



Scottish Manufacturing Research Study

Executive Summary

December 2014

upperquartile

1. INTRODUCTION

The Scottish Manufacturing Research Study was commissioned by Scottish Enterprise and Scottish Engineering, with support from Highlands & Islands Enterprise, and undertaken over the summer and autumn of 2014. It formed part of a wider programme of work which is underway to develop a Scottish Manufacturing Action Plan which will underpin and promote a competitive and sustainable high value manufacturing sector in Scotland.

The focus of the research was to gather the views, insights and inputs of a selected sample of manufacturing companies from across Scotland, and broadly representative of the different sectors which make up Scotland's manufacturing economy. The views of industry bodies and other organisations which support and engage with the manufacturing sector were also sought. Altogether over 140 interviews were undertaken and the research challenged and sought to develop an understanding of the key factors which companies believe impact both positively and negatively on manufacturing in Scotland, and which will impact on the creation of a sustainable high value manufacturing sector in Scotland over the next 5-10 years and beyond.

There is not currently a specific action plan in place for the manufacturing sector as a whole in Scotland. Many of the individual industry strategies include manufacturing as a key theme and seek to address the issues and opportunities related to manufacturing in their specific sector, but there is no one central Action Plan which seeks to facilitate and develop a high value manufacturing sector for Scotland as a whole.

For developed nations, it is fast becoming apparent that the future of manufacturing lies in highly differentiated products which can sustain healthy margins. This may be achieved through marketing excellence, product provenance, outstanding quality, innovative design, leading edge technology or superior business models, combined with optimised manufacturing and business processes. As such, high value manufacturing is likely to include ambitious companies from across all manufacturing sub-sectors from food & drink to engineering and life sciences.

Research has consistently shown that a competitive and high value manufacturing sector brings a significant multiplier effect in to an economy; it brings higher value jobs and wage levels, and drives increasing skills levels across the economy.

The findings of the research study will be used, together with the research evidence base and a review of manufacturing policies and best practice from other successful manufacturing countries, to develop the thinking and to engage industry in the development of a targeted Manufacturing Action Plan for Scotland.

Upper Quartile LLP would like to take the opportunity to thank all the company and stakeholder representatives who engaged in the research and felt able to give their views and thoughts as to how best An Action Plan for the Manufacturing Sector in Scotland can be developed.

This Executive Summary sets out the main findings of the research, together with the conclusions emerging from the company and stakeholder consultations and interviews which will guide the development of An Action Plan for the Scottish Manufacturing Sector.

2. CONTEXT FOR THE RESEARCH

The manufacturing sector overall in Scotland currently accounts for approximately 12 % of Scottish GDP, and 59% of Scottish exports, and is spread across a range of manufacturing sectors from textiles and food and drink through to electronics, energy and life and chemical sciences.

The EU Commission has set a challenging target to grow manufacturing to 20% of European GDP by 2020, and a number of public private technology and innovation initiatives are now in place to support this transition at EU, UK and Scottish level, particularly in terms of high value manufacturing, and the creation and application of high added value products, processes and services across manufacturing industries.

The key Scottish manufacturing sectors for the purposes of this research project were as follows:

- Enabling Technologies, Aerospace, Defence & Marine
- Energy
- Life Sciences
- Construction
- Forest Industries
- Engineering
- Food & Drink
- Chemical Sciences
- Textiles
- General Manufacturing

Despite a number of unique strengths and capabilities across these manufacturing sectors and significant pockets of manufacturing excellence evidenced from the research, the research evidence as a whole shows that Scotland's manufacturing sector is underperforming in areas such as productivity, innovation and investment, and the overall growth of the manufacturing sector.

The research also shows that Scotland appears to continue to face challenges around the image of manufacturing, the scale of the industry and company base and supply chain in some manufacturing sectors, and the relative lack of international ambition and awareness of international opportunities for growth across many of the companies in the manufacturing sector.

The research study therefore focused on the following key themes:

- The ambition and opportunity for growth across the manufacturing sector
- A SWOT Analysis of Scottish Manufacturing
- Key Elements of Current Manufacturing Practice in Scotland
- The International Dimension for Manufacturing
- The Image of Scottish Manufacturing
- The Current and Future Support Infrastructure for Manufacturing

The following sections set out the main consistent findings and key messages coming from across the interviews undertaken. The purpose of the research study was not to replicate or cross examine the more detailed research and interventions in place or under development through the individual Industry Strategies – rather it was to look across the Scottish manufacturing sector as a whole, and to draw out specific and common themes across the main competitive issues and opportunities facing the manufacturing sector in Scotland.

3. KEY FINDINGS

The main highlights of the research findings from the company and stakeholder interviews under each of the key themes were as follows:

3.1 The ambition and opportunity for growth across the manufacturing sector

In general there was a significant optimism (80% plus) across the companies interviewed in terms of their growth prospects over the next 5-10 years – but this was often dependent on moving continuously to more efficient manufacturing and the production of higher value products.

