

SKILL GAPS IN THE AUTOMOTIVE SUPPLY CHAIN IN THE WEST AND EAST MIDLANDS 2005

FURTHER OBSERVATIONS AND RECOMMENDATIONS

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9.1 Introduction

Many points were raised by survey participants about their own limitations and skill needs, as well as those of their suppliers. Similarly, specific training needs were identified. Numerous suggestions were made for ways to tackle the deficiencies identified in their own competences, and to improve both their own and their suppliers' ability to meet their customer expectations better. This concluding section draws together these various points and groups them thematically, while taking the opportunity to make some further observations and recommendations. The various themes are as follows:

- Best practice, lean manufacture, and continuous improvement.
- The business environment and the global marketplace.
- Skill gaps and the supply of suitable skills in the labour pool.
- Issues for training provision and access, and
- Issues for business support.

9.2 Best practice, lean manufacture, and continuous improvement

Among the points made by survey participants about their best practice expectations (section 8) certain performance priorities were evident and to a high degree inseparable, namely:

- *Lean manufacture.*
- *Quality, Cost and Delivery performance, and*
- *Continuous improvement.*

Issues were raised with regard to their suppliers and their own in-house competences, as well as customer-supplier relationships including supplier development.

Lean manufacture is a very significant driver for 15 firms for changes in the competences they need. Firms need to implement lean principles and ensure that they make continuous improvement, cutting costs and reducing time and waste across their businesses in general, not just on the shopfloor. These are important to firms at all levels of the supply chain, including the vehicle manufacturers. But there is a concern that lower tier SMEs face a particular problem in implementing lean principles due to their lack of resources. Their focus is on paring down their workforce levels to reduce

their costs and not in investing in training and workforce development or new technology. Their managers do several jobs, none of which they are specialist in. Nor are SMEs doing enough to ensure that they continuously improve. Even those which have undertaken a course on lean do not appreciate that there is more to learn, because expectations are continuously evolving. There is more understanding to gain about even the most familiar elements, for knowledge is moving on all the time. This also has implications for the support agencies who must keep evolving, too, in their support to businesses on lean principles and continuous improvement. They are also supremely well placed to get the message through to SMEs of the need for continuous learning about lean.

A further possibility is via benchmarking firms which are rolling out continuous improvement ways of working throughout their companies. It would be helpful to benchmark what their principles and methods are, and how they instil them. Certainly, these involve not only production systems but also a broader programme of cultural values. Currently some firms are benchmarking the Toyota Production System, or have developed variants of it, without necessarily taking on board other aspects of the wider programme. To do so would give them insight into how to achieve a more harmonious working environment and better buy-in to performance improvement across the whole company. Self critical appraisal of their systems, processes and procedures is a key element of the competitive advantage of the leading exemplar in the industry, and this, too, warrants benchmarking.

9.2.1 Meeting customer service requirements and best practice expectations

There is an issue for all tiers, including the vehicle manufacturers, of meeting increased and changing customer expectations. But there is a substantial gap between what the vehicle manufacturers and 1st tiers want and what their suppliers are able to provide. The vehicle manufacturers voiced criticisms of the 1st tier indicating that they, too, are unable to meet expectations as fully as they are required to, but it was particularly an issue in relation to lower tier SMEs' QCD performance. There is a danger to suppliers of losing business if they are unable to bring down their prices to the level that their customers want, to prevent them sourcing offshore instead. They also need to improve their level of customer service. It may be timely to reassess the content of any current training provision in customer service.

There is a concern that lower tiers are generally not doing the technological investment needed to improve productivity and bring down their costs by purchasing higher output machines, which some SME comments confirmed. Though others are investing in new equipment, it is limited to certain workshops, cells or individual machines. They also need a speedier responsiveness, notably when problems occur or when their customer switches their requirements either by volume or by components or systems sourced. This will more easily enable them to retain their customers even if they cannot reach complete parity on pricing with competitors. So, SMEs in particular need finance to purchase new plant and equipment, both production and inspection/testing. A suggestion was made that SMEs could be redesigning tooling or adding a second operation to reduce lead times and prevent production problems occurring. They need the appropriate accreditation, such as ISO/TS 16949 and ISO 14001, or at the very least QS 9001/2000. Their customers need a more concerted effort by SMEs in relation to pre-production parts approval (PPAPs) documentation, 6 Sigma, and Advanced Production Quality Planning (APQP). This raises issues for SMEs in obtaining the necessary level of competence, or recruiting appropriately experienced personnel. Certainly, problems were already apparent in relation to PPAPs and finding affordable expertise. Suppliers must also have strong organisational skills to respond quickly if an issue occurs, to solve the problem speedily, with no re-occurrence.

