



# THE CULTURE OF MANUFACTURING WITHIN THE MIDLANDS







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## 1. EXECUTIVE SUMMARY

### 1.1 CONTEXTUAL OVERVIEW

Businesses in the UK are currently experiencing a number of challenges including a tight labour market, increased energy costs, higher than normal inflation, disruptions to supply chains and increased complexity in some export markets. The combination of leaving the EU single market, the COVID pandemic and the Russian invasion of Ukraine have added to recent economic uncertainties.

Within the context of this unstable backdrop, business confidence levels reported by the Institute of Chartered Accountants in England and Wales remain low. During quarter 3 of 2023, the figure fell to +2.9, a figure which has not exceeded +6.1 since the beginning of 2022<sup>1</sup>. Figures from the Office of National statistics support this low confidence, with over 50% of businesses expecting no increases in business performance over the next 12 months, and over 10% expecting decreases in performance<sup>2</sup>.

This paper seeks to provide an overview of 'manufacturing culture' in the Midlands, drawing on the sector's current and historical culture through the examination of industry commentary, interviews with business leaders and apprentices. It sets out cultural observations in the context of capabilities and how these can be applied and leveraged for the benefit of the manufacturing sector in the Midlands.

### 1.2 UNDERSTANDING CULTURE

Culture is a key influence in any company, sector and economy. Culture is not static and evolves, for example increasing priority is being attached to carbon emissions reduction in response to climate change and there are shifting views about working at home accelerated by the pandemic.

This paper highlights some of the nuances in UK manufacturing culture and shows the impacts these have at the regional and national levels. Culture can conveniently be defined as "how things are done around here"<sup>3</sup> and becomes embedded "through the system of rites and rituals, patterns of communication, the informed organisation, expected patterns of behaviour and perceptions of the psychological contract."<sup>4</sup>

To understand manufacturing culture, this report examines and analyses various insights into manufacturing worlds. Conclusions and implications are then established via broad thematic analysis. Whilst models of organisational culture exist, these are aimed at understanding individual organisations (rather than whole sectors). Figure 1 shows one such model, the Cultural Web, which identifies categories of influencing forces - the "behavioural, physical and symbolic manifestations of a culture"<sup>5</sup>. Although aimed at analysing individual organisations rather than whole sectors, many elements which fall into its categorisations can be seen running through this report.

<sup>1</sup> ICAEW, UK Business Confidence Monitor: National, ICAEW 2024 [Online] Available from: <https://www.icaew.com/technical/economy/business-confidence-monitor/business-confidence-monitor-national> [Accessed 10/7/2024]

<sup>2</sup> House of Commons Library Research Briefing, Business and Consumer Confidence: Key Economic Indicators 2024 [online] Available from <https://commonslibrary.parliament.uk/research-briefings/sn02817> [Accessed 10/7/2024]

<sup>3</sup> L. J. Mullins and G. Christie, Management & Organisational Behaviour, Eleventh edition. Pearson, 2016, p537.

<sup>4</sup> *ibid*, p358.

<sup>5</sup> G. Johnson, Exploring Strategy: Text and Cases, Eleventh edition. Pearson Education, 2016. [online], p.175.



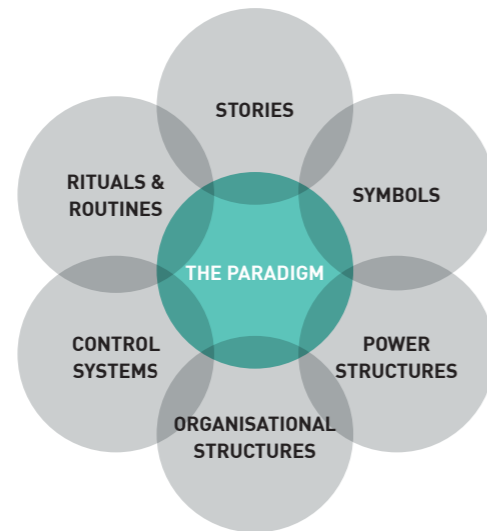


Figure 1. The Cultural Web of an organisation.<sup>5</sup>

### 1.3 RECOMMENDATIONS ON KEY THEMES

#### Sustainability.

Cultural shifts in society have already created pressure for manufacturing businesses to operate in a greener manner. Risks to reputation are elevated, especially in the era of social media and increased activism. For bodies or organisations seeking to promote further change, presenting over ambitious, non workable, or costly solutions to businesses may lead to disengagement of some business owners. Generic 'one size fits all' sustainability campaigns may alienate smaller businesses; therefore, it is advisable that approaches are tailored and ideally company appropriate/specific.

#### Workforce Culture and Work Design.

Post-pandemic, there continues to be new work redesign imperatives that require strategic focus. Pre-pandemic, some manufacturers had already adopted new work structures. Opportunities remain for manufacturers to lead on forging the new strategic approaches towards work redesign.

#### The Labour Force.

Whilst manufacturers have developed a toolbox of engagement methods to assist in recruitment and retention in a tight labour market, some endeavours seem ad hoc. Additionally, it is notable that "healthier people perform better, cost less and cause fewer organisational risks"<sup>6</sup>. This rationality advocates for formalising and embedding key wellbeing and engagement activities into a strategic approach.

#### Cultural and Regional Bonds.

Regional links between manufacturers and universities are strong, as is engagement with the next generation through schools; yet local community engagement varies in intensity and commitment. With pride in manufacturing and legacy still strong in the Midlands, taking a view which embraces community and family members as stakeholders can add value where they hold interest and influence. The benefits of such a stance include; a) ensuring manufacturing continues to be held in high regard, b) ensuring parents continue to champion manufacturing-oriented apprenticeships c) retaining and continuing the sense of pride in engineering in the region.

#### Skills and Reskilling.

Greater investment in skills is required. Strategies to address forthcoming developments are needed. These include a) the need to plan for the likely displacement of people from one sector to another as technology advances b) the increase in working life given retirement age changes and c) the inevitability that the workforce will move through multiple waves of technological change during their working life. Manufacturing can be at the forefront of reshaping careers and ensuring the acquisition of skills continues – throughout the whole of a working life – to cover both continuous technological evolution and the longer life working imperative.

#### Skills and Recruitment.

Apprenticeships, as a brand, hold esteem for multiple stakeholders (companies, students, their families, and the UK population) who recognise and associate them with a good standard of skills acquisition. Manufacturing can leverage its power to play a part in elevating apprenticeships to achieve parity with university qualifications.

#### Reaching the Next Generation.

Many manufacturers appear particularly well-versed in deploying a visit-demonstrate-engage model in communication. Additionally, where progression and success stories are made visible and receive the influential support of leadership, this generates an 'opportunity for all' culture. Organisations should deploy these methods and practices to reach the next generation systematically and 'position' manufacturing as an aspirational industry.

#### Technology Adoption.

Barriers to technology adoption faced by businesses vary (for example financial, lack of skills/knowledge, or heritage brands retaining labour intensive methods as part of the brand identity). As a result, a one size fits all approach to advancing technology adoption is not practicable. An identification of the barriers faced by particular businesses would enable bodies offering support to tailor suitable solutions as differing barriers will require differing responses.

#### The New Digital Era.

Relying on upskilling alone may be oversimplifying the preparation required for businesses to digitise. An overall preparedness, beyond digital skills training alone, is needed for successful adoption. Companies must lay the groundwork for a "digital organisational culture" and pay attention to "designing and aligning systems and processes."<sup>7</sup>

#### Innovation and Legacy.

A zeal for innovation remains in the West Midlands along with cycles of renewal and reinvention. The potency of history and legacy is still evident at all levels – for individuals, for firms and for sectors. Today's apprentices are tomorrow's industry ambassadors and future veterans championing manufacturing in the coming decades. There is

<sup>6</sup> PWC, Work Well, 2017. [Online] Available from: [www.pwc.co.uk/services/human-resource-services/work-well-programme.html](http://www.pwc.co.uk/services/human-resource-services/work-well-programme.html) [Accessed 02/04/23].

<sup>7</sup> T Neeley and P Leonardi, "Developing a Digital Mindset," Harvard Business Review, pp. 50-55, May-Jun 2022, p.51



a continued opportunity to view and treat pride in manufacturing and history as assets. Companies can embrace technological advances whilst also drawing on the value of legacy.

**Leadership influence and development programmes.**

Significant generativity<sup>8</sup> can be found amongst manufacturing leaders who enjoy championing recruitment and development agendas of the next generation. Sharing successful examples

and methods of leadership, sponsorship and engagement across industry subsectors will ensure propagation of successful entry and development programmes.

**Agility and resilience.**

Manufacturing is characterised by qualities of agility and resilience, as evidenced by continued operation through the pandemic. There are opportunities to examine learnings from this time to build in future resilience.<sup>9</sup>

<sup>8</sup> E H Erikson, Identity and the life cycle: Selected papers. International Universities. 1959.

<sup>9</sup> Global Centre for Crisis and Resilience, Building resilience to position your business for success, PWC, n.d. [www.pwc.com/gx/en/issues/crisis-solutions/covid-19.html](http://www.pwc.com/gx/en/issues/crisis-solutions/covid-19.html) [Accessed 02/04/23].







## 2. MANUFACTURING IN THE MIDLANDS – A GLIMPSE AT HISTORY AND CURRENT VIEWPOINTS

The 'Manufacturing Confidence' report<sup>10</sup> highlights the rapid and innovative response of the sector to the COVID pandemic with manufacturing rising to the challenge of providing medical and protective equipment. This underscores regional manufacturing's pivotal role in national resilience and that reliance on long supply chains brings risks. The need to bolster and renew confidence is evidenced by the reported long-term downward trend in manufacturing employment (UK) from the 1960s.<sup>11</sup> Volume redundancies, as seen within the West Midlands automotive sector, between 2000-2010 have had significant impact at both a regional and human level.<sup>12</sup>

A brief look at the strength and fate of a selection of some of the prominent and recognised manufacturing industries in the Midlands highlights the clear lack of investment, support, and long-term planning for the UK manufacturing sector to remain as a national asset.