There was less explicit reference to exploiting and growing international market opportunities – with the focus for growth for a number of the companies still primarily on the Scottish and UK market. Most sectors were seeing a recovery from the recession, and gradual growth in manufacturing output, with some sectors reporting increased exports – although this continues to be constrained in part by the strength of sterling.

Many of the companies were seeing increased customer expectations around manufacturing quality and service, and innovation in the end product; more product functionality; and a focus on high value assembly. A number of companies felt manufacturing operations are now beginning to move back from India/China to Europe for reasons of quality/reliability/ and comparatively increasing costs.

Industry specific opportunities for growth which Scotland is well placed to meet included within the oil and gas sector; offshore renewable energy dependent on creating the deep harbour infrastructure required, sustainable construction, the move to healthier and “free from” foods, and the development of effective supply chain clusters in industries such as chemicals and life sciences.

There was more consistency of response across the manufacturing companies when they considered the specific challenges they faced in achieving long term sustainable growth, with availability of skilled workers, particularly at technician level, and the lack of forward planning, and commercial and selling skills in companies coming through consistently in the company interviews, no matter which industry sector. Margins continue to be squeezed across a number of sectors and energy costs, and other infrastructure costs such as water and rates, remained challenging for a significant number of companies.

The ambition and ability of companies to scale up manufacturing operations, and the skills and knowledge required to make this change, was also a common gap highlighted. Industry regulation, new technology applications in process and product development, and increasing automation were viewed as the most common changes likely to impact on the industry over the next 5-10 years.

3.2 A SWOT Analysis of Scottish Manufacturing

The specific strengths of Scottish manufacturing were seen to be its core engineering and technical skills base; and the natural assets of Scotland, in particular its water quality and renewable energy potential. The strength of the research and academic base was also recognised, although there was concern that there is still a considerable gap in translating this into effective commercialisation, and the effective and efficient transfer of research and knowledge into businesses.

Opportunities for companies to move to more high value manufacturing through better supply chain development; and through the introduction of new technologies and lean manufacturing processes, were also mentioned by a good number of companies.

Key threats remained the ageing manufacturing workforce, and the lack of ability in many companies to scale up operations. There were also a number of significant skills shortages and gaps cited – in particular around production and technical engineers, food technologists, and in terms of commercial sales and marketing skills.

3.3 Key Elements of Current Manufacturing Practice in Scotland

The research findings suggest that Scottish manufacturing companies typically invest less in capital equipment than competitor companies, and this was broadly accepted by a significant majority of the companies interviewed, particularly the SME company base. However there were plans across most companies for some form of new capital investment over the next 18 months, primarily brought about by renewed confidence in the market.

Many felt there is still the need to de-risk capex and take a more long term view towards planning and investment across many SMEs. Companies felt that the linkages between the University sector and manufacturing companies also need to be considerably improved if Scotland is to capitalise on its strong research and academic base. The Innovation Centres, and initiatives such as Catapult, were seen as one important means of bridging this gap.

An active and engaged academic base was also seen by many across manufacturing as being essential to the FDI opportunity, and as a core strength of the proposition to attract higher value FDI. It was also acknowledged R&D ideally needs to be linked to manufacturing on the same site to be most effective, and this is not the current business model in many of the manufacturing sectors at the present time.

The consistent feedback on leadership mirrors other industries in Scotland but is particularly pronounced in manufacturing given the nature of the sector. There were a number of examples given of strong leadership across companies but an overall acceptance that this should be a key development area for any manufacturing action plan – in particular to provide networks and opportunities for leaders across manufacturing industries to share experience, and learn from each other and other sector and international approaches and best practice.

It was also felt that this should be replicated at a middle management level – indeed for some of the larger companies interviewed this was consistently seen as a key advantage of being able to network and learn, and develop their middle management, from within a global operation.

Tailored leadership programmes and learning journeys around manufacturing with a strong emphasis on international market understanding and opportunities, and supply chain development, were felt to be of significant importance for the development and growth of the sector.

In general, there was evidence of considerable short term and responsive innovation across manufacturing companies, but often this was focused on cost reduction as opposed to new product development, and needed to be more long term, IP led and forward looking.

However, the vast majority of companies interviewed (over 90%) felt that there was an increasing culture of continuous innovation in their business – less a formal process but driven by response to customer demand, and taking different forms of innovation dependent on the industry but driven ultimately by commercial reality.

Productivity across all the companies interviewed was seen to be improving, although a number of companies cited the minimum wage, and increasing energy and raw material costs as key challenges in maintaining productivity, as opposed to gains in value added per unit input, which would suggest a misunderstanding among a good number of companies of their approach to productivity, particularly in the context of high value manufacturing.

The main challenge cited most frequently was consistency of communications and processes across the workforce in achieving productivity gains; lean manufacturing techniques were consistently mentioned and applied by companies across sectors but many SMEs still viewed it as a large company tool and too resource intensive. A number of companies were seeing the benefits of greater automation, not just in terms of productivity but also in terms of reliability and consistent quality.

The core skills of the workforce remain a key strength for Scotland but new technical skills are increasingly required, and the industry still requires a significant number of new entrants to balance the ageing profile of the workforce, and strong and committed apprenticeship programmes.