There is increasing emphasis on quality improvements in helping to reduce costs because then fewer problems will occur. Among both the vehicle manufacturers and 1st tiers there is a perception that suppliers are not sufficiently aware of how the requirements have become tighter, though these do vary according to the process and part/system supplied. In one case 1 part per million defects was the standard formerly acceptable, now it is one part in 10 million. Another case mentioned fewer than 25 defects in 1 million.

A vehicle manufacturer observed that few SMEs attend quality circles and the like. Is there scope for an initiative here?

For the SMEs there is also an issue about their 'customer focus' and perhaps how some SMEs define this term, given that for one this meant getting more sales from customers. This is not what vehicle manufacturers mean when they state that SMEs should be more focused on their customers. To the

SMEs' customers it involves mirroring their volume and parts changes and providing the quality and delivery performance that they need. There was a perception, too, that SMEs are tending to manufacture to stock rather than manufacturing to demand (though this is obviously a tendency among some 1st tiers, too). In meeting ever reducing Just-in-Time deadlines which entail radically more frequent deliveries, there is an issue of who has the burden of storage to enable firms to meet JIT deadlines. More inventory holding equals more cost, so this is clearly an area for attention in searching for ways to reduce costs further.

There is also a question mark about how flexible SMEs are, since a gap was discernible between SMEs' flexibility in mirroring customer changes and what SMEs believe themselves able to provide. There is also an issue about how 'flexibility' is defined. To the SMEs flexibility is likely to be focused inwardly on multi-tasking production skills on the shopfloor, whereas to the 1st tiers and vehicle manufacturers it implies they should be more customer focused. It requires profound attention to QCD as well as speedy responsiveness to volume fluctuations and components required, as well as additional competences such as strong business planning and [project] management skills. Some 1st tiers believe an attitudinal transformation needs to occur among SMEs, and a willingness to adapt to change, but a reluctance to change and develop was highlighted among the SMEs, in the views of 1st tiers.

Certain engineering and quality skills which are particularly important in relation to reducing faults and increasing production performance are in short supply, as especially noted by the vehicle manufacturers and 1st tier suppliers, namely:

- Experienced quality engineers, including with an environmental specialism.
- Project management engineers, and
- Maintenance engineers.

In the Quality function there is relentless ongoing change in relation to new standards and quality tools and techniques due to increased customer expectations of product reliability, endurance and performance. But skill gaps were identified in the possession of technical skills in these tools and techniques, and keeping up with quality standards. Indications are that

training is not keeping in step with the technical requirements of quality. It is also clear that Quality staff need strong competence in IT and that here, too, they are having difficulty in keeping up to speed. Furthermore, they need motivating and influencing skills to get people (notably in production and engineering) to change. There is a heightened need for Quality staff to be questioning, innovative and forward looking in suggesting better ways of doing things, but the perception was that often they lack these attributes, and that time pressures make them reactive rather than strategic and proactive. There was a suggestion that schools are not teaching people about quality and continuous improvement, nor do universities or colleges teach best practice. It is clear, too, that workforce training for Quality staff needs to be more broadly based and strategically approached to keep them in step with, rather than following, quality trends.

Project management engineering skills are also to the fore in relation to problem solving, rectification, and QCD. Part of the role of project management is to ensure things are done right first time, so no problems can occur, deadlines can be met and project costs kept within budget limits. Yet the level and availability of project management skills is an issue both among the 1st tiers and SMEs. Furthermore, the SMEs appear to have a limited appreciation that it might be necessary that they possess these skills. There is a question mark about the supply of training provision for project engineers.

Maintenance engineers, too, are in limited supply, and training for these is evidently an issue, too. Expectations of their role has changed from reactive (repair) to proactive (preventing machine breakdown and production problems), by doing preventive maintenance. New and advanced technology has meant their acquisition of higher tech skills. There is also a move to get the shopfloor to do their own maintenance (this was happening in some cases), which clearly places another expectation on the skill requirements of Manufacturing Operators.

It is crucial to get buy-in by the shopfloor, in particular, because they are the key to performance improvement and it is considered that they are best placed to identify innovative improvement opportunities in production areas. But there is a trust issue because people think they will lose their jobs if they implement performance improvements or suggest ways to conserve resources and cut time and waste. But they could

lose their jobs if they do not do this, because employers will move production offshore if costs remain high. It is vital to get this message through to workforces. An issue appeared about workforces not supporting productivity changes, not appreciating the global threats to the business and their own jobs, and not wanting to work smarter, just to push buttons. But people need to be enquiring, problem solving, investigative, and suggest ways to improve. Leaders, including team and line leaders, need to engage workers in assuring that they operate to their optimum. 'Softer' skills like communication, motivational, personal relationship and team working skills are seen as key (though this also applies off the shopfloor, too).