### Lacemaking:

Lacemaking was centred in Nottingham from the start of the industry in the 1760s along with associated organisations close by – merchant-convertors and machine assemblers in the city's outskirts. The clustering of these suppliers and

associated professions cemented the trade to Nottingham and in turn the city's central position in the world lace trade.<sup>13</sup> By 2011 Nottingham's last lace producer's closure was imminent owing to the decline of demand and inability to compete with cheaper production costs of China.<sup>14</sup>

### Hosiery and Shoes:

The three counties of Nottinghamshire, Leicestershire and Derbyshire formed the centre of the UK's hosiery and knitwear industry. The stocking frame (essentially a mechanical knitting machine) invented in Nottinghamshire as early as 1589 transformed the stocking industry.<sup>15</sup> Leicester was the principal centre and specialised in woollen hosiery.<sup>16</sup> Although goods were produced at home and in workshops on individual frames for several hundred years, the knitting industry eventually shifted to become predominantly factory based around the late 19th century, with the East Midlands hosiery industry seeing jobs increase from around 50,000 in 1911 to 77,000 in 1939.<sup>17</sup> Shoe manufacturers such as the British United Shoe Machinery Company and the British Shoe Corporation, located in Leicester, were large employers during the 20th century but no longer exist. More happily, Leicester still hosts

<sup>10</sup> Midlands Manufacturing Resilience Commission, "Manufacturing Confidence: Progress Report Summer 2021".

<sup>11</sup> Office for National Statistics, Long-term trends in UK employment: 1861 to 2018, ONS 2019. [Online] Available from: [www.ons.gov.uk](http://www.ons.gov.uk) [Accessed 11/02/2023].

<sup>12</sup> Foresight, "The Future of Manufacturing: A new era of opportunity and challenge for the UK: Project Report", London: The Government Office for Science, 2013.

<sup>13</sup> S. A. Mason, Nottingham Lace 1760s-1950s: the machine-made lace industry in Nottinghamshire, Derbyshire and Leicestershire, Ilkerton: Sheila A. Mason, 1994.

<sup>14</sup> Nottingham Post, Last Nottingham lace factory closes its doors, 2011. [Online] Available from: [www.nottinghampost.com/news/last-nottingham-lace-factory-closes-292231](http://www.nottinghampost.com/news/last-nottingham-lace-factory-closes-292231) [accessed 02/04/2023].

<sup>15</sup> University of Nottingham, Manuscripts and Special Collections, Textiles Lace & Hosiery, University of Nottingham, n.d. [Online]: [www.nottingham.ac.uk/manuscriptsandspecialcollections/collectionsindepth/businessrecords/textiles-lace--hosiery.aspx](http://www.nottingham.ac.uk/manuscriptsandspecialcollections/collectionsindepth/businessrecords/textiles-lace--hosiery.aspx).

<sup>16</sup> British History Online, Institute of Historical Research, University of London, The City of Leicester: Hosiery manufacture, in A History of the County of Leicester: Volume 4, the City of Leicester, ed. R A McKinley (London, 1958), pp. 303-314. Available from: [www.british-history.ac.uk/vch/leics/vol4/pp303-314](http://www.british-history.ac.uk/vch/leics/vol4/pp303-314) [accessed 2 April 2023].

<sup>17</sup> The University of Leicester, The hosiery industry in Leicestershire, in the East Midlands Oral History Archive, The University of Leicester, n.d., [Online] Available from: [www.le.ac.uk/emoha/themes/the-hosiery-industry](http://www.le.ac.uk/emoha/themes/the-hosiery-industry), [Accessed 02/04/23].

<sup>18</sup> Visit Leicester/Leicester City Council, Leicester Clothes the World, Leicester City Council, 2023 [Online] Available from: <https://storyofleicester.info/city-stories/leicester-clothes-the-world/> [Accessed 02/04/23].



a fifth-generation hosiery supplier (Pantherella), as well as smaller firms in the textile industry.<sup>18</sup>

#### Motor Vehicle Manufacturing:

The automotive sector has long been a key employer for the Midlands. In 2021 the UK automotive workforce had reduced to 160,000<sup>19</sup> from the number standing at 500,000 in the 1970s.<sup>20</sup> Nationally, the sector has become more geographical concentrated with 29% of employees in 2008 in the West Midlands increasing to 32.6% in 2018.<sup>20</sup> Automotive production and its associated industries have declined overall leaving the West Midlands more reliant on Jaguar Land Rover (JLR).<sup>21</sup> Elsewhere the Midlands has been home for approximately a century to well-known tyre companies, Michelin with its UK head office and commercial headquarters at Stoke-on-Trent and Pirelli with its UK headquarters at Burton-on-Trent.<sup>23</sup>

#### Ceramic Industry:

The origins of ceramic production lie in the early 18th century when production commenced in the region due to the availability of clay and coal. By 1938 half the workforce of Stoke-on-Trent worked

in the pottery industry with the highest level of employment being 79,000 people around 1948.<sup>24</sup> Decline within the sector has seen potteries close, however, history and heritage have been preserved through the regeneration of Middleport Pottery; funding raised has allowed it to be restored and reinvented as a visitor attraction and base for local artisans.<sup>25</sup> Stoke-on-Trent is still today home to 300 ceramic companies with 7,000 employed in this sector, with a robust local supply chain involving 400+ companies. The region's internationally recognised brands include Waterford Wedgwood Royal Doulton; Portmeirion; Steelite International; Burleigh; Wade; Churchill; Endeka; Johnson Tiles; Dudson and Emma Bridgewater. More recently, technical ceramics has become a developing sector and both this new growth sector and the traditional industry is supported by local universities (through technical and design expertise).<sup>26</sup>

The narrative of historic decline in manufacturing does not paint the full picture. Many sectors have survived and reshaped over time and remain key parts of the UK economy. For the UK to continue to grow its manufacturing industry, it is key that the culture and outlook of the UK manufacturing sector is known and understood. This report now turns to

insights to help identify which cultural elements will sustain and serve the industry well in the present and into the future and conversely which elements might hinder them.

## 2.1 FOOD MANUFACTURING

The food and drink sector is often overlooked as a significant manufacturer, but accounts for the largest portion (20%) of the total UK manufacturers' product sales.<sup>27</sup>

Deborah Bolton, former CEO of Addo Food Group from 2019-2022 and current consultant Transformation Director, has headed companies across a range of categories including ambient and chilled food, bakery, and frozen products. Deborah provides insight into the industry through the lens of a successful 35-year career in manufacturing:

#### Workforce Culture and Work Design

The food manufacturing industry remained operational during the COVID pandemic and adapted to the challenges. Some functions were able to work from home and this accelerated trend changed several aspects of working patterns and dynamics. The workforce, particularly support function roles, became used to greater flexibility being offered by employers, and concessions in other areas became regularly requested, such as shift patterns specifications.

Having become accustomed to working around family needs during the pandemic, requests for specific frequency, duration and patterns of shifts became the new norms. Secondly, some employees may closely evaluate the minimum number of shifts that can be taken on while still retaining access to social security benefits, which can result in them working fewer

shifts. A consequence of the pandemic is that certain workers have sought alternative means of structuring their working time and requested more concessions. With a tight labour market employers have sought as far as possible to meet expectations and demands, and there has been a power shift between employer and employee.

Despite there being a historical division between white collar workers and those on the production line, the food manufacturing industry can provide a solid career for anyone. Examples include a worker who arrived from Eastern Europe with very little English becoming a successful Site Director. Opportunities have seen workers move from the shopfloor to graduate programmes. Where people can see progression and success stories it provides motivation and generates aspiration where they think: "I'd like to do that" says Deborah. Not everyone sees food manufacturing as a career. As a sector though it does extend opportunities, but ultimately this also depends on leadership.

**"Above all, if people can see progression and success stories it provides a source of motivation and generates aspiration whereby, they may reflect and think: 'I'd like to do that'."**

#### The Labour Market

The main volatility issue for food manufacturing has been the labour market. The operating environment is more challenging and complex than in previous decades due to the UK's departure from the EU. After the referendum, some EU nationals returned to their country of origin, shrinking the labour pool. Deborah observes that "it felt as if everyone went home as labour just disappeared, and this brought a complexity to businesses, especially seasonal business." Whilst there was an expectation of workforce retention with the possibility of the 'settled status' (when applied for), not all

<sup>19</sup> A Panjwani, Automotive Industry in the UK Debate, House of Commons Library, 2023 [Online] Available from: <https://commonslibrary.parliament.uk/research-briefings/cdp-2023-0189/> [Accessed 30/7/2024].

<sup>20</sup> Office for National Statistics, The UK motor vehicle manufacturing industry: 2008 to 2018, ONS 2020. [Online] Available from: [www.ons.gov.uk](http://www.ons.gov.uk) [Accessed 02/04/23].

<sup>21</sup> T. Donnelly, J. Begley, & C. Collis "The West Midlands automotive industry: the road downhill," *Business History*, 59(1), 56-74, Oct. 2016.

<sup>22</sup> Michelin, Michelin in the UK, Michelin, 2023 [Online] Available from: <https://business.michelin.co.uk/michelin-in-the-uk> [Accessed 02/04/23].

<sup>23</sup> Pirelli, Pirelli's history, Pirelli 2023. [Online] Available from: <https://corporate.pirelli.com/corporate/en-ww/aboutus/history>. [Accessed 2023]

<sup>24</sup> D. Carpenter, Industrial Pottery, Heritage Crafts, 2019. [Online] Available at <https://heritagecrafts.org.uk/industrial-pottery/> [Accessed 02/04/23].

<sup>25</sup> The Prince's Foundation, Much-loved pottery brought back from the brink, The Prince's Foundation, 2023 [Online] Available from: <https://princes-foundation.org/practice/middleport-pottery>. [Accessed 02/04/23].

<sup>26</sup> Make It Stoke-on-Trent & Staffordshire, Ceramics: World Capital of Ceramics, Make It Stoke-on-Trent & Staffordshire 2023. [Online] Available at: <https://www.makeitstokestaffs.co.uk/industry-sectors/manufacturing/ceramics>. [Accessed on 02/04/23].

<sup>27</sup> Office for National Statistics, UK manufacturers' sales by product: 2021 result, ONS, 2022. [Online] Available from: [www.ons.gov.uk](http://www.ons.gov.uk) [Accessed 02/04/23].



those who applied for it were successful, resulting in unexpected losses. Additionally, Deborah observes that the cost of living pressures create an added obstacle, with many seeking employment and wanting to make the UK their home finding it more expensive than elsewhere.

A key challenge for the food and drink sector is competition for labour. It competes with other sectors, such as warehouse operation and logistics, and is considerably more labour intensive with typically low levels of automation and many hand-finishing processes. Food manufacturers find that some labour at Christmas will leave to work the seasonal period in warehouses and then return to the food industry. This is a change from a decade ago, when the labour force would not have had this option. This switching between jobs is a response to pay levels, but also the nature of the tasks – working in a warehouse may be less tedious and repetitive than jobs such as placing prawns on top of a product all day long in a cold factory. People “will leave and return as it suits them, as and when they find a warehouse job to be more attractive” Deborah explains.

