehicles by contrast attract interest and comment almost across the board: an indication that issues of carbon reduction and electrification involve a broader range of technologies than just powertrain. That said, the overall high score for powertrain efficiency as a research priority undoubtedly reflects the UK's strengths in this area.

THE BUSINESS OF INNOVATION

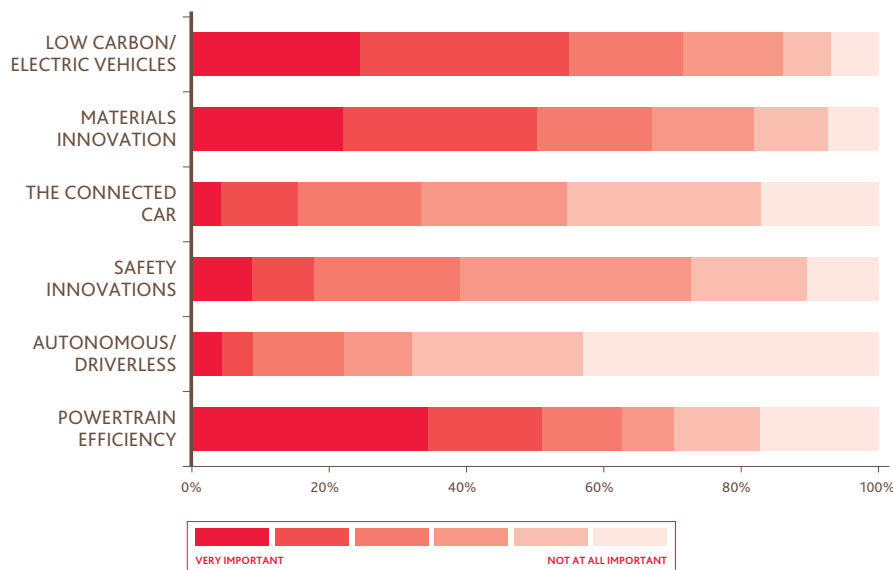


FIGURE 3

Materials innovations such as lightweight materials and nanotechnology are, like low carbon and electrics, of significant interest for more than half of the respondents. Materials developments may be seen as primarily the responsibility of metals, plastics and other sectors, rather than of the automotive end-users, but it is the automotive OEMs and their suppliers who are driving the technologies, often with the aim of producing lighter vehicles that will achieve greater fuel economy. This is a very widespread requirement that underpins a lot of other automotive innovation and very few are unaffected by it.

Vehicle **safety innovation** such as automated braking systems is an area of top priority for relatively few respondents, but equally very few ascribe no importance to it: most see it as of medium importance. Driver safety is, of course, the responsibility not just of the automotive industry but also of legislators and traffic management systems – as well as of drivers themselves. While safety remains a paramount consideration across all sides of automotive innovation, and can make or break a project instantly, as a direct subject for industrial innovation there is perhaps limited potential currently.

Some current safety work can be seen as part of the technologies that feed into a vision of future motoring that owes as much to computing as to mechanical engineering. This vision also grabs headline attention: under the heading of **'the connected car'** are concepts such as vehicle intelligence, interaction between the vehicle and its surroundings and the integration of different information systems to improve the driver experience and to make travelling more efficient. But, perhaps surprisingly, this area is seen as less attractive for immediate research effort and spending.

And the survey is clear that the sector where UK technical people currently see the least real potential for research investment is into **autonomous and driverless vehicles**. There is likely to be significant attention in 2015 on this area anyway, with government-backed schemes to trial autonomous vehicles on public roads set to go ahead. But the industry is less enthusiastic.

There is perhaps a broader conclusion to be drawn from all of these responses about automotive technology. There has been much discussion that the thrust of automotive innovation has subtly shifted in recent years away from mechanical technology to electronic and software development. Large-scale automotive employers such as Jaguar Land Rover are on record as stating that they view communications and connectivity technologies as particular areas of focus, and that their current recruitment of engineers reflects that. This survey does not explicitly contradict that, but it does suggest that there are still many research challenges in the development of more efficient and environmentally friendlier vehicles that require new mechanical and materials technologies.

THE ROLE OF GOVERNMENT



The survey of automotive members of the Institution of Mechanical Engineers tackled two distinct areas where the activities of the UK Government have an impact on the sector. For the past two years, the Department for Business, Innovation and Skills (BIS) has been actively pursuing an industrial strategy to develop technology projects, supply chain initiatives and research collaborations for the automotive industry; at the same time, there has been a continuing emphasis on the development of technical skills, particularly at the technician and apprentice level.

The news from the survey for the Government is mixed. The industrial strategy for the automotive sector has had limited visibility within the industry that it is aiming to support, and two-thirds of the respondents said they were unaware of it. With this level of recognition, it is no surprise that 31% of respondents are unsure whether the spending commitments – £316m for automotive projects through regional growth funds, £80m in the supply chain initiative and £180m of research support – is sufficient to secure the future of automotive manufacturing in the near future. Also, perhaps not surprisingly, is that, of the 69% who expressed a view on this funding, 52% thought it not enough and only 17% were content.

Survey recipients were then asked to pick three from a list of six additional government measures that they would

like to see introduced by the Government. Three of the six – additional investment of the kind already implemented in the automotive strategy, channelled support for smaller players within the supply chain, and additional tax breaks – all achieved between 56 and 64% support, as did a fourth measure, more support for apprenticeship schemes, of which more below.

The idea of using government money to offer financial support to encourage consumers to buy lower emission vehicles was less popular, 45% of the vote, and the idea of further funding for the Catapult Centres, which seek to boost innovation capability in strategic industrial sectors, was backed by less than 25%.