9.2.2 Best practice

What is 'best practice'? According to certain respondents, this term has become a buzzword, a cliché, and its connotations are not fully understood (the same might also be said of the term 'lean manufacture'). The issue was raised among 1st tiers of a need to define what best practice is, and of achieving consensus on what it entails. For the vehicle manufacturers, best practice suppliers achieve reliable delivery, are financially sound and so on, but what values and abilities within those suppliers underpin this achievement? Other attributes mentioned by vehicle manufacturers and 1st tiers include sound business planning, project management capability, and highly focused and responsive customer service, as well as the ability and willingness to improve continually, and invest sufficiently in new technology and workforce training and development.

It could be problematic for suppliers if, in serving a range of different customers, they are expected to meet a variety of expectations on best practice and comply with different requirements for procedures and documentation. There may be a need for the greater provision of external education and training, too, specifically on 'best practice,' as well as the identification of criteria, procedures, standards, and documentation.

Best practice needs to be embedded throughout companies, though certain functions are front line including Purchasing, Quality, Manufacturing, Maintenance Engineering, Project Engineering, and Design Engineering. Is best practice a part of study for qualifications and in-post training undertaken by

these personnel? A 1st tier observed, too, that best practice principles are important for apprenticeship training. Is this a part of their training? Crucially, too, Senior Management, indeed, management at all levels, need to take best practice on board. Is it a key part of management training, including team leader and supervisor training?

Certain 1st tiers are not sure that SMEs understand what best practice entails, or that they are prepared to make the necessary changes to their businesses, or to keep the momentum going by continuously improving. It is important that SMEs have some best practice exemplars to benchmark themselves against – not major companies with tremendous resources, but more like themselves, in order to relate to them better. People need to benchmark their own roles, working practices and individual performances with comparable personnel in other companies, not just looking at companies at a business performance level. They need to benchmark what is actually considered to be best practice, not what they assume to be so. Bear in mind that it was difficult for SMEs in this survey to identify best practice firms, or to be sure what 'best practice' denotes.

9.2.3 Customer – supplier relationships

Customer – supplier behaviours are compromised by the pressures inherent in demand and supply patterns, and relationships can be difficult. One vehicle manufacturer commented that promoting trust between customers and suppliers would be a powerful training programme.

There is variation among the vehicle manufacturers about the development of their suppliers. Certain vehicle manufacturers are evidently against getting involved in supply chain development programmes with their suppliers but others are doing it, have a history of doing it, or are about to start. Supply chain development involving the lower tiers is in some opinions the responsibility of the 1st tier. But for whole supply chain competitiveness surely the whole supply chain should be developed as one unit? Furthermore, lower tiers are likely to understand more clearly what they have to achieve, and why, if they also hear it direct from the vehicle manufacturer, and see themselves as working for mutual gains. They would also benefit from having direct access to the resources and knowledge of the vehicle manufacturers. Is there a trust issue between the 1st tiers and lower tiers that would have to be resolved for this to happen?

9.2.4 Design and development collaboration

There is an issue about investment in design. The vehicle manufacturers generally consider that design expertise is the responsibility of the 1st tiers, and, similarly, the 1st tiers believe that design is their responsibility. In their view, the SMEs need to have development competence but not design, and this view is reflected in the perceptions that SMEs have of their own required competences. It is important to consider whether this scenario is inhibiting innovation capability within the supply chain, and, secondly, whether it is limiting individual suppliers' potential survival, growth and diversification potential because they have no or very minimal experience of product design and development, as distinct from development assistance.

Another issue concerns the advanced software employed increasingly by vehicle manufacturers and 1st tiers to reduce product development lead times. It is crucial that these firms possess the means to keep at the leading edge of change, and that the required investment and training is conducted throughout their businesses, within and outside the design engineering function. It is also crucial that they are able to transfer designs and other development materials to their 1st tier suppliers and that the 1st tier mirror them in the technical, IT and skill investments they make in order, for example, to do e-visualisations. It would be surprising if this requirement to share advanced software competences did not filter through to the SMEs and therefore poses a question for their own investment and skill needs. This needs to be addressed.

9.2.5 The use of e-business

Design and development through online transfer of design specifications and other technical information is one feature of e-business. Other key aspects of e-business include communication and information handling of all kinds, as well as purchasing, marketing and selling, and billing.

The time slots for Just-in-Time supply have reduced. For Stores and Despatch, and Supply Chain Logistics, there is added pressure to send out deliveries substantially more frequently including, in some cases, supplying to several delivery windows or direct to work stations. Stores and Despatch are going onto web based systems if they have not already done so, and this presents a training issue as well as a compliance issue in relation to their customers' procedures. They need IT competences

including in integrated management systems (IMS). In addition to standard capabilities in the Stores and Despatch function, a higher calibre of personnel is needed with sound business planning and leadership skills.