Recruitment for management positions also has its own challenges. A particular barrier could be location, with food manufacturing sites located in areas considered less desirable to live in. This could result in management staff living some distance away – it is not unusual for managers to live two counties away from production. A shift in mindset and approach has evolved – that is, flexibility to accommodate the necessary working patterns and hours to fit with this travel, and the acceptance that people can be recruited from a much wider geographical area. This is a step change from past mindsets and associated assumptions that staff will live within a certain radius.

### **Workforce Culture – past, present, and future**

Historically, although both female and male employees have worked in factory food production, other levels in the industry have been very male dominated. Some inroads to redress the imbalance have occurred with a bigger proportion of women in senior management than in previous decades. Whilst overt prejudice may be consigned to another era, some residual attitudes remain. As does a gender imbalance of the male/female CEO split in the food industry with women poorly represented at this level.

Culture can be created by the workforce in the area and driven by the environment where the business is located, and Deborah believes this must be reflected in how a business is managed. Those buying businesses will inherit these cultural aspects and must be mindful of them. For example, a business drawing on a diverse workforce from diverse backgrounds and labour pools will need a different management approach to that of a family-owned business where the latter might pool labour from a local community. A business in South East London for example, with labour pooled from a wide population and a demography where many languages are spoken, may face greater communication challenges – here the business and its heritage may not be of importance to the employees, especially if they are part of a transient workforce. By contrast, a Midlands-based factory with people that have grown up in the business (and especially long servers), may relate to the business and changes in the business will matter to them.

### **Cultural links**

A culture where people are valued and looked after is an ethos that works two ways – people remember and appreciate what senior management do for them and, equally, it is rewarding for a leader. Cultures give individual businesses their unique identity but can be lost in larger businesses through

the imposition of ‘group’ parameters. Ultimately culture is very dependent on leadership.

Regional cultural bonds may emerge for example from businesses having local charity links. Awareness of this support will permeate through the workforce. Companies Deborah has worked for have supported schools and charities with links to the manufacturing sites and local community, although national charities have also been supported. The links to local charitable organisations though are particularly important in cementing a relationship between the business and the local community.

Deborah also cites examples of regional food manufacturers investigating new technology created by universities in the midlands, and tapping into their technical expertise when scientific support is needed for research work. As a result, these working associations bolster regional ties.

### **Skills and engagement**

Graduate schemes play a successful part in ensuring manufacturing is aspirational for younger generations; these schemes bring awareness of manufacturing professions to younger age groups and can provide challenging and exciting career paths. The best schemes enable participants to rotate through different disciplines, so that those taking part do not feel pigeonholed. This last notion is key, Deborah believes, as some decades ago those starting out could be allocated a permanent ‘function’ and be stuck from the outset in, for example, solely development, commercial or operations. By providing a wider business overview with associated responsibility at an early stage, graduates can get the insight needed to understand options and pathways.

Strong mentors can also help ensure trainees succeed within particular business functions

bolstering a sense of inclusion, significance, and value. Deborah feels that it has always been important that, as a leader, she has contact with the programme participants as leadership can encourage and champion careers and support individual aspirations. In terms of other programmes aimed at the younger generation, there is an uptake of apprenticeships within food manufacturing although of course this is dependent on individual businesses; it is a considerable investment and needs constant evaluation to use appropriately.

To attract and retain workers, benefit schemes such as free meals may be used. More and more workers (of all age groups) are looking at what employers are offering. If people know they will be having a free meal – this is extremely advantageous to them and holds significance beyond the cost to the company. Christmas retention incentives – perhaps a small financial bonus and maybe, for example, a box of biscuits or similar item are incentives which help to motivate the workforce to come into work in the lead up to Christmas. More so than in previous years, ‘add-ons’ are valuable Deborah observes – with any meals provided by the company meaning they get to take their wages home rather than having to spend on food whilst at work. In recent years there has been a trend which has seen benefits extend further to include medical provision, such as on-site flu vaccinations available to all levels from the shop floor to the senior management.

### **Technology adoption**

The more traditional UK food manufacturing contrasts with the European culture where the latter can be more innovative and invested. Traditional practices in the UK food sector encompass significantly more manual labour and are not necessarily well invested. The labour



intensity is driven by lifestyle and eating choices in the UK and associated product ranges which require a high volume of labour. A substantial demand for ready meals plays its part in driving more process driven manufacturing and results in larger manufacturing sites. As more processes are added production can become more labour-intensive.

As an illustration, contrast simple pasta made in an Italian factory versus a ready-made pasta dish produced in the UK. The former may have very few processes whereas the production of prepared ready meals with a multitude of specific variations means UK production often relies on hand finishing which poses a barrier to automation.

#### Meeting future Vision and Barriers to Action

As food is a commodity product, unless there is an adequate margin there are limitations as to what businesses can do to invest to modernise. It would be unrealistic to believe in the simplicity of addressing vacancies or replacing workers at scale with automation. Automation investment can work for innovative products especially if a company opens 'breakout sites' once a product has been developed. Looking at the outset of the vegan market as an example, originally vegan products may have been developed within an existing food production unit. Then, as demand establishes, and with the commensurate margins being enjoyed, the product may be moved to a well invested separate facility for production.

A niche market with associated stronger margins from products which attract a premium retail price can thus mean higher associated investment and

innovation. In contrast non-premium products do not enjoy the same margins. As such Deborah explains, this almost splits the food manufacturing industry and 'breakout' sites for innovation will spring up where businesses see a future in the product and believe they can produce more efficiently in a separate facility.

#### KEY INSIGHTS – FOOD MANUFACTURING

- The working from home trend during the pandemic generated expectations of permanent flexibility and concessions to work routines to fit around home life. Because of the tight labour pool, some balance of power moved to the employee.
- There is a trend in more recent years for workers to move between employers without hesitation, where pay levels may hold more sway than job continuity or permanence during difficult financial times. In response some employers have offered 'bolt-on' benefits to employees to assist in retention.
- The labour pool reduced when people returned to their home countries owing to the UK's departure from the EU. The departure of labour was substantial and often unexpected when settled status was sometimes anticipated but not granted.
- Female representation at CEO level in food manufacturing remains low.
- Companies will look to regional knowledge hubs and seek out expertise such as universities. Regional links are cemented through collaborations and projects with universities.
- Leadership that nurtures people is beneficial

for all. Dedication to employee engagement and development is shown to be relevant given the tight labour market. Leaders can play a part in championing and backing employee value and career aspirations.

- Company group structures can compromise the unique identity and culture of smaller individual businesses and their relationship with employees. Larger companies should factor in the 'value' of their people.
- Regional workers and long servers will have more emotional investment in the business than those drawn from a wider area and transient workforce. Differing engagement approaches may be needed accordingly, to reflect employee emotional attachment and to avoid tension.
- Younger generations seem less inclined to follow their family into an employer and there are fewer 'generations of families' working together. However, graduate schemes play a successful role in making manufacturing aspirational for younger generations. Rotation, pathway options, and a strong mentor plus engagement with the business are key to maximising the success of graduate schemes.
- Labour intensive production in the food industry is driven by UK eating habits and the demand for multiple variations of processed food. Innovative products attracting a premium can be an enabler of investment and automation, whereas traditional product margins can be tight and do not allow for innovation investment.

#### 2.2 POWDER COATING SECTOR

In the UK, the powder coating sector plays a significant role in the manufacturing supply chain.

These products are employed in sectors such as automotive, architecture, furniture, appliances, electronics, and many others. Domestic supply chains and the organisations within them are vital to the long-term success of the UK manufacturing. They provide national security and risk mitigation, enable economic resilience, develop industrial capabilities, foster innovation, and increase job creation and social value. For these reasons, the perspectives of smaller companies within the supply chain are vital to creating a holistic view of the culture of UK manufacturing.

#### BJ Plastics (Wolverhampton)

Entrepreneur Jay Benson joined the power coating industry in 2016 by acquiring BJ Plastics of Wolverhampton. Jay graduated with a degree in metallurgy from Sheffield and from Nottingham with an MBA. As a Chartered Engineer with 29 years' experience in the rail industry he is able to provide insight into the powder coating industry through the lens of a business owner operator.

#### Workforce culture and work design

The company has a mixed demographic workforce of around six production staff. To achieve efficiency, work is conducted in blocks - this has not changed much over time. The lack of change in working methods and patterns is because there is not a huge variation that can be made in terms of approach to working practices. Since the change of ownership, the workforce is open to doing more overtime than before, but otherwise, there have not been any major shifts in workforce culture or methods. The company is a socially conscious employer in terms of approach, and this fosters mutual flexibility and allows the company to seek and deploy change when necessary.

Engagement and interest from the employees towards innovation or change is very much



“an individual thing” Jay explains, rather than a collective dynamic. The recruitment of an industry year-out student highlighted conflicting expectations with Jay observing that some may want a desk-based role whereas a production company may actually need hands-on workers. There is a wider concern – that people are not inclined towards manufacturing as it can be tough, considered grimy and branded with a ‘dirty’ reputation. The combination of mental and physical work can be quite tricky, Jay acknowledges, although he personally, as an engineer, enjoys the mix of challenges it presents and associated problem solving.

#### Cultural links

Bygone culture does not directly influence BJ Plastics today, but regional historical links between the West Midlands and innovation and entrepreneurship remain. Jay observes that for this region “there is something in the blood to innovate” and highlights the diversity of products manufactured from high end bathrooms to something as obscure as metal structures for grave surrounds. The West Midlands is home to many other companies in the same industry as BJ Plastics. Powder coating companies are located there to service those manufacturing companies in the area creating a cluster.

#### “There is something in the blood to innovate”

However, the reduction in the number of manufacturers in the West Midlands since its heyday is noticeable, especially since the visual landscape has changed. In previous decades, the production sites of Armitage Shanks and tyre makers were local reminders of the manufacturing dominance, but these have disappeared to make way for housing. Despite job losses, Jay believes

a beating manufacturing heart still exists in the region as redundancy knockbacks may cause people to go down the route of setting up by themselves.

There is, he believes, a historical regional link to innovation, a cultural phenomenon existing in the West Midlands whereby people have an entrepreneurial thread running through them – “they want to make things – they may be one-man bands, but they are making” Jay observes albeit quite often on a small scale. There is a flow of people setting companies up with many small industrial units tucked away. Resilience seems to prevail as “Wolverhampton keeps getting up and dusting itself off” Jay observes.

