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South Yorkshire Employer Insights on Artificial Intelligence and Jobs of the Future Research Report

August 2025

KNOWLEDGE AND SKILLS SERIES.

Contents

Management summary - headlines

One of the features of the South Yorkshire Local Skills Improvement Plan (LSIP) is the development of a portfolio of knowledge and skills insights offering up to date intelligence on employer needs. This is a summary of findings from the sixth in a series of seven employer research insights undertaken as part of this work, focusing on Artificial Intelligence (AI) within businesses in South Yorkshire.

This report looks at skills in AI now and in the future with a view to informing the valuable work of providers and those involved in the development and delivery of skills, training and business support in South Yorkshire. Over the past 70 years AI has experienced a rapid evolution through machine and deep learning to the present-day establishment of generative AI, which can create original content in response to user requests. Generative AI is already beginning to be superseded by agentic AI which can autonomously make decisions and act with the ability to pursue complex goals with limited supervision.

AI is transforming how we live and work. It provides businesses in South Yorkshire with new ground breaking opportunities. It has a versatility of applications that can improve efficiency, automate routine work, and uncover insights in almost any industry.

Artificial Intelligence adoption, company policies and ambition

- AI has widespread integration across diverse sectors and firms from those that could be described to digital natives to other service and manufacturing industries.
- Adoption rates vary considerably. There are both ‘pioneers’ and ‘current or potential adopters or followers’ across five broad categories of AI use (see here).
- Employers' experiences and engagement with AI vary significantly, ranging from adopting AI products and services to achieve efficiencies to AI playing a more fundamental role.
- Some are creating AI bespoke products and infrastructure, such as building large language models, developing customised pipelines, and creating automated platforms. A handful of non-adopters would like to understand more or had more pressing priorities.
- There is an appetite for knowledge sharing, to learn more and deepen understanding.
- Despite increasing deployment, the adoption of AI policies to regulate its use is not widespread, they were often subsumed into wider digital and data policies. That said many were looking to adopt a formal policy. In larger firms its use was more likely to be covered by company procedures and/or AI working groups or forums.
- Generally, teams are not discouraged from using AI and these frameworks are designed to ensure its use is ethical, in line with regulation and protects company data. There is some good practice which could be shared with firms looking to develop policies.
- Most employers are moderately optimistic about AI's potential to improve efficiency and productivity and for some it will play a key role in sales and marketing applications.
- AI leaders anticipate its future contributions in product or service development, data analysis, and predictive insights, including coding, platforms, software, and hardware.
- A few firms were more cautious despite the inevitability of AI.
- AI tool usage and application skills were mentioned frequently; and the awareness and ability to use AI software effectively and understanding how to prompt and guide AI outputs.
- More specific technical AI skills (software development, programming, machine learning and the use of large language models) are required by those businesses at the forefront

of AI development. Several firms sought more sector-specific or functional AI use. A few were considering recruiting new AI related roles or jobs with AI responsibilities.
- Employees who took a 'learning through experimentation' approach towards AI were highly valued. Employers like staff to keep up to speed with AI trends and share internal knowledge and best practice, recognising these traits were as crucial as technical skills.

Artificial Intelligence skills and talent pipeline

- For certain technical or senior roles industries such as engineering and data science, qualifications remain essential. But the more routine use of AI simply requires an understanding of how to use the tools. This requires adaptability, problem solving and curiosity with digital skills best advanced through real-world application. This requirement is particularly well suited to courses with on-the-job training such as apprenticeships.
- New AI models and technologies make it difficult for qualifications and training to keep pace with employers wishing to build the knowledge to implement AI effectively.
- Traditional interview techniques may not be suitable for candidates to demonstrate their technical capabilities for roles with an AI component. One employer required candidates to demonstrate coding skills.
- There are a few wholly AI roles being advertised. Employers are focused on upskilling their existing employees and embedding AI roles into job descriptions.
- The hardest vacancies to fill were in more specialist technical areas particularly within engineering where the pool of candidates is more limited.
- Employers were confident that future generations would enter industry with an understanding of AI and a willingness to work with it but were concerned that AI-generated CVs were making recruiting harder to identify quality candidates.
- The provision of work experience and 'real life' experiences was a priority for inspiring the next generation, offering insights into industry and the use of technology in business.
- The concept of role models was frequently mentioned in the context of technology adoption and the value of meaningful work encounters for primary as well as secondary students. Employers had a range of strong partnerships with education providers some of which were AI specific such as STEM ambassador programmes and AI roundtables.
- There is an openness to engaging with providers and some interest in engaging with young people with special educational needs and disabilities through outreach activities.
- AI is playing a more integral role in industry-education partnerships with some interest in hiring AI-specialised graduates in the future. Employers wanted education systems to adapt and shift towards teaching AI much more routinely within curricula.