SMEs certainly have considerable limitations as regards e-business, and there is potential for them to grasp the opportunities it could bring, for instance investing in video conferencing between customers and suppliers. Furthermore, ensuring traceability of products and materials, and the required documentation, is not something that all SMEs know enough about. Materials resource planning is another area for improvement in SME competences. SMEs' commercial staff also need a knowledge of internet auctions and how they work.

It is important that the whole spectrum of e-business skill needs is evaluated with regard to individual suppliers' expertise as well as whole supply chain competence.

9.3 The business environment and the global marketplace

There were plentiful signals that managers need more international knowledge. It is difficult to identify firms suitable to do business with. There are also communication and time barriers, and limited cultural knowledge. This is the case even among the vehicle manufacturers where one firm observed that they need to know more about 'global economics'. Understanding about global competition, and how to compete globally, is important. Where and how do firms find this knowledge? Do they get what they need from the internet? Are there courses on the topics that businesses need to know about? Are there consultants that even the smallest SME can afford to hire? Is there funding available? Some firms said that their staff had little or no experience outside the company to draw on. Can this be tackled through staff away days to other firms, global economic seminars at companies in related industries – say, in rail or aerospace? One vehicle manufacturer was establishing learning networks across its multinational plants which would provide a means for leadership and management development. Could the learning network be a model to emulate, as it was stated that the development of leaders to operate within an international context is not easy?

9.3.1 Issues for purchasing, including global sourcing

Both vehicle manufacturers and 1st tiers are keeping a close watch of supplier component costs and their in-house productivity. Firms at all levels are doing more offshore sourcing, and suppliers are mirroring the vehicle manufacturers in establishing or considering to set up production arrangements overseas. There is a danger both to their own workforces and to their SME suppliers in the very real prospect of some 1st tiers moving [more] manufacturing overseas, but of their own workforces and the SMEs not responding to the threat by raising their performance. In contrast, one vehicle manufacturer who sources most components from overseas but exports much of the finished product is considering using local suppliers to reduce their logistics costs to one-way. This is an opportunity for Midlands (and other UK) suppliers but only if they can meet the vehicle manufacturers' QCD targets.

Global sourcing introduces an additional layer of expertise onto Purchasing skills. In order to source at the best price they need international knowledge as well as strong negotiation skills. The international knowledge they require includes cultural knowledge, languages, legislation, financial regulations, currency and exchange, import, goods handling and shipping, insurance, routes, preparation and packing, and storage.

9.3.2 Selling in the global marketplace

A question mark arises as to whether firms operating globally are fully conversant with how to clinch business overseas. Lack of customer knowledge is a significant information vacuum. What kind of market information is available to them, currently, and at an affordable price? Firms may need market bulletins not just giving import/export regulations but information on what firms do, and may find it helpful to receive an advisory service on potential partners, government agencies and consultants that could assist them, financial regulations, packing/shipping regulations, documentation needs, and cultural issues about doing business. One respondent noted that exporters need to know about Intrastat commodity codes. Sales staff also need to have a sound grasp of the financial implications of the sales they are agreeing so that they can get the best deal and so increase profit for their company. There was little evidence of training for Sales people. Is there suitable training, i.e. in selling in the global marketplace?

The ability to clinch business overseas (and perhaps also in the UK) is proving increasingly problematic for suppliers against cost-competitive rivals. There is also an issue for SMEs as regards their small size in winning business, not just in the global marketplace, but locally, too. It is harder where they are not known and have no 'visibility'. But they cannot invest to increase their resources and maximise their output if they have insufficient funds and profit margins do not allow. What can be done to help innovative small firms? Is there any feasibility in providing, say, some insurance backing, with SMEs paying an annual or occasional one-off premium? Lack of international visibility is also an issue for 1st tiers who do not have any global presence. Certainly, there is potential for supporting such firms through marketing their expertise and providing opportunities for acquiring international contacts and knowledge. Perhaps a joint overseas office to use as a launch platform could be one answer.

An overseas-owned vehicle manufacturer pointed out that suppliers must supply all documentation in the foreign language their potential customer operates in, including process information, if they want to get business overseas. Central sourcing by customers means that they may need to supply to all the group's plants including in Europe. There is an issue of language skills as well as the ability to supply documentation in the format required, but also of suppliers' resources and capacity to meet the level of demand, and to do this consistently. Is there help for suppliers, for example to translate process documentation into foreign languages, as well as acquiring a knowledge of the foreign terminology used in the countries they want to do business with?