#### “they want to make things – they may be one-man bands, but they are making”

#### The macro environment

As an energy intensive activity, powder coating businesses have been affected by the energy price spike and global political uncertainties. For BJ Plastics however, timing of their energy contract was key and helped dampen impact. Solar power roof panels help winter costs of gas oven usage.

Although a technological change to lower carbon solutions is desired, a move to electric ovens would impact costs considerably and change would most easily be facilitated at industry level. The production process sees the products heated to 200 degrees, which theoretically could be reduced with a change in the plastics used. This would need to be driven by the powder manufacturer suppliers and involve an industry step change. The UK’s departure from the EU single market has added difficulty to the importing of raw materials. A previously seamless trading process is now one beset with new frictions, barriers, and hurdles.

Additionally, UK based customers of BJ Plastics used to export to Germany and France, but they have halted exports to these markets. At a turbulent time and with the associated increased energy costs, BJ Plastics is relieved there are no imminent environmental mandates to invest large sums which would prove problematic.

#### Support for manufacturing

Aside from the furlough scheme, the company felt somewhat cut adrift during the pandemic. Nonetheless, Jay’s own drive as an entrepreneur has seen the setting up of a newly developed product and associated company. This was achieved by reaching out to seek local university support rather than looking for government help.

#### Technology adoption

Little new technology has been adopted in the powder coating industry in recent years and established working methods have remained static, although the BJ Plastics factory does use a robot to perform a simple task. In terms of technology adoption, steps are being taken to introduce energy recovery to reduce gas usage and improve energy efficiency. This is being done by introducing energy scavenging via a digital system, which will concentrate and move energy until it is needed. It is expected to reap benefits and reduce gas usage since the ovens are on 8 hours a day. A strategic decision taken 3 years ago to install solar panels designed to reduce the exposure to rising electricity prices has been successful and is close to fully recovering its cost, though inevitably the initial investment had to be made first.

#### Skills and engagement

In terms of skills development Jay feels there is a sense that young people do not get taught how to solve problems or to “challenge the orthodoxy”.

This is something as an engineer and entrepreneur he enjoys. Equally, management thinking can also become stuck and lack the flexibility and innovation needed to explore alternative methods. Innovation-wise, Jay believes everyone should be involved from the shopfloor upwards.

#### KEY INSIGHTS – SME POWDER COATING MANUFACTURER

- Mutual flexibility can help with accommodating and implementing change. However, in the powder coating industry, there has been little change in working methods. Limitations to improving some manufacturing processes may exist.
- Interest in innovation can vary throughout the workforce. Interspersed interest for innovation may mean there is no collective dynamic.
- The ‘dirty and difficult’ reputation of manufacturing can still prevail. New starters may not favour undertaking hands-on roles.
- Companies will look to regional knowledge hubs and seek out expertise. Regional links are cemented through collaborations and projects with universities.
- A desire to reinvent and manufacture still exists in the West Midlands. The historical essence of innovation and entrepreneurship remain through personal reinvention and resilience after setbacks.
- The region has lost significant visual references of larger manufacturers, yet small manufacturers remain significant. Clustering of those serving manufacturing is evident.



- Small business owners juggle to respond to rapidly evolving challenges. These decision makers can respond with some agility and creativity to challenges such as the evolving energy crisis.
- Engineers with an entrepreneurial spirit may personally enjoy problem solving. Not all challenges can be solved at SME level due to cost barriers – an industry-wide technological change will be needed in certain circumstances.
- SMEs value problem solving abilities. This could be integrated further into skills development.
- The UK's departure from the EU has hampered a previously streamlined raw material import process and halted exports to some EU markets.

### 2.3 PRECISION ENGINEERING

Precision engineering involves the design, development, and manufacturing of high-precision components, parts, and systems with extremely tight tolerances and exacting specifications. It plays a vital role in various industries such as aerospace, automotive, electronics, medical devices, and telecommunications, by enabling the production of high-quality, intricate, and reliable components. It contributes to advancements in technology, facilitates innovation, and drives improvements in sectors where precision and miniaturization are critical factors.

#### Harris RCS Precision Engineering

Graham Harris is Managing Director of Harris RCS Precision Engineering. The company has resided in Coventry for over 40 years, and are specialists in manufacturing for aviation, defence, electronic and other hi-tech industries. Benefitting from a

wealth of combined expertise in CNC machining (including stainless steels, exotic alloys, plastics, aluminium, and general steels), Harris RCS has become an established and trusted supplier to the UK aerospace sector.

#### The macro environment

The uncertainty of the operating environment in recent years has been at a level not previously experienced. Whilst the aerospace sector has been through ups and downs and navigated downturns previously, Harris RCS have faced new challenges as forward visibility of energy and material costs have disappeared.

#### Workforce culture and work design

Harris RCS embraces a proactive and progressive approach to technology adoption with robot technology commonplace. There is a yawning gap between the reality of the modern production environment which has moved on from the last century and the depiction of manufacturing and engineering in the media, where news stories, Graham notes, will often feature companies using 40 or 50-year-old machinery. The narrative that manufacturing is a profession which means working in an antiquated or even dirty environment may thereby be cemented in the mind of the younger population.

A solution to this, Graham believes, is to invite people in, as the younger generation are likely to be interested in robots; they can then become acquainted with the visual reference of the contemporary production environment. This visit-demonstrate-engage approach is one Harris RCS have used to great effect, showcasing the installation of a state-of-the-art scheduling system to customers who responded very positively and have also felt inspired to replicate systems and

technology they have viewed. With the rise and impact of digital and robotic technology, a different type of workforce is more relevant now than in past times. Whilst there is still a need for a practical engineering brain, the company now needs people who will be able to transfer their skills onto, for example, programming robots.

The company's progressive approach is demonstrated by the early adoption of a four-day week some 25 years ago. With an ethos built on valuing the workforce, the company communicates what it is trying to achieve to its employees, and in that way an environment of respect is fostered and is mutually rewarding to both employee and employer. Yet not all in the industry share this engaging attitude with some in similar sectors noted as still employing a stick rather than carrot approach to the workforce.

#### Skills and engagement

Whilst a skilled workforce might be offered higher salaries elsewhere, Harris RCS offers its staff variation, skills, and knowledge development, and an environment where they can feel part of something and instrumental to the process. Skills wise the ethos is to build and retain knowledge within the business. To achieve this the company will buy robots in a box, assemble them and its engineers will programme them; this not only cultivates knowledge inside the business but also develops the workforce concurrently.

Although the company embraces technology, there is still a requirement for problem solving engineering capabilities rather than just basic machine operators. Naturally, there are firms offering consultancy and problem-solving support, but this approach comes at a price and Harris RCS feels it would not learn from taking this route. Instead, the business favours 'in-house' problem solving to develop its own workforce skills and enhance the company's own abilities.

There are engineering skills to be found in the Midlands, but historically, the company has competed for skills and labour against large companies such as Rolls Royce and JLR. These major operators were greater employers of apprentices and historically acted as the 'feeders' of skills dispersed into the region. However, in the last two decades the big players appear to have scaled back apprenticeship numbers and it is smaller companies that seem to be more leaning towards apprenticeship training.

#### Technology adoption

Harris RCS started some 40 years ago, with manual machines, but now uses CNC equipment. The programming and machine inspections are digital which helps the business move towards a paperless environment. Each machine has its own screen, results are saved, and data analysed; everything is paperless, and this is an aspect that has transformed since the company started manufacturing.

However, they are mindful that embracing technology must be balanced with cost consideration. Manufacturing hundreds of parts means different machines; however, old machines are not necessarily discarded as the cost of a new machine from a smaller business perspective cannot always be justified. Their answer to this conundrum is an enterprising approach – with robots being designed as non-machine specific, so that when a particular task is finished, they can be moved on; hence the business is advancing in a different way. Historically, it might have been quicker to purchase more machines, but now the approach is to focus on maximising current resources, whilst at the same time recognising that to compete on a world stage, investment in technology is needed.



### Support for manufacturing

The company keeps an eye on the wider funding environment and uses it accordingly, but the bulk of support is experienced through the Manufacturing Technology Centre and through membership of the Midlands Aerospace Alliance – an organisation formed in 2003 for members from the aerospace industry or those looking to enter the industry.

### Cultural Links

Traditional engineering skills are still relevant and, in this respect, recent anecdotes around workers switching between industries becomes noteworthy. Such stories shared between industry members hint at the possibility that residual cultural links still hold some influence since retaining staff in Coventry is, anecdotally, found to be easier than in some other regions with less historical association to engineering. From these areas with less historical engineering significance there are accounts of people leaving engineering for professions such as Uber driving. Graham reflects that “rightly or wrongly we do feel that we are the centre of manufacturing – in the Midlands”.

**“Rightly or wrongly, we do feel that we are the centre of manufacturing – in the Midlands”.**

### Meeting future Vision and Barriers to Action

In a global context, British manufacturing, when viewed side by side with other countries, can be regarded as having issues of labour costs. However, contact with businesses elsewhere (such as India) has given Graham a good overview around strengths and weaknesses of overseas production.

Whilst labour costs can be reduced through off-shoring, other issues arise from differing cultural approaches and attitudes to work which can impact productivity and compromise quality. Having witnessed over the years industries move production out of the UK and then back again, the conclusion is that controlling and resolving labour costs, whilst being good at manufacturing should be the real priority.

Above all, Harris RCS feels it must operate in a way which will be sustainable without open-ended spending. As an organisation that leads on adopting technology and efficiency, it tries to also lead on environmental issues; although naturally, there is also a business case for energy consumption reduction as saving energy ultimately means cost savings.

Campaigns to reduce or cease oil or energy use sometimes causes some frustration as the insistence by campaigners that companies take a certain stance on consumption could ultimately lead to business failure if cost-effective alternatives are not developed. Firms, to produce the products people need, may currently have no alternative but to use oils and energy to operate and therefore, change must be leveraged and encouraged from a business case perspective. Sustainability campaigns therefore need to be realistic and targeted appropriately. For example, it would be improbable to expect a small business to develop its own wind farm, so theoretical solutions promoted via marketing materials sometimes alienate rather than engage. Instead, a dialogue around what is achievable is preferable.