The Sector Skills Strategies and Skills Investment Plans developed by SDS with strong industry input were broadly welcomed, with companies particularly keen to see the employer readiness of market entrants addressed, and more active engagement with schools although they accept this will require more input from the companies themselves also.

Effective supply chain development was felt to present a real opportunity for significant gains in productivity and innovation, and entry to new market opportunities for companies; and there is a need to encourage and promote a supplier development skills base in Scotland and across procurement specialists.

3.4 The International Dimension for Manufacturing

Within an international context, the research looked at both Scotland's manufacturing export and FDI performance, and also considered where there is the opportunity to learn from selected international markets in terms of developing a high value add and successful manufacturing sector.

The main export markets for Scotland's manufacturers remain the EU markets of Germany, France, and Holland, and the USA remains the biggest single market. Manufactured exports are dominated by the food & drink industry (primarily whisky) and the chemicals sector, although other manufacturing sector exports continue to grow at smaller volumes.

From the research conducted, there is some variation in the export markets currently targeted by companies in different sectors as would be expected, but broadly there remains a focus on the more traditional core markets of North America and Europe, and to a lesser extent Asia. There was limited interest apparent in the new emerging BRIC markets, out with the whisky industry and some niche products, primarily targeted at the growing middle class consumer base in these markets.

The strength of sterling remained a very important factor in terms of both raw material and setting competitive export prices, and often the fundamental decision to export, with the current strength of sterling acting as a disincentive to export for a number of companies. Work is also needed to both encourage and raise the export ambitions of the Scottish manufacturing sector – and provide SME manufacturing firms in particular with the export market information and technical skills to develop and grow export markets effectively.

In terms of FDI, Scotland was seen to continue to perform strongly in international terms, and in attracting international manufacturing operations, most often as a base into the UK and European markets. For some of the manufacturing sectors, targeted FDI remains crucial for the development and growth of the sector in terms of both industry scale and value chain development such as the offshore wind manufacturing sector, and the chemical sciences sector.

There is a need to be clearer and more creative in Scotland's mobile investment proposition for manufacturing. Research excellence and links, in disciplines such as medicine, engineering and science, and the skills base this creates, were felt to be among the key FDI attributes for Scotland.

There is also the opportunity to learn from best practice in manufacturing, and elements of advanced manufacturing practice from overseas markets, in particular Germany, USA, Japan and Korea.

3.5 The Image of Scottish Manufacturing

The image of manufacturing remains a challenge, particularly for the more traditional manufacturing sectors, but is gradually improving. The positive messages around manufacturing need to be simplified and company specific, and targeted at the key audiences of parents, teachers and careers advisers.

The connection with young people needs to be made early on in their school life and there is still a need to attract more females into manufacturing, and promote the STEM subjects across school age groups.

3.6 The Current and Future Support Infrastructure for Manufacturing

The final part of the research asked companies to identify which interventions had been particularly effective in addressing manufacturing competitiveness or enabling the growth of their business, and what would they wish to see within a future Action Plan for Scottish Manufacturing.

Overall, the current support infrastructure for manufacturing companies in Scotland was viewed positively by companies, with specific interventions around networking, supply chain development, R&D support, modern apprenticeship programmes and export development found to be of particular value.

The work of SMAS in terms of site and best practice visits, and the promotion of lean management principles was well regarded, and companies felt there was a real opportunity to create/demonstrate a "Factory of the Future" – this was seen as a key role of the Innovation Centres and initiatives such as Catapult; and companies were keen to engage more in these initiatives to see

what was possible and what could be applied to their own businesses to make them more competitive in their respective markets.

Interestingly, very few companies had accessed EU or UK research programmes or support interventions and SMEs in particular felt there should be more awareness and marketing of the support which is available to companies in manufacturing.

In terms of the proposed Action Plan for Scottish Manufacturing, companies wished to see it clearly set within a global context, and setting out the role of high value manufacturing as a key element of wealth generation in an economy. It should set out a long term and confident ambition for the manufacturing sector – and in particular seek to facilitate the skills base to fulfil this ambition.

Fundamental would be the need to ensure the right key industry people are driving it – and a clear commitment from Government, and a supportive policy, fiscal and regulatory environment in terms of the manufacturing business infrastructure, and appropriate funding/intervention streams to support the agreed objectives within the Action Plan need to be put in place.

4. CONCLUSION

From the research, the industry view is that it will be critical that any Action Plan for Scottish Manufacturing underpins, aligns and adds value to the individual industry strategies already in place. It should be clear in its definition of high value manufacturing, its aims and objectives, and focus on addressing the critical and common issues and opportunities across the manufacturing sectors.

It should be ambitious, international in outlook, owned and led by the industry; and should facilitate the manufacturing industry to build the necessary scale at company and sector level; and assist growth businesses in particular to have the confidence to achieve scale, and sell the Scottish manufacturing product overseas.

Finally it should present a clear focus and clear choices for manufacturing in Scotland with supporting funding streams to achieve the aspiration of a successful high value manufacturing economy.