9.4 Skill gaps and the supply of suitable skills in the labour pool

Many issues were raised about skill gaps and the supply of suitable skills. Working practices are changing due to the search to reduce costs and to maximise operational effectiveness. More outsourcing or devolution of certain functions is occurring, or planned, such as ancillary functions like security, and machine build. Purchasing in some cases is partly outsourced to partner organisations. Devolution of Human Resources responsibility to line managers is occurring to a small extent among the 1st tiers. Another firm planned to outsource some aspects such as recruitment and employee records. All these changes will have skill implications of which it would be helpful to have a clearer understanding.

Firms are finding new legislation is an increasing burden on their time and resources, for example Employment Law is taking up the time of Human Resources staff. Technical legislation such as emissions, end of life vehicles (ELV) and volatile organic compounds (VOC) were among those mentioned as already in force or in prospect. Does appropriate training on new legislation or new emissions standards and other support exist to enable firms to comply?

Health and Safety is increasingly important due to legislation, though employees are more active regarding litigation for personal injury claims for accidents in the workplace. This has a cost implication as well as being an issue for the wellbeing of individuals. There is a Human Resources focus on loss prevention. Little training appears to occur in Health and Safety management. Is this really the case, and, if so, how can it be resolved?

9.4.1 Recruitment issues

Many issues concerned problems in recruitment, including the affordability and retention of recruits by SMEs and their ability to pay salaries high enough to attract experienced and qualified people, including graduates. Attracting the right level and experience of process and technical skills is proving difficult. They are also encountering considerable competition from other sectors (e.g. retail) for a diminishing supply of young recruits. Issues were raised about unsuitable graduates in the labour pool and about recruiting a suitable calibre of employee straight from school. Certain comments also indicate that gender stereotyping is preventing young women from entering apprenticeships and working in shopfloor jobs, certainly in rural Derbyshire. There were comments about the need for schools to interest pupils in manufacturing. Comments also indicate that a higher calibre of recruit is needed for team working in production cells. Implications are that issues about the supply of appropriate labour are not being resolved.

9.4.2 Leadership and management skills

Fifteen firms said that leadership and management development presented challenges for their company, and only 4 said they did not. The need for better leadership skills was identified not just for senior management but throughout workforces, in Engineering, Quality, and in Manufacturing

Operations at team leader, line leader and supervisor level. There was also a perception that suppliers need to undertake leadership and management development.

One major question for all firms is how to instil the ability to manage change and to break people out of the culture of 'this is how we do things here'. This merits some thought as to possible methods which might include mentoring, staff exchanges, best practice DVDs, seminars, training or consultancy. It is considered important that people break out of their functional (and mindset) silos. Clearly it is vital that people understand the business, their role in it, and share the same vision. One vehicle manufacturer was going to give staff in their office functions (which included Purchasing) time in other departments, including Manufacturing. Team working skill needs were identified at all levels from Senior Managers and Directors down to people working in the production cells on the shopfloor, and those working in Stores and Despatch.

The question asked by a powertrain 1st tier was: how do you develop people quickly when you can only put one or two staff through training that takes 2-3 years? This is a pertinent point. The learning network route undertaken by one vehicle manufacturer might offer a way forward for leadership and management development. Linking it to the development of lean principles could be considered, as another intended to do at their projected lean centre of excellence. The development centre for manager appraisal and training that a third vehicle manufacturer was already forming could provide a model. Or it could be helpful to look outside the industry altogether.

There was some agreement that it is important for leaders to have business planning skills, though these are skills needed at all levels and functions. Does existing business school or other managerial training instil the right competences? This needs looking at. There is also an urgent need for project management skills at all levels of the supply chain, including vehicle manufacturers (though SMEs may need convincing that this applies to themselves). It is important that the question of what 'project management skills' entails is addressed, so that training can be adapted, improved or introduced, as necessary.

A repeated opinion was the need for 'soft' skills like motivation, relationship building and communication skills, in order for leaders to get the best out of people. It may be that additional strands need to be added to existing leadership and

management training at all levels, including for team leaders, or new courses established. Possibly firms, more particularly the SMEs, need to be made aware of any new thinking. UCE in Birmingham was mentioned by a vehicle manufacturer as doing this sort of training. A list of all providers could be made. Consideration also needs to be given to the level of training currently available, as there were some criticisms of the suitability of existing training, and one 1st tier also thought that their NVQ2 funded team leader training under-trained people who were actually capable of reaching a higher level. One of the SMEs also called for NVQ3-4 training for their shopfloor. Clearly, funding is an issue. The leadership training at Northampton Chamber of Commerce was applauded and it could be useful to benchmark this. How do other Chambers compare?

Generally, very little leadership training appears to occur in the SMEs although there were sporadic instances of individual study for managerial qualifications. However, one SME was involved in team leader development and another intended to commence some leadership training. A machining and fabrications SME mentioned that Operation Raleigh is used for team leader training by a Sheffield company as a gap year and this was under consideration for apprenticeship training by the SME concerned. It may prove useful to assess the wider potential of this type of leadership development for shorter courses for team leader training.