### KEY INSIGHTS –

#### HARRIS RCS PRECISION ENGINEERING

- The volatility and associated uncertainty are at levels not previously experienced even by long-standing industry professionals. Macro volatility impacts forecasting ability.
- Media can sometimes work against the profession. The narrative that manufacturing is an old-world or dirty profession is sometimes perpetuated through outdated visual references.
- A ‘visit-demonstrate-engage’ approach is proven to be successful with customers. This approach is generally a successful way to engage and thereby lends itself to correcting manufacturing image concerns and work environment misconceptions.
- Work variety, skills, and knowledge development along with a sense of inclusion as an integral part of a journey holds benefits. This mix can foster mutual commitment between employer and employee and aid staff retention.
- Smaller businesses value problem solving abilities alongside traditional engineering skills. There may be a need to integrate this further into skills development.
- Knowledge retention, in-house problem solving and learning have multiple benefits. Becoming a ‘learning organisation’ brings savings by avoiding costly solution outsourcing.
- Anecdotal evidence suggests engineering workers leave for non-manufacturing professions in some regions with a less powerful manufacturing heritage. Whilst evidence is anecdotal, this may reflect an enduring emotional attachment to regional manufacturing history and heritage which mitigates against attrition to other professions.
- Sustainability campaigns aimed at companies if unrealistic and improbable could cause alienation. Engaging around achievable solutions is preferable over highlighting ‘ideal’ examples.





### 3. SKILLS AND DEVELOPMENT

#### 3.1 STRATEGIC OVERVIEW

The Learning and Work Institute suggest skills are at the heart of “The five foundations of productivity” see Figure 2.<sup>28</sup> This is because the UK’s skills reservoir impacts its aptitude for innovation and technology adoption, as well as ideas deployment.

Secondly, maintaining infrastructure also requires a robust skills base. Thirdly, as well as playing a part in employers’ productivity, within the business environment skills availability affects both domestic and overseas UK investment.

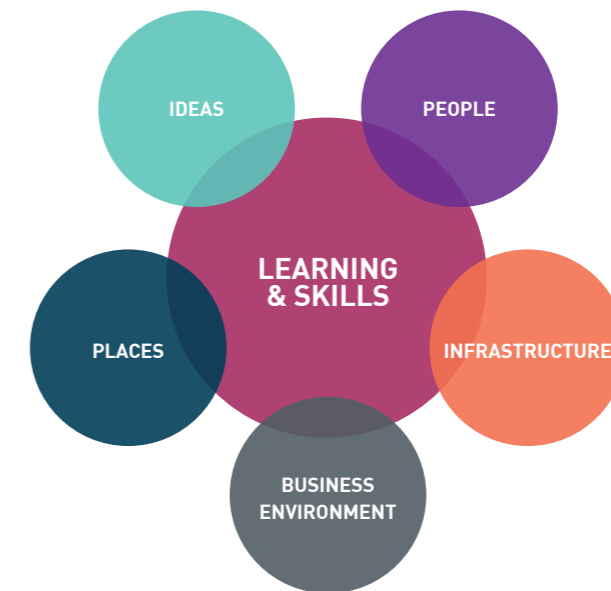


Figure 2. Skills and the Foundations of Productivity. Source: Learning and Work Institute

Another factor potentially limiting the talent pool occurs when hiring managers only seek to take on graduates. Commentators in the field of skills and human resourcing advocate that companies instead consider and deploy a “Skills-First Hiring”<sup>29</sup>

approach to develop talent which allows access points for new employees of varying backgrounds. Such an approach positively improves diversity and helps companies avoid bypassing talent, through a degree only hiring approach.

<sup>28</sup> S. Evans & C. Egglestone, “Time for Action: learning and skills for economic growth and social justice,” Learning and Work Institute, Mar 2019.

<sup>29</sup> C. Ammerman, B Groyberg & G Rometty, “The New-Collar Workforce”, Harvard Business Review, pp. 96-103 Mar-Apr 2023.



David Grailey, Managing Director of MTC (Manufacturing Technology Centre) Training shares his observations around the strategic challenges of the manufacturing skills and training landscape:

There is a sense that compared to other countries, the UK is not investing in skills adequately – there is a barrier in the British psyche to financing skills. This could be related to training generally being viewed as a cost rather than an investment, with companies eager to see a quick return. Despite insufficient outlay and focus from businesses to fund training, firms feel they can go to the market and find the necessary skills. Both the UK as a whole and businesses are beneficiaries of a skilled workforce, so in that respect it is a shared financial and organisational responsibility of governments and businesses jointly.

Aspirations in the UK have traditionally focused on attending university, with such education being seen as the gold standard. However, efforts are better placed in guiding people into the type of learning and development that is appropriate to them, and which the country needs – through identifying their aptitudes and interests (for vocational skill). In comparison in Germany for example, vocational learners are well recognised and hold good social standing.

Here in the UK, David observes, “there needs to be greater parity of esteem and recognition for the value of vocational pathways and university.”

Additionally, it is important to maintain the quality of vocational qualifications and ensure they do not become diluted. ‘Apprenticeships’ as a brand is probably the last vocational one that the public understand, and it is important to maintain this status. Already the notion of ‘time served’ apprenticeships has dissipated as end-to-end apprenticeship time has reduced. Modern apprenticeships do not rely on division of labour

because such approaches mean apprentices would not necessarily acquire the breadth of knowledge required to undertake a job, but instead may become skilled in elements of it.

**“There needs to be greater parity of esteem and recognition for the value of vocational pathways and university”.**

Constant changes in the vocational education sector are a cause of uncertainty and can be counterproductive. Where politicians feel they must be seen to be making a change, systems alter before they have a chance to thrive, and qualifications can fall by the wayside before becoming established. Such churn in the further education landscape does not inspire or encourage employers to want to engage with it, and there is much in the educational system that makes it complex. Additionally, policy interventions often focus on the end of the system that is easiest to reform (qualifications), and often overlook the investment in delivery that is needed.

Apprenticeships are delivered to standards, and at MTC Training, advanced manufacturing techniques are overlaid to give the apprentices exposure to current and emerging technologies. Added to this, a strong enrichment programme provides extra beneficial aspects, for example Lloyds Bank is invited to talk to apprentices in the context of monetary responsibility.

Improving equality, diversity and inclusion can be challenging, as despite efforts to recruit from underrepresented groups, underrepresentation persists, as engineering and manufacturing have traditionally been male dominated. There are measures to appeal to all and engage at an early age through school visits and raising the profile of STEM subjects.

Manufacturing is still predominantly characterised by the traditional three phases across the life course – that is, education/ skills front loaded at the beginning of a career, followed by decades of work, then retirement. Those seeking to enter manufacturing from other industries may currently find a (physically) tough manufacturing environment difficult, so starting out in manufacturing at a later age may not be feasible except in a modern manufacturing environment. People do retrain midlife and mid-career especially where a household with good wages/a second wage facilitates this, giving people more agency over their ability to change pathways. More recently, opportunities for older students/second career professionals are appearing through corporate clients such as Amazon with their programmes being open to those already having career experience.

Retraining is something businesses and governments must consider given likely displacement of people through technological advancement (e.g., moving from combustion engine to electric vehicle). This may need more thought about work organisation and how people may be transferred into new sectors, and in this respect, workers may need to be retrained at any age. However, signs of this disrupting the dominant three phase model of education-work-retirement are not apparent, and the UK has not yet worked out how to approach this issue. In theory there is little reason people cannot retrain and be redeployed, especially into a cleaner higher technology manufacturing environment. The government is piloting skills “bootcamps” to support individuals to reskill and success of this initiative will be an important issue to track.

There is real ambition for the apprentices at MTC Training. “We want them to be technology leaders in the future” David affirms. The Centre intends

to direct future course enrichment initiatives towards enabling apprentices to spend time on advanced projects to generate enthusiasm and engagement around technology. The idea is that the apprentices can become the advocates, the evangelists and the implementors of technology in their new organisations.

### 3.2 APPRENTICESHIPS

Apprenticeships have long been considered a warranted and well understood method of learning and transferring skills. Examining the history of apprenticeships shows us that they have been used as training vehicles since the Middle Ages, in these times being known as ‘medieval craft guilds.’ In early centuries the numbers of apprenticeships were few and binding contracts were on a one-to-one basis (master and apprentice). By the early 20th century there were approximately 340,000 apprentices in any given year, and this continued to increase, however the approach came to be criticised as failing to evolve to fit industry requirements and post 1960s the uptake of apprenticeships reduced. Despite this, after a reform in 1993 the uptake of this new ‘modern’ apprenticeship stood at 250,000 by the end of 1998.<sup>30</sup>

The reinvigoration of the apprenticeship career path, starting post 2000, saw uptake of apprenticeships in England numbered 321,400 in the 2020-2021 academic year, with STEM subjects accounting for almost a quarter at 78,100 (24.3%).<sup>31</sup> However, when it comes to manufacturing and engineering, underrepresentation of BAME (black, Asian, and minority ethnic) people remains a factor.<sup>32</sup>

Today, apprentices are treated as employees receiving a wage alongside structured training on and off the job. Training varies depending on

<sup>30</sup> J Mirza-Davies, A short history of apprenticeships in England: from medieval craft guilds to the twenty-first century, House of Commons Library, 2015. [Online] Available from: <https://commonslibrary.parliament.uk/a-short-history-of-apprenticeships-in-england-from-medieval-craft-guilds-to-the-twenty-first-century/> [Accessed 03/04/23].

<sup>31</sup> UK Government, Academic year 2020/21 Apprenticeships and Traineeships, Gov.uk, 2021. [Online] Available from: <https://explore-education-statistics.service.gov.uk/find-statistics/apprenticeships-and-traineeships/2020-21> [Accessed 03/04/23].

<sup>32</sup> J. Crook, Eradicating the opportunity deficit for black, Asian and minority ethnic young people, The Black Training and Enterprise Group (BTEG)/Learning and Work Institute, 2018. [Online] Available from: <https://learningandwork.org.uk/resources/research-and-reports/all-change-where-next-for-apprenticeships-essay-collection/> [Accessed: 7 November 2022].



the industry and the individual apprentice, but it is a structured way so that employers can develop and shape their starters. Whilst there are some distinctions within the four countries making up the United Kingdom the central elements of apprenticeships remain consistent. One highly significant change in modern times has seen apprenticeships open to those over the age of twenty-five<sup>33</sup> with this category reported in 2020 as receiving a considerable (16%) growth in starter numbers.<sup>34</sup>

#### An apprenticeship story – a glance back in time

Kevin Iredale who still works in engineering today, provides a look back on his apprenticeship and work from 1977 to 1985 at the British United Shoe Machinery Company (BUSM), Leicester. The company, known affectionately as ‘the BU’ operated in Leicester between 1899 and 2000, employing 4000 people during its prime.<sup>35</sup>

In his last year at school, and with thoughts turning to acquiring a skill, a maths teacher acting as a career advisor suggested a week’s work experience at the BUSM – as a taster. Several members of Kevin’s family already worked there, including a grandmother in the canteen, a cousin, and an uncle who also played for the BU football team – so in this respect it felt like a good place to go. Kevin reflects that although he did not realise it at the time, generations of families together in the same workplace was a usual occurrence.