Training the employees of tomorrow and offering the skills for today

- Across South Yorkshire, the availability and visibility of AI support varies widely, awareness is low and it is fragmented and difficult to navigate. While there are pockets of expertise, many depend heavily on internal knowledge, self-directed learning, and personal networks rather than on established, clearly signposted support systems.
- For providers and brokers, the opportunity lies in being visible in those early stages, offering guidance that is both sector-specific and product-agnostic, and presenting services in ways that are easy to understand, access, and implement.
- Keeping pace with AI is an ongoing journey and there is real enthusiasm about the possibilities, but also a clear sense of how fast things are moving and how hard it can be to decide where to focus. The volume of information is daunting.
- A recurring theme was that while technical skills matter, critical thinking, adaptability, problem-solving and willingness to change are seen as even more important.

- There is a clear role for organisations to act as trusted guides.
- Offering opportunities for different generations to share knowledge was used to build confidence across the workforce.
- Short workshops, hackathon-style sessions and “fail-fast” pilots help companies to develop strategies around what works.
- Recruitment for AI positions was putting more weight on attitude, curiosity and willingness to learn alongside technical skills.
- For those in employment some offered a baseline training offer on AI and/or CPD followed by specialist training.
- There is openness to engaging with every training format when the content is practical, sector and role specific, and easy to fit around the working day. A single approach will not reach everyone. A mix of learning modes will allow people to choose what suits them.
- Confident adopters often see themselves as contributors as much as learners, and they want spaces to share insights while continuing to deepen their capabilities. Early stage adopters want orientation that can be quickly applied and grounded in real work.
- Sessions should be framed around specific, practical outcomes. Short, focused courses appeal to teams that need learning they can act on straight away.
- Tailored online tools and resources are valued to complement and reinforce live sessions. They help time poor teams, support dispersed workforces and allow people to revisit materials when they need them. Employers still look for in person encounters for inspiration and networking opportunities to helps ideas take root.
- Introductions to key notes speakers, experts and advisers are seen as especially helpful when those experts understand the realities of a given sector.
- Employers want structured help for senior teams to set direction, commission safe experimentation and empower internal champions who can carry learning across the organisation. They also asked for model policies, ethics guidance and places to compare approaches with peers.
- Willingness to engage depended on the value they expected to receive, the quality of delivery and a clear link to business outcomes.

Future Outlook

- Lack of knowledge is the primary barrier to AI adoption for instance how different AI functions and models can enhance business processes. One in three businesses would welcome tailored support highlighting how AI can improve operations and productivity.
- Adoption barriers include firms and sectors with older workforces, employer scepticism, market uncertainty, lack of confidence in returns, and gaps in specialist support.
- AI risks include data security including potential hacking or data breaches, perceived content inaccuracy and job loss which can lead to low workplace morale.
- Companies engaged in the development and creation of AI services and products recognized the value of undertaking bias mitigation measures and critically assessing AI generated content.
- The importance of internal policies, frameworks and guidance was highlighted and for those working with LLMs or agentic AI compliance with regulatory frameworks to ensure the use and development of AI is safe and unbiased.
- As noted, adoption of AI software is more likely when business-specific training demonstrates AI in action. This is especially true for generative AI software applications.
- Businesses would like to see training providers consult industry bodies frequently to gain a deeper understanding of how to tailor training content to meet their needs.