Some awareness was discernible among firms that they could do more to help develop their suppliers' leadership and management competences, but with one well-known exception highly regarded for its supplier development activities, no firm plans were in evidence. It is difficult for firms that have historically had an arms length relationship. A vehicle manufacturer was moving to become a matrix organisation where functional integration would also mean more integration with their suppliers. There may be a role for external agencies to provide support for any businesses undertaking supply chain integration. But it is important that supplier development operates throughout the supply chain, not just between direct customers and suppliers. It is also valid to observe here that links between companies in the East Midlands appeared to be fewer than in the West Midlands, perhaps because they have not had initiatives like Accelerate, and automotive suppliers are fewer in number.

9.4.3 Process knowledge

Although shopfloor and engineering competences are discussed below, issues about the need for better and up-to-date process knowledge were raised for these areas as well as more generally, for example for staff in Purchasing, Sales and Quality. There was a concern about the declining availability of process training which needs to be urgently addressed, like the vehicle manufacturer who emphasized that it is crucial to keep process skills alive. This is clearly being tackled in certain ways through Government agency support and firms' own initiatives for particular production techniques, but it warrants an examination of the broader spectrum of needs including locally available training on advanced machines, robotics, inspection and testing equipment, advanced software and appropriate IT skills including handling statistics and spreadsheets. The need for employees outside Manufacturing Operations to have process knowledge may also indicate the need for a specific targeted training initiative.

9.4.4 Shopfloor competences

Numerous issues appeared about shopfloor competences, and all their points indicate where help could be targeted. For instance, there was the perennial concern about standards of literacy and numeracy. This has a particular significance, now, in relation to higher level skills needed for employees in handling statistics, as well as for working in production cells where good team working capabilities are required and they may have a customer facing role, indeed a role in business-getting when prospective customers are shown around the plant. Firms are not able to recruit the calibre of individual they need to operate in a modern production environment and their comments indicate that external bodies could do more to resolve this.

The school curriculum is not considered to deliver people with foundation competence in technical and materials skills, or in reading engineering drawings. Furthermore, doing coursework rather than examinations makes people less able to work to deadlines. The question is how to instil this capability, not just on the shopfloor. A poor work ethic was noted, particularly among Manufacturing Operators. One SME commented that now they only get disaffected school pupils applying for jobs, the rest go to university. But these issues are not just apparent among the SMEs.

Process skills and apprenticeships are a major issue. Good, time-served apprentices who know about milling and turning are hard to find. Why? Toolmakers are in short supply. Even though many firms are closing they do not want to come back into the business. What might persuade them to do so? There is a shortfall in welders who can weld, they do not possess relevant qualifications like City and Guilds or NVQ, and they lack an understanding of materials. How can they obtain this knowledge? People who can programme robot welders are few. Where do they learn this skill? Machinists are in short supply – good fabrication skills. Why?

Anxieties were voiced about insufficient apprentice numbers: attracting people to do apprentices; issues about few women apprentices; retaining apprentices until finished; graduate apprentices. Are there issues in not being able to send apprentices on day release but on 6 month blocks? Low priority was given to Maintenance apprenticeships, but there is a need for these, and skill shortages will increase. For NVQ training, the caps on age (25 years) for funding eligibility need to be removed to enable mature people to receive training. Upskilling older workers is also an issue on the shopfloor. Why not tailor apprenticeship training to suit this group? This might also be one route to a solution for the limited availability of fabrication and other shopfloor skills.

Due to shrinking workforce sizes the shopfloor have to be more flexible and be adept at more than one skill. They are also increasingly expected to do their own setting and maintenance. But achieving the multi-tasking capability firms seek is proving problematic for some. This needs addressing. More women are needed on the shopfloor. In cell working a higher level of skill is required, in one view of graduate level. People working in teams need skills in quality, planning, and performance improvement. On the shopfloor generally there is an issue about maintaining performance levels when volume demands fluctuate, as a skill imbalance between permanent employees can occur when extra temporary workers are taken on.

There is certainly an issue about the dearth of training facilities for technical training, such as the lack of local equipment suppliers providing machine training; courses not provided by Further and Higher Education; courses closing because they have insufficient numbers to run them; the lack of training on production processes. As the supply base

shrinks because firms are closing this exacerbates the problem and a solution needs to be found. There is a trend towards placing technical training with specialist providers, such as apprenticeship training with the Engineering Employers Federation, and advanced level training by other specialist providers. Are SMEs able to do this?