The apprenticeship theme was taken up in a further set of survey questions which asked about skill problems in the automotive industry. Skills are an issue at all levels. The survey asked whether respondents were aware of difficulties in their organisations in recruiting skilled engineers, and 75% said Yes, there were problems, with a further 7% saying there were no problem – see Figure 4A.

The recruitment of skilled technician grades is a less visible problem: 56% said they had current problems and a further 23% were unsure. The results are displayed in Figure 4B. The minority of 21% see no current difficulty in technician recruitment also, on the whole, felt they would not have problems in the future. This appears to be more a reflection of the presence, within the survey respondents, of people from very small companies for whom recruitment and staff development are not priority issues.

THE ROLE OF GOVERNMENT

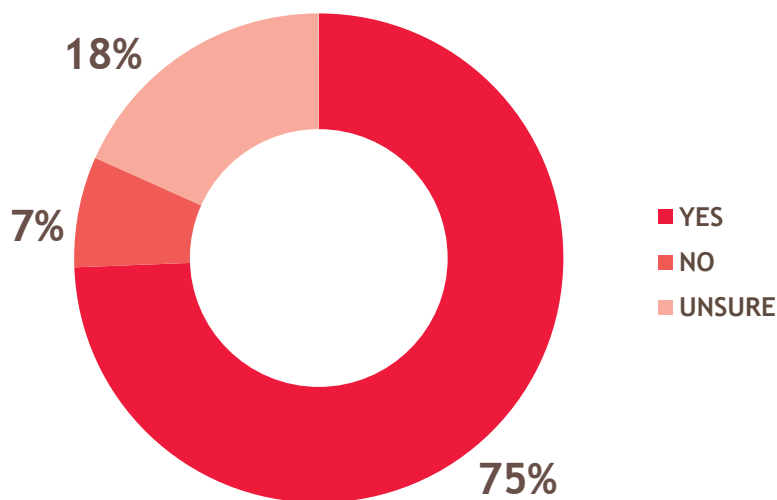


Figure 4A: Problems recruiting skilled engineers

These same people formed the bulk of those answering No to a question about whether their organisation had taken on apprentices in the past two years, and several of them explained that there were no relevant roles for apprentices within their structures. The majority reply to this question was Yes: 78% of automotive companies have been taking on apprentices, and this accords with government figures that show the automotive sector playing a leading part in the 39% increase in apprentice take-up over the past two years.

This is good news for the Government but, as in the industrial support funding, the industry wants more. Asked whether the Government was doing enough to increase entrants into the STEM (science, technology, engineering and mathematics) professions, only 11% give the Government the thumbs-up, and 71% say No.

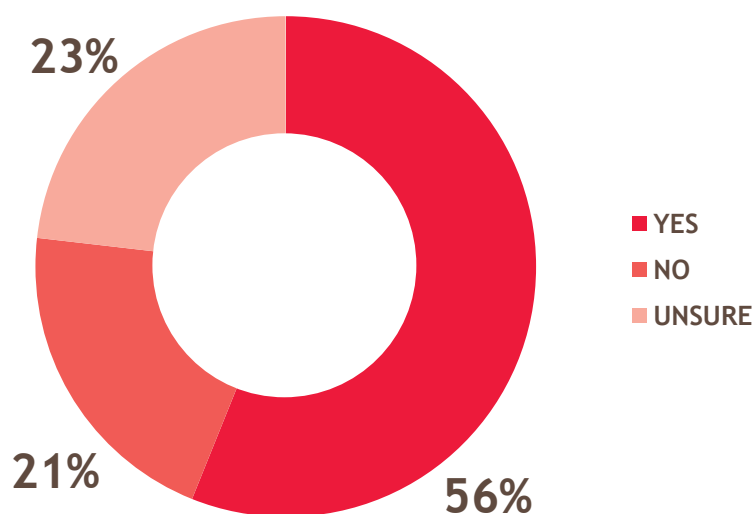


Figure 4B: Problems recruiting technicians

THE STATE OF THE INDUSTRY

Big companies dominate the automotive industry worldwide and that is true as well of the UK industry. Almost half of the survey respondents, 47%, work directly for the vehicle manufacturers or OEMs and a further 18% are employed by suppliers of major assemblies, subsystems and individual components. Of the remainder, the largest business sector is 'consultancy and services' which accounts for 17% of the respondents.

Unsurprisingly, half the respondents work for groups with an annual turnover in excess of £500m. At the other end of the scale, 9% of the respondents work for very small companies which turn over less than £1m a year. The UK automotive sector perhaps lacks companies in the 'small-to-medium' category: only 10% of our respondents came from firms in the £1m to £50m turnover band.

IMechE members naturally tend to have technical roles: 81% classed themselves either as engineering or manufacturing managers or as consultants, while a further 7% had director or senior management titles in engineering functions.

The geographical spread of the UK industry is perhaps less predictable. There are concentrations of survey respondents in the West Midlands, the traditional heartland of the UK motor industry, and in the South



East, with 31% and 26% respectively. But all areas of the UK, including Wales, Scotland and Northern Ireland, are represented among the IMechE's automotive membership and the survey respondents: this is truly a national industry.

It is also an industry where important decisions are taken in the UK. We asked where the respondents regarded the headquarters for their businesses to be, and 57% report to a UK location. Of the others, the United States with 15% is the

most important player in the UK industry; Germany, Japan, India and France were the only other countries to merit more than a solitary mention. This finding may reflect the size of business of the respondents.

A separate question asked the survey recipients whether their companies had had recourse to bank finance in the previous year: only 17% of those who answered said that they had, and 80% of those had said they had met with no difficulties in sourcing this finance.

NOTES

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