- Further demystification of AI and signposting is needed to support businesses to adopt applicable AI solutions. Businesses recognised the role of the Chambers and other business organisation as impartial conveners and sign posters to businesses that create, develop or supply AI services and training.
- Financial support for businesses looking to adopt AI would be welcomed by some. Examples included subsidised training grants, assistance with purchase agreements, and links to provider and creator deals to make the adoption of AI more financially viable.
- For those who have embedded AI, support to pay licensing fees would be appreciated and pooling of AI resources and/or infrastructure to enable new entrants to keep pace with some faster developing firms.

Despite some concerns, there is a clear appetite for AI adoption. Additional opportunities for training, building on the services of those already provided AI to businesses in the sub-region, would help to consolidate the benefits of AI adoption, providing tangible, industry-specific outcomes for those looking to use AI more frequently. The sub-region is well-placed to harness to potential of AI, highlighting the importance of raising awareness of uses, providing meaningful opportunities for training, and supporting smaller businesses to keep pace with technological advances.

Preface

Local Skills Improvement Plans (LSIP) place employers at the heart of local skills systems to help support and drive change. This change requires direct and dynamic insights and intelligence. This report on the use of Artificial Intelligence (AI) is part of a portfolio of knowledge and skills activities designed to articulate and elevate the employer voice including podcasts, skills zones and skills teach-ins.

South Yorkshire LSIP background

Doncaster Chamber is the Employer Representative Body (ERB) for the South Yorkshire LSIP. They are collaborating with the two other Chambers of Commerce in South Yorkshire (Sheffield, and Barnsley and Rotherham), as well as the South Yorkshire Mayoral Combined Authority, South Yorkshire College Group, universities, independent training providers and employers. The current LSIP was created in 2023 and runs until 2025, building on the 2021 South Yorkshire Trailblazer. LSIP is a strategic document concluding with 36 recommendations to improve understanding of employer needs and better align and inform the provider offer. These reflect the fact that employers, training and education providers have unique perspectives, but similar and complementary aims. This ensures post-16 education meets local employer priorities and demand. The Government's English Devolution white paper confirms that mayors will be given "joint ownership" of LSIPs alongside ERBs[1].

Artificial Intelligence

Unlike previous LSIP reports that focused solely on specific sectors, this report covers the use of AI in businesses in South Yorkshire. Advances in AI continue to drive innovation across the board and the technology has begun to permeate many forms of business activity.

Artificial intelligence (AI) refers to a machine's ability to perform cognitive functions that we usually associate with humans[2]. The first reference point for AI was in 1956, in a period where the technology was limited to early work with neural networks[3].

Machine Learning

Machine learning automates analytical model building. It uses methods from neural networks, statistics, operations research, and physics to find hidden insights in data without explicitly being programmed for where to look or what to conclude.

Neural Networks

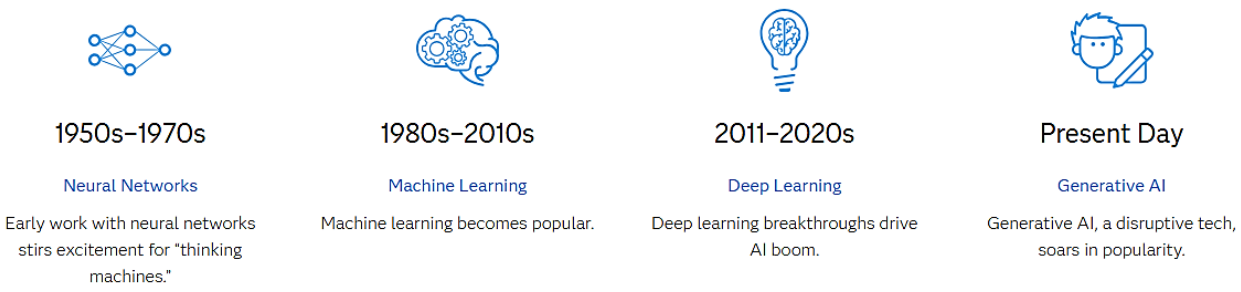
A neural network is a type of machine learning that is made up of interconnected units (like neurons) that processes information by responding to external inputs, relaying information between each unit. The process requires multiple passes at the data to find connections and derive meaning from undefined data.

Deep Learning

Deep learning uses huge neural networks with many layers of processing units, taking advantage of advances in computing power and improved training techniques to learn complex patterns in large amounts of data. Common applications include image and speech recognition.