Where Training staff are expected to do some training of production, they must keep up to speed on the process knowledge to do this. Much technical training in SMEs is done by in-house staff. How do they keep up-to-date in their knowledge? They must maintain a first hand awareness of new and emerging technical processes and production machinery in the marketplace. How? Another possibility is for training materials as the electronics 1st tier using IPC DVDs for shopfloor training. Is there any UK or overseas organisation providing process/technical training via CD/DVD that could be used by UK firms?

Problems occur in interesting the shopfloor in training, and in getting them to train satisfactorily outside the work environment. It is also difficult to find cover to release people to train since firms are running so lean in order to keep costs down. Is there anything that could be done to boost the likelihood of shopfloor employees engaging in training activities? Does their awareness need raising of the global business environment?

9.4.5 Engineering skills

Engineers must keep technically advanced, at the forefront of knowledge, aware of changes in incoming technology. Keeping up to date is an issue. Could this be addressed? Engineers need ability in business planning, as do staff in other functional areas. It is also considered important that no divide exists between engineering and production, and they need to break out of the culture of 'this is how we do things here.' Engineers also need team working and communication skills. Do they receive this training as part of their engineering studies, or as a compulsory additional module? The problem was raised of business training for engineers, too. There was also a call for business courses aimed at suppliers and SMEs.

A lack of process, technical, design and production skills was found to occur among engineers, especially among the 1st tiers. There is a shortage of technical engineers; limited CAD/CAM skills; the right level of skill among maintenance

engineers; a shortage of electronic engineering skills; and project management skills.

There is some concern about university education and training for engineers. One vehicle manufacturer thought that engineers do not learn the necessary technical skills there, including on quality management. A 1st tier pointed out that training at business schools is hugely expensive and only the large companies (e.g. vehicle manufacturers) can afford it. There is the implication that it is there that business schools place their focus, i.e. in catering primarily for vehicle manufacturers' needs. Is this the case?

9.4.6 Skills for Stores and Despatch

Two levels of people are needed: at NVQ2 and degree level. Stores and Despatch need process knowledge; IT/information handling skills; business planning ability; language skills; customer care and communication skills. Do they receive this kind of training? There is an issue about basic skill competences, too, in this function.

9.4.7 Skills for Finance and Administration

Finance and Administrative staff are dealing with more financial controls and regulations. They are also expected to source ways to reduce costs and increase funds, for example by securing the best loan interest rates and investment opportunities. Finance also has a contribution to make to customer cost savings, like identifying cost savings in distribution and the cost/value of products purchased. New legislation on accounting standards is incoming during 2005. IT skill needs are ongoing, for instance in online billing, but skill gaps occur.

Greater integration of Finance and Administration is occurring in certain vehicle manufacturers, so staff need to know how other departments run, including the shopfloor. One vehicle manufacturer was moving to become a matrix organisation during 2005 and will give financial and accounting people time on the shopfloor. The relationship with suppliers will change due to the integration of functions so Finance would have contact with them, too. This raises issues for staff about new working practices and acquiring new knowledge and responsibilities which probably signal skill needs. Does current training for Financial staff prepare them for a more integrated business/supply chain role?

9.4.8 Skills for IT and Systems

Inadequate IT and software skills were noted for IT and Systems personnel, reflecting the difficulty in keeping up with technical change. IT have an additional role, too, in not only being responsible for systems integration but also in advising the Board on IT strategy. This covers system links between customers and (potentially) suppliers, exerting a need for customer facing skills as well as sound efficiency and business planning. How are they prepared for these additional expectations that will be placed upon them? Do they receive this kind of training?

In cases where most IT is outsourced there also is a question mark about what in-house support there is for staff to become more IT literate.

9.4.9 Skills for Human Resources and Training staff

Competences for Human Resources staff are increasingly onerous due to the welter of legislation (currently Employment Law, in particular), the move to e-HR and the maintenance of computerised employee records, and consequent IT skill needs. HR are often also responsible for training, where e-learning is a growing trend, certainly in the larger vehicle manufacturers. This may filter down quite quickly to the supply base. How well are staff geared up for this role?

The need was also identified for leadership and 'soft' skills; an understanding of the business; and ability to advise senior management on the company's skill needs and workforce development. Indeed, HR has acquired a more strategic role in some companies, for example by supporting the Plant Manager in their business planning. The question is, does their training equip them to meet this added expectation?

9.5 Issues for training provision and access

Many issues have already been raised about training, but it is useful to look specifically at the subject of training provision and access.

There is not enough emphasis on people development in the 1st tiers and SMEs. Certainly, this is not aided by the extreme pressures evident in the industry. It is vital to train people in numbers, not just ones and twos, and as speedily as possible, or firms cannot change as quickly as they need to respond to changes in the marketplace and be globally competitive.