At that time there were two levels of apprenticeship (one craft, one technical) with ‘day release’ at college forming part of the programme. Although very nervous as a new starter he came to greatly appreciate his experience at the firm. The fact that the company retained all functions ‘in house’ allowed apprentices to be sent round different

departments adding real interest to the job.

In the 1970s most of the machines were manual and production was by piecework with this method of work and remuneration creating some pressure. Although the work was interesting, and advice was available from many good people, the downside was that occasionally employees would not be willing to share best practice. For example, where a colleague was making good money on piecework and had made a piece of ‘kit’ to help them work more productively, this was closely guarded and even locked away. Outside of these instances of individuals ‘knowledge guarding’ the overall experience at the BUSM was very positive with company benefits playing a significant part in generating valued memories. Specifically, Kevin fondly recalls the company’s social club where his father would meet him out of work so that they could play snooker there together.

#### KEY HISTORICAL INSIGHTS

- Family members already employed at the company were in essence effective recruitment sponsors.
- Payment incentives attached to piecework could generate some non-collaborative behaviours.
- School careers advisors played a key role in highlighting local work experience opportunities.
- Rotation through departments provided interest and momentum to the apprenticeship, alongside delivering a wide range of skills, and understanding of multiple functions.
- The blended nature of work and social life, along with the welcoming of family members to facilities provided an uplifting and sustaining employee environment and experience.

### 3.3 PERSPECTIVES FROM TODAY’S APPRENTICES

#### The appeal of apprenticeships

Those on current apprenticeship programmes say they chose this pathway because they were drawn to learning new things combined with the stability, and the career prospects they understood it to offer. The composition of programmes – the mix of teaching and practical learning also appealed to them and the latter, they discovered, provides a welcome varied experience through task rotation. Additionally, since commencing their programmes many say they became aware that it would provide a wide choice of future avenues including possible further study.

Future higher-level study often appeals, particularly to the older apprentices or career changers in cohorts who also had already begun to think about more advanced education and professionally recognised qualifications supported by their employer. These second career cohort members, who had already experienced the world of work, also cited some additional distinct reasons around the appeal of choosing the apprenticeship route. They were conscious that this pathway would mean they could be both part of a learning infrastructure and be employed and not have to meet the challenges of self-employment, such as generating business and customers.

Remuneration appeared as a strong motivator to all apprentices to taking the apprenticeship route – to be earning immediately was instrumental in their decision especially since they observed some of their contemporaries taking similar level qualifications remained unremunerated. University just did not appeal to some, and relief was expressed at avoiding associated student loan debt; others felt the apprenticeship experience to be more valuable than a degree. For some

younger apprentices, staying on at sixth form was not for them whilst other (older) members of the cohort cited attainable entry requirements making apprenticeships more accessible than university as a factor in choosing the route. Above all the guarantee of a job, to be earning whilst learning and avoiding university debt were all central deciding factors.

#### Who and what influences the uptake of manufacturing apprenticeships?

External influences varied; some schools encouraged the apprenticeship route whereas others reported being ignored if they did not consider university. However, school career facilities had clearly progressed over time since those changing careers (usually apprentices who had attended school a decade or so before their cohort colleagues) reported little to no career guidance existed during their school years except for army career advice. There were no pressures or reported expectations emanating from family members, although parental opinions did influence choice a little, as parents encouraged the acquisition of what they referred to as a ‘solid trade’ or ‘solid career’, and engineering was viewed as such. Although opinions and guidance of peer groups and friends were not as significant, word of mouth played a part as a channel for communicating opportunities with referrals happening between friends or family members.

The removal of the upper age limit of 25 in 2004 opened the apprenticeship route to career changers. Whilst some were moving between technical based professions, for example an electrician trade, others taking up engineering apprenticeship arrived via dissimilar professions such as chef or hairdresser.

<sup>33</sup> J. Mirza-Davies, Apprenticeships Policy, England Prior to 2010, House of Commons Library, 2015. [Online] Available from: <https://commonslibrary.parliament.uk/research-briefings/cbp-7266/> [Accessed 03/04/23].

<sup>34</sup> Chartered Institute of Personnel and Development (CIPD), Making Apprenticeships Future-Fit, CIPD, 2020. [Online] Available from: [www.cipd.co.uk/knowledge/fundamentals/people/routes-work/apprenticeships-future-fit#ref](http://www.cipd.co.uk/knowledge/fundamentals/people/routes-work/apprenticeships-future-fit#ref) [Accessed 04/04/23].

<sup>35</sup> University of Leicester, East Midlands Oral History Archive: British United People, University of Leicester, n.d. [Online] Available from: [www.le.ac.uk/emoha/collections/all/british-united-people](http://www.le.ac.uk/emoha/collections/all/british-united-people) [Accessed 03/04/23].



### **Understanding manufacturing as a younger person**

Amongst the young, the understanding of manufacturing was limited to various stereotypes of 'basic factory jobs' which provided the only reference points. Apprentices expressed their later surprise after leaving school and discovering the extensive range of functions which make up manufacturing as a whole – avenues of which they had no prior knowledge. In effect at school age, they had viewed and understood 'manufacturing' as a single career path as it was conveyed as being one huge, all-encompassing 'whole' or discipline, rather than an aggregate of functions, sub-fields and specialties spanning industry sectors and, as such, generating diverse career avenues and opportunities. They had at that time no understanding of all the options or sub-careers available.

### **The value and esteem attached to apprenticeships**

A clear sentiment felt among apprentices was pride in obtaining a place on the programme. The experience felt positive and enriching. In addition, the structured and formalised nature of the programme (especially compared with other more informal learning previously experienced), the level of integral support and the professional standards all inspired confidence. In terms of positioning – that is, where the apprenticeship fell in the grand scheme of life's pathway there was a general feeling that it was integral to helping them evolve and mature quickly. It also provided, they believed, a good middle ground (route) between school and the world of work, effectively affording some element of cushioning in this transition. As some interviewees highlighted – there can be a shock element that comes with transitioning from school to the work environment. This 'preparation' in anticipation of the world of work is something

they felt that university did not compete on. Others felt good that they had been pushed outside their own (local) geographic boundaries.

The Manufacturing Technology Centre and manufacturing as a profession had unquestionably delivered a welcoming and positive experience to cohorts who had arrived from a range of backgrounds. Above all they felt it gave them an opportunity to learn whilst providing variety through task rotation, connections to new and significant people in industry and a chance to progress. These benefits were embedded within the wider context of providing job security.

### **Reflections on opportunities and expectations**

Whilst apprentices were aware of the under-representation of women, they were unsure about the dynamics and mechanisms that led to this. However female apprentices were clear in highlighting much underdeveloped scope to promote apprenticeships and in a wider sense 'women in engineering and manufacturing' to pupils at school. Opportunities were missed, they felt, to promote a culture of inclusivity and engage with schoolchildren at an early juncture. Some had heard of apprenticeship opportunities almost informally by word of mouth but had self-organised to apply. Career facilities at school were not especially encouraging girls in the direction of engineering or manufacturing; this led to the general sense that the profession was not especially considered an option for girls by school careers staff, although experiences did vary. Additionally, a particular point that female apprentices had noted centred around the targeting of women to enter the profession; once they had entered manufacturing, they had noticed adverts bolstering the idea of women in manufacturing or engineering, but they felt this publicity to be wrongly targeted as it spoke to those already

successfully following this career path. However, apprentices within an older cohort had noted that efforts were being made to encourage women into engineering and had noticed that women in engineering was generally more normal and socially acceptable today. Nonetheless, they believed more targeted funding is needed. Lastly, a sentiment voiced by female apprenticeships centred around them questioning their place on programmes; that is, once having secured a place, concern around tokenism emerged in their own reflections, and they contemplated whether they were there truly from merit or hired for gender and inclusivity.

### **The wider view of manufacturing through the apprentice lens - Why does manufacturing matter?**

Despite no formal understanding of manufacturing or engineering as a profession during their early lives, those spending formative years in surroundings with links to industry were aware of the existence of manufacturing in their region's heritage – Jaguar Land Rover in the West Midlands and steel production facilities in Sheffield were cited as being embedded within their memories when growing up. When asked to share thoughts around the importance and relevance of manufacturing in today's society, the view offered was that it would be positive to retain manufacturing in the UK because not only would it contribute to being more self-reliant it also ensured that any jobs generated by industry remain in the UK.

On the wider overarching theme of the significance and importance of manufacturing in general,

the all-embracing response of 'everything is manufactured' was the response that most captured the perception of the huge significance of manufacturing to society. Above all, the apprentices felt that the relevance of manufacturing was that it generates improvements, advances technology and as such improves systems for all – in turn enhancing quality of life. Reflecting on the UK's part and place on the world stage yielded the belief that the UK should be a nation making strides to lead on technology, innovation, and manufacturing rather than being a follower. One early childhood memory offered by an apprentice poignantly had embedded the understanding that the UK was not a player or leader or indeed did not manufacture at all. This was because 'made in China' was always noted as being on products and they had therefore assumed everything was imported.

Above all, manufacturing was viewed as a global and unbounded profession, a discipline understood universally; an activity that connects people through large projects (inter-country or intercontinental projects) allowing people to collaborate through speaking the same manufacturing language and forming international alliances. In turn, skills gained in the manufacturing profession give those within it the possibility of cross border career mobility. It would provide a future widening of opportunities and aspirations where skills gained in the manufacturing profession are globally valued, understood, and transferable. Lastly, within a global context the apprentices recognised the immense scale of job creation through the profession worldwide, and thereby the significance of their vocation within a global backdrop.



## KEY INSIGHTS

### The appeal of apprenticeships

Key motivations to taking the apprenticeship route included:

- The 'built in' career progression along with the variation of tasks, skills and interests rotations provide.
- The associated job security and stability provided along with the ability to earn immediately while learning.
- The balance of learning through a mix of teaching and practical pathways.
- Of particular interest to older apprentices was the opportunity for further advancement and 'professional' qualifications.

### An apprenticeship versus other pathways

The influencing factors in choosing apprenticeship over other options included:

- The level of pay was viewed as more favourable versus alternatives, and the chance to earn a salary whilst gaining a qualification outshone the prospect of taking unremunerated avenues leading to similar level qualifications.
- The entry requirements made apprenticeships more accessible than university, and university debt was a key deterrent.
- Experience was considered more valuable than a degree (although this varied by employer), and for some remaining in sixth form and university just did not appeal.
- Preparation in anticipation of the world of work is something apprentices felt that university did not compete on.