[1] See FE week here
[2] McKinsey Global Institute, The next big arenas of competition, 2024
[3] SAS, Artificial Intelligence what it is and why it matters, accessed 2025

Over the past 70 years AI has experienced a rapid evolution through machine and deep learning to the present-day establishment of generative AI (AI that creates original content in response to user requests).



The possibilities associated with AI use became more widespread following the AI 'boom' in 2022[4], marked by the release of ChatGPT by Open AI. By early 2024, ChatGPT had more web traffic than tech giants such as Netflix, Pinterest, and Twitch[5]. Generative AI has increased productivity for developers and knowledge workers in very real ways and initiated a trend of organisations and industries beginning to rethink their business processes and the value of human resources[6].

"AI's biggest strength is its versatility. It can improve efficiency, automate routine work, and uncover insights in almost any industry. From speeding up medical diagnoses to helping businesses work smarter, AI is transforming how we live and work. As the technology advances, its ability to spark innovation and solve big challenges will only grow."[7]

However, as is consistent with the pace of technological advancement, generative AI is already beginning to be superseded.

Gartner's AI Hype Cycle is a graphical representation of the maturity, adoption metrics and business impact of AI technologies (including GenAI). It helps organisations understand where different AI innovations are on the path to becoming mainstream, why they are where they are and what these innovations mean in the context of the overall AI landscape. In 2023 Gartner placed Generative AI in the 'peak of inflated expectations' reflecting businesses aggressive experimentation with the technology and emergence of AI start-ups[8]. Two years on and Generative AI now sits within the 'trough of disillusionment' as organisations gain a broader understanding of its potential and limits and the associated governance and regulatory barriers[9]. Low-maturity organisations Gartner finds have trouble identifying suitable use cases and exhibit unrealistic expectations for initiatives. Mature organisations, meanwhile, struggle to find skilled professionals and instil GenAI literacy[10]- topics discussed later on in this report.

In 2025, Agentic AI is now coming to the fore. This newest form of artificial intelligence operates almost entirely autonomously, making decisions and acting with the ability to pursue complex goals with limited supervision, providing businesses in South Yorkshire with new opportunities and applications. Gartner predicts that by 2028, one third of all enterprise

[4] University of Cincinnati, 9 benefits of Artificial Intelligence in 2025, 2025
[5] McKinsey Global Institute, The next big arenas of competition, 2024
[6] Gartner, What's New in Artificial Intelligence from the 2023 Gartner Hype Cycle, 2023
[7] University of Cincinnati, 9 benefits of Artificial Intelligence in 2025, 2025
[8] Gartner, What's New in Artificial Intelligence from the 2023 Gartner Hype Cycle, 2023
[9] Gartner, The 2025 Hype Cycle for Artificial Intelligence Goes Beyond GenAI, 2025
[10] Gartner, The 2025 Hype Cycle for Artificial Intelligence Goes Beyond GenAI, 2025

software applications will employ agentic AI[11]. By 2034, IBM anticipates that these agentic AI systems might become central to managing everything from business workflows to smart homes.

"Their ability to autonomously anticipate needs, make decisions and learn from their environment might make them more efficient and cost-effective, complementing the general capabilities of LLMs and increasing AI's accessibility across industries[12]."

The democratisation of AI and the adoption en masse of AI tools could be where the greatest benefits for society reside. AI is feeding into the rapid development of R&D in adjacent areas like advanced materials for energy.[13].

However it is not without its challenges. Attitudes towards AI use vary and the UK in particular faces a challenge in its 'emotions' towards AI and what this means for future innovation. A recent study by KPMG and the University of Melbourne[14] highlighted this fact and the conundrum posed to innovators and policy makers.

This report seeks to reflect on the evolution of AI in the context of South Yorkshire, what it means for local businesses and what the landscape looks like in the sub-region. The employers consulted to inform this study covered a wide range of sectors from those in 'natural territory' for AI such as cybersecurity and IT/digital solutions to other industries from services such as marketing and accounting to manufacturing including aerospace. The degree to which these employers had adopted AI also varied considerably. Some were at the forefront of AI, creating