Numerous needs were voiced about the availability of appropriate training provision, and the ability to take up training opportunities. The flexibility of training is an issue as regards timing, since larger firms may operate a night shift. The cost of training is frequently problematic, and funding to enable people to train – or to continue training once started – is a concern. The matter of the suitability, availability and quality of training is an issue, particularly for 1st tier and lower tier suppliers. SMEs, especially, are among those finding problems in locating suitable training. Is there an information gap? Or does it indicate that training is not targeted at SME needs? Certain vehicle manufacturers are keen to see their existing access continue through ongoing funding. Another has not received funding but called for a level playing field with the SMEs with regard to NVQ training. Training for mature workers and for specific skills and functions is required.

Certainly, the eligibility of people to receive funding for their training is an issue. If eligible, is there any support to enable firms to provide cover, perhaps for a 'floater' to be employed – particularly raised in respect of shopfloor training? Some reluctance to train was noted, among Manufacturing Operators though not solely confined to the shopfloor. How can this be tackled? The affordability of training is another matter of concern. It is also important that courses like those offered by Further and Higher Education keep running, and do not close because of too few numbers. Issues about training materials and the quality of training delivery by their own staff were raised by some suppliers. What can be done to help?

Very little training is provided for some occupations, including Purchasing, Sales, Quality, IT and Systems staff. Certain training activity, like customer care, communication, and business planning skills, is little in evidence. Forklift truck driving is most likely for Stores and Despatch, though providing training in jobs where high staff turnover occurs is problematic.

No SMEs were studying for higher degrees, and the only current study mentioned by these was for an engineering degree. A knowledge of training provision and qualifications, plus where to source appropriate courses, is needed by suppliers more generally. There is also an issue about training for the trainers, this being relevant to all firms at any tier. Training provision and funding for training needs to be tailored to firms' needs, not vice versa. The potential of providing bespoke solutions should be widely investigated.

A few cases occurred of in-house or intra-group training or development centres starting up or at the planning stage for management training, technical training, a purchasing academy, in specific production processes, and lean development. What is the prospect of suppliers both within and outside the supply chain using these? Or at least using the training materials?

What potential is there for establishing other training centres, perhaps as independent entities, or attached to existing institutions or organisations: say, for best practice and continuous improvement, or training in 'soft' skills including customer care, and for web-based learning? At least two of these centres were using or plan to use e-learning methods. One was intending to prepare e-learning materials in 'soft' skills. Could these be made available more widely, also in other subjects? What access do suppliers really have to e-learning facilities or materials that their customers possess?

A skill gap was considered to exist in e-learning methods. What training provision is available to remedy this? Is there a possibility of an e-trainer training course? Are standards in force for e-training?

9.6 Issues for business support

This concluding discussion has highlighted numerous problems and issues that the support agencies could address in helping the automotive and engineering sector to improve its skills and access suitable training. Enabling firms to tap into external funding to train people is clearly a major factor, whether by changes to eligibility rules or new initiatives, or allowing bespoke solutions to their training needs. Support for firms to take training into their own hands by setting up training centres is clearly welcomed and this could be expanded.

There is also more potential for training focusing on topics which fall outside the technological spectrum, including customer care, negotiation skills, motivational skills, and operating in the global economy. Information needs of firms could also be covered, not only regarding courses and providers, but also for international data on markets, sourcing, sector profiles, individual companies, regulations and business customs, and public and private sector agencies.

It is difficult to establish where any priorities might lie due to the many pressing issues which abound, but the following are among primary considerations:

- *Whole supply chain development involving vehicle manufacturers, 1st tiers and SMEs.*
- *Technological investment for SMEs and smaller mixed 1st/2nd tier firms, to reduce their costs.*
- *SME benchmarking of best practice exemplars.*
- *A re-education programme on lean manufacture/best practice to go deeper into the principles.*
- *Process skill training across workforces; address the recruitment of fabrication skills.*
- *Local access to process training, including training on new/advanced equipment.*
- *Project management, maintenance and business planning training.*
- *Training in 'soft' skills: how to engage and motivate workforces to 100% performance.*
- *Training for mature workers including post-25 years training and apprenticeships.*
- *Quality management training combined with environmental management.*
- *International knowledge through training, information and links; including training for Sales and Purchasing.*
- *Development centres: specialist training centres for specific skills/knowledge development and access by all; establish learning networks.*
- *E-learning materials and standards.*
- *Training for Training personnel in training techniques and delivery materials, also up-to-date process knowledge (where relevant).*

Finally, it is vital that solutions to firms' skill needs are found that enable them to manage change speedily. In the spirit of continuous improvement, the support base helps industry adapt to change by continually reassessing and progressing what they do and the methods they employ, and by their positioning at the leading edge of change. In providing the model for continuous evolution the support agencies are well placed to motivate sections of the automotive and engineering sector that believe that a one-time effort will suffice.