### Who holds career influence?

- School influence and support of manufacturing apprenticeships can vary, and word of mouth led to the discovery for some of the apprenticeship openings.
- Parents viewed a move into manufacturing via apprenticeship as a 'solid career'.

### Understanding manufacturing opportunities as a younger person

- The frame of reference for understanding manufacturing is often constrained by stereotypical images of 'basic factory jobs' and manufacturing being viewed as one homogeneous arena.
- The breadth of functions and careers which make up manufacturing are not visible or understood by those of school age deciding their career pathways.

### The value and esteem attached to apprenticeships as expressed by apprentices

- Apprenticeships provide a positive experience which creates a sense of pride.
- A structured and formalised programme boosts confidence in the integrity of the scheme and experience, plus the variety and rotation of tasks ensure continued interest.
- The apprenticeship provides a 'cushioning' transition phase between school and the world of work.
- Learning and progressing whilst experiencing job security and remuneration cement appreciation in the programme and the choice of their pathway.

### Reflections on opportunities and expectations

- The scope to promote manufacturing apprenticeships at an early stage to address gender imbalance is under developed.
- The timing of 'women in manufacturing/engineering' promotions can appear to be mistargeted reaching those already in the profession.
- Whilst happy to have secured an apprenticeship, concern around tokenism emerged in female apprentices' reflections.
- The removal of the upper age limit has opened the apprenticeship route to career changers.
- Career changer apprentices have switched from both technical and non-technical backgrounds.

### The wider view of manufacturing through the apprentice lens

- Manufacturing is omnipresent as all physical products are manufactured or have manufactured elements.
- It generates improvements and advances technology.
- As a globally occurring profession manufacturing provides a universal language and creates employment on a hugely significant scale in the global context.
- It connects people and countries through

large projects worldwide and helps people to collaborate with mutual understanding whilst providing opportunities for international alliances.

- Skills gained in the profession are valued, understood, and can enable cross border career mobility.

### Insight from apprentices' reflections

- Cultural references to manufacturing had become noticeable from an early age.
- A disconnect occurred between the visual cultural references of manufacturing versus manufacturing goods labelled 'made in China'.
- Retaining manufacturing in the UK is better for job retention and UK job creation.
- Regional references during formative years feed into an awareness of local manufacturing history and legacy.
- Reshoring UK manufacturing could allow for improved national self-reliance.
- The UK should be a nation making strides to lead on technology, innovation, and manufacturing rather than be a follower.





## 4. DISCUSSION – THEMES AND IMPLICATIONS

### Sustainability

The cultural shift in attitude towards sustainability in society has created pressure for manufacturing businesses to operate in a greener manner. Risks to reputation are elevated especially in the era of social media and increased activism. However, presenting over ambitious, non-workable or costly solutions may lead to the disengagement of some business owners.

#### IMPLICATION

There is an opportunity for manufacturers to harness their innovative culture and lead on a strategic level approach to redesigning work.

#### IMPLICATION

Generic 'one size fits all' sustainability campaigns may alienate smaller businesses; therefore, it is advisable that solutions are company appropriate/specific.

### Workforce Culture and Work Design

The pandemic ushered in new working structures and post-pandemic expectations of flexibility remain, along with in some cases, specific permanent concessions to work routines. Where the labour pool is tight, this has resulted in a change in relationship dynamics with some power shifting from employer to employees. Whilst manufacturers have shown themselves to be forerunners of change (e.g., the four-day week), post-COVID there are new work redesign imperatives. Practitioners note that a more strategic focus is needed in this area. This is supported by experts in the field of transformational work redesign who highlight that the post-pandemic era provides a unique opportunity for companies to dedicate attention to restructuring work in a meaningful way.<sup>36</sup>

### The Labour Force

Labour availability is impacted by the UK's departure from the EU and, in some sectors, new entrants competing in the labour market. A culture of active and positive engagement helps manage the labour market complexities. These management 'tools' take various forms: Employees are inspired to feel part of the journey and upskilled, mutual flexibility is appreciated, and retention and loyalty is secured through the provision of benefits which are significant to the workforce yet relatively cost effective to the company to deliver.

Traditional methods, historically used to motivate such as piecework, a type of variable payment systems (VPS)<sup>37</sup> appeared to generate some pressure and adverse 'knowledge guarding' behaviours. Unsurprisingly, such systems of pay have dwindled whilst managements' input in shaping pay is shown through research to have increased.<sup>38</sup> Unsurprisingly manufacturers now favour and demonstrate that a resourceful and considerate approach to employee engagement can be effective in workforce acquisition and retention in a difficult labour market. Expanding workforce benefits (free meals, on site inoculations etc) echoes the commitment to workforce welfare from early Birmingham philanthropic industrialists Richard and George Cadbury and their approach

<sup>36</sup> L. Gratton, Redesigning Work: How to Transform Your Organization and Make Hybrid Work for Everyone, UK: Penguin Random House. 2022.

<sup>37</sup> J Arrowsmith, J & P Marginson, The decline of incentive pay in British manufacturing, Industrial Relations Journal, Volume 41, Issue 4, pp. 289-311, Jul. 2010.

<sup>38</sup> ibid pp. 289-311



to 'whole life' employee welfare (e.g., access to sports facilities, playgrounds, kitchens etc).<sup>39</sup> In Leicester other examples of big employers such as Corah, Wolsey and the British United Shoe Machinery Company would often fulfil a socially cohesive role and were essentially like villages<sup>40</sup>, ensuring social and work life were interconnected through workplace clubs and facilities.

Taking care of employees is an imperative which ultimately benefits both employee and employer. It is of note that "Healthier people perform better, cost less and cause fewer organisational risks".<sup>41</sup>

**IMPLICATIONS**

Manufacturers have developed a toolbox of engagement methods to assist in recruitment and retention in a tight labour market. A return to a focus on 'whole life' employee care benefits both the employer and employees. Where arrangements are informal, there is an opportunity to build on and embed rather than continue in an ad hoc manner.

**Cultural and Regional Bonds**

Regional manufacturing legacy provides a sense of pride to some and can be anecdotally powerful by anchoring people to labour markets.

Manufacturers are creating strong regional links and bonds with Midlands universities and industry specific alliances (between companies and manufacturing membership organisations) appear strong and supportive. Engagement with schools receives some focus to secure connection with the next generation workforce; the declining concept of the multigenerational workforce of former times makes school engagement especially important, since extended family working at the same firm no longer act as informal recruitment conduits. Nonetheless, family sway is evident in the sphere of parental signposting towards manufacturing or engineering professions, which notably parents view as a solid career path. In this respect both small stakeholders (individual family members) and larger stakeholders (school career advisors, industry bodies) may appear close to the activity of recruitment.

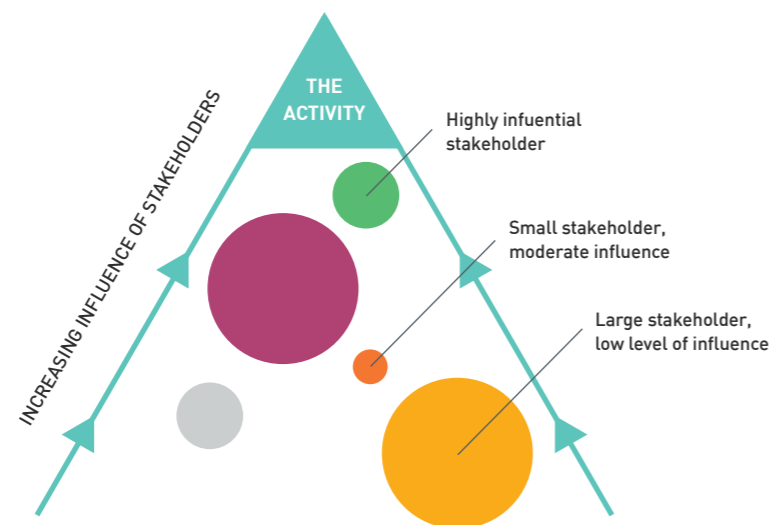


Figure 3. The stakeholder influence map <sup>42</sup>

<sup>39</sup> Cadbury, About Bournville, Cadbury, n.d. [Online] Available from: [www.cadbury.co.uk/about-bournville](http://www.cadbury.co.uk/about-bournville) [Accessed 03/04/23].

<sup>40</sup> Visit Leicester/Leicester City Council, Leicester Clothes the World, Leicester City Council, 2023 [Online] Available from: <https://storyofleicester.info/city-stories/leicester-clothes-the-world/> [Accessed 02/04/23].

<sup>41</sup> PWC, Work Well, 2017. [Online] Available from: [www.pwc.co.uk/services/human-resource-services/work-well-programme.html](http://www.pwc.co.uk/services/human-resource-services/work-well-programme.html) [Accessed 02/04/23].

<sup>42</sup> L Bourne, Stakeholder Relationship Management: A Maturity Model for Organisational Implementation, Farnham UK, Gower Publishing Ltd, 2009.

Engagement with local communities varies in intensity, with commitment down to firms' individual inclination. Local tensions can arise where local (as opposed to transient) workforces are emotionally invested in local and heritage matters. An example which chimes can be seen in the protests around the closure of the National Brewery Centre in Staffordshire<sup>43</sup>, (brewery owned, and originally opening as the Bass Museum in 1977). The centre showcased the development and heritage of brewing, and since it also acted as a visitor attraction it highlighted local history and in doing so promoted a sense of pride in Burton-on-Trent's historical pre-eminence within the brewing industry.

**IMPLICATIONS**

School engagement needs to receive strategic focus to reach the next generation workforce. This is especially relevant since previous informal recruitment conduits have waned.

There is little formalised local community engagement with no strong theme of obligation and interest to win hearts and minds. There is an opportunity for companies or industry bodies to re-evaluate focus (using stakeholder mapping) to ensure inclusion of community and family members as stakeholders – since they hold interest and influence in certain areas:

- a) manufacturing being held in high regard
- b) championing manufacturing-oriented apprenticeships
- c) continuation of pride in regional engineering.

A culture of companies forging alliances with universities in the Midlands and industry organisations prospers and provides regional knowledge and know-how synergy.

**Skills, Reskilling and Recruitment**

Several themes emerge. Firstly, that there is insufficient investment in skills and difficulty in finding sufficient skills in some areas; secondly, engineering leaders value problem solving skills alongside regular engineering abilities; thirdly, there are skills gaps associated both with advances in digital systems/technology and the retirement of older generation engineers.

There is little dialogue around two imperatives. One is the opportunity and need to reorganise work ready for the displacement of people through technology advancement. The other is the absence of any discussion around the career sustainability arguably needed in the context of longer working lives, particularly as the retirement age is set to increase further.<sup>44</sup> Career sustainability refers to being able to remain in work during the (new) longer working life, and the home and work environments being able to sustain it.<sup>45</sup>

Whilst longer working lives may seem incompatible with traditional (physically tough) manufacturing environments, new clean advanced environments may provide a better fit for older workers, however, this seems unexplored. Furthermore, with increased longevity, peoples' careers can span multiple technological developments<sup>46</sup> and hence lifelong upskilling will be needed. The trends described are at odds with the industry's culture of loading skills primarily at the beginning of a career.

Turning to the topic of next generation engagement, there are three considerations. The reputation of manufacturing as dirty and tough perpetuated somewhat by the media is detrimental; secondly, apprenticeships do not enjoy absolute parity with university, and thirdly; while school engagement receives some strategic focus there is a chance to formalise and comprehensively embed programmes. Notably also reaching out to potential female engineers sometimes occurs too late.

<sup>43</sup> BBC News, Closure of Burton upon Trent National Brewery Centre a 'devastating loss' BBC, 2022 [Online] Available from: [www.bbc.co.uk/news/uk-england-stoke-staffordshire-62902920](http://www.bbc.co.uk/news/uk-england-stoke-staffordshire-62902920) [Accessed 03/04/23].

<sup>44</sup> Department for Work and Pensions, State Pension Age Timetable, UK Government, 2014. [Online]. Available from: <https://www.gov.uk/government/news/state-pension-age-review-published> [Accessed 03/04/23].

<sup>45</sup> Eurofound, Sustainable work over the life course: concept paper, Eurofound, 2015. [Online] Available from: <https://www.eurofound.europa.eu/publications/report/2015/working-conditions/sustainable-work-over-the-life-course-concept-paper> [Accessed 03/04/23].

<sup>46</sup> Deloitte, The longevity dividend: Work in an era of 100-year lives, Deloitte Insights, 2018. [Online] Available from: [www2.deloitte.com/us/en/insights/focus/human-capital-trends/2018/advantages-implications-of-aging-workforce.html](http://www2.deloitte.com/us/en/insights/focus/human-capital-trends/2018/advantages-implications-of-aging-workforce.html) [Accessed 03/04/23].



However, positive themes include the regard for apprenticeships and their embeddedness in the British psyche; and, for apprentices themselves, apprenticeships provide a huge sense of pride. Removing the age barrier has been significant in opening this pathway to career changers and older cohorts.

In the food sector, for example, graduate programmes receiving leader sponsorship which rotate graduates through functions, successfully develop and induct the next generation. Additionally in this industry the ability to see progression and success provides a culture of 'opportunity for all', with strong leadership supporting this ethos.

### IMPLICATIONS

Greater investment in skills is required to fill skills gaps.

Well-structured skills programmes such as apprenticeships and graduate programmes provide robust conduits into manufacturing.

'Apprenticeships' as a brand are held in high esteem by multiple stakeholders.

There is an opportunity for manufacturing to play a part in elevating apprenticeships to achieve parity with university qualifications.

An 'opportunity for all' culture exists where people can see success stories and this ethos is supported by leadership.

Next generation engagement receives some focus and appears to follow the visit-demonstrate-engage method. Yet there is a sense that this is a 'nice to do' rather than a systematic approach to reaching the next generation.

Traditional tough manufacturing environments are a poor fit with the expected new longer working life.

Manufacturing can take the opportunity to be at the forefront of reshaping careers and ensuring skills acquisition (throughout the whole of a working life) to meet continual technology advancements.

### Technology and innovation

Technology adoption is variable, and not all businesses are open or able to adopt technology at the same rate. Barriers to adoption can affect small and large businesses alike, as demonstrated by large food manufacturers being reliant on hand finished production lines; while small businesses may view industry wide technology adoption as needed to make change financially feasible.

Outside of financial constraints, some companies choose to retain traditional production processes e.g., Emma Bridgewater products showcase the heritage elements that see each item handled by 30 people before reaching the customer.<sup>47</sup> This (human) process and the geographical siting of the production within the potteries provides authenticity and prestige. However, innovation within the potteries has emerged with the new sector of 'technical ceramics'.<sup>48</sup> The West Midlands is also a region which holds historical links with innovation and entrepreneurship and today is still characterised as a place still holding a zeal for innovation.

In general, where employee interest towards innovation or change varies or is absent, this may hold challenges. To prepare the workforce for new digital technologies, experts advise that simply imparting digital skills will be an insufficient response, and companies must lay the groundwork for a "digital organisational culture"<sup>49</sup> in addition to planning and reconfiguring practices and structures.<sup>50</sup>

### IMPLICATIONS

Barriers to technology adoption vary. Not all need to be overcome as in the case of heritage brands.

A continuity of innovation reportedly remains in the West Midlands, with historical connection to manufacturing and innovation perhaps providing an orientation for entrepreneurs and innovators. A sense of 'renewal' prevails especially where new product lines and markets have emerged (e.g., technical ceramics).

Experts advise that a 'readiness' is needed for successful adoption which should move beyond a reductionist approach of simply delivering digital skills training.

<sup>47</sup> Emma Bridgewater, About the Factory, Emma Bridgewater, n.d. [Online] Available from: [www.emmabridgewater.co.uk/pages/about-the-factory](http://www.emmabridgewater.co.uk/pages/about-the-factory) [Accessed 03/04/23].

<sup>48</sup> Make it Stoke on Trent & Staffordshire, Advanced Materials, Make It, 2023. [Online] Available from: [www.makeitstokestaffs.co.uk/industry-sectors/manufacturing/advanced-materials](http://www.makeitstokestaffs.co.uk/industry-sectors/manufacturing/advanced-materials) [Accessed 03/04/23].

<sup>49</sup> T Neeley and P Leonardi, "Developing a Digital Mindset," Harvard Business Review, pp. 50-55, May-June 2022.

<sup>50</sup> *ibid.*

### Leadership and resilience

Perspectives from leaders demonstrate interest and enjoyment from sponsorship of the next generation, for example by supporting graduate programmes, encouraging employees to be 'part of the journey', and championing development. This creates a culture of opportunity and engagement.

Business owners are often busy responding to rapidly evolving challenges generated by the new, uncertain, and changeable operating environments. However, they appear motivated to problem solve and respond to challenges with agility and creativity. This culture of problem solving embodies the "can do" component of an entrepreneurial attitude;<sup>51</sup> in addition it demonstrates what experts writing in the field of leadership have labelled "contextual intelligence."<sup>52</sup>

The ability to be able to adapt and respond with agility appears to set manufacturing apart from some other sectors. Make UK's Executive Survey 2022, 'Harnessing agility and resilience' concludes that the agility and resiliency demonstrated by manufacturing during challenging and uncertain times can provide the basis of future growth.<sup>53</sup>

### IMPLICATIONS

Leaders are motivated to use their power to give impetus and energy to next generation recruitment and development agendas. There is an opportunity to consider if this can be both strategically cemented and replicated at other organisational levels.

A particular type of leadership with entrepreneurial and problem-solving aspects helps facilitate resilience in the manufacturing industry.

Manufacturing is characterised by qualities of agility and resilience evidenced through the pandemic. Consultants highlight the opportunity to examine learnings from this time to build in future resilience.<sup>54</sup>

## 5. CONCLUSION

It is already recognised that organisations within a particular industry will share some cultural characteristics.<sup>55</sup> In this report, characteristics which appear replicated between manufacturers include leadership generativity, motivation for organisational and individual learning and a culture of innovation and pro-activity towards technology adoption (where barriers do not prevail).

Additionally, there are elements of entrepreneurial leadership which frequently occur alongside organisational dexterity in responding to the challenges associated with an ever-changing macro environment. Interestingly, these collections of cultural aspects appear to facilitate "dynamic capabilities"<sup>56</sup> – a concept where abilities are pivoted or reconfigured to address the fluctuating business environment.

There is an established culture and competency of providing robust conduits into the industry (graduate schemes, apprenticeships, careers engagement). However, surprisingly, with the industry undergoing its 4th revolution this strong recruitment and training culture does not

appear to extend toward conceiving strategies to upskilling differing age groups (of the workforce) in preparation for waves of evolving technology which will be experienced through a working life. In this area manufacturing seems stationary, whereas elsewhere creativity has emerged through strategic activities which are deployed for employee acquisition and retention purposes – in some part a response to the tight labour market.

Finally, on the topic of history and heritage, there is little indication that companies consider themselves custodians of legacy (this appears to fall to specific interest organisations). Nonetheless, the significance of history, heritage, and the legacy it affords runs through the narrative with the benefits evident at all levels – micro (individual), meso (the firm) and macro (the industry and its environment). It furnishes individuals and community with a sense of pride, it can lend prestige to products, and it can impel innovation – in essence, history and legacy are valuable resources to the manufacturing industry whilst also providing a golden thread of continuity through time.

<sup>51</sup> J Mullins, "The counter-conventional mindsets of entrepreneurs", *Business Horizons*, vol. 60, pp. 597-601, Jun 2017.

<sup>52</sup> N. Nohria, "As the world shifts, so should leaders: Research shows that different eras call for different approaches." *Harvard Business Review*, pp. 59-61 Jul-Aug 2022.

<sup>53</sup> Make UK/PWC, "Executive Survey 2022: Harnessing Agility and Resilience" Make UK 2022 [Online] Available from: [www.makeuk.org/insights/reports/make-uk-pwc-executive-survey-2022-harnessing-agility-and-resilience](http://www.makeuk.org/insights/reports/make-uk-pwc-executive-survey-2022-harnessing-agility-and-resilience) [Accessed 24 July 2022].

<sup>54</sup> Global Centre for Crisis and Resilience, Building resilience to position your business for success, PWC, n.d. [Online] Available from: [www.pwc.com/gx/en/issues/crisis-solutions/covid-19.html](http://www.pwc.com/gx/en/issues/crisis-solutions/covid-19.html) [Accessed 02/04/23].

<sup>55</sup> G. G. Gordon, "Industry Determinants of Organizational Culture" *The Academy of Management Review*, Volume 16, Issue 2, pp.396-415, Apr 1991.

<sup>56</sup> D. J. Teece, G Pisano & A. Shuen, "Dynamic Capabilities and Strategic Management" *Strategic Management Journal*, volume 18, issue 7, pp. 509-533, Aug 1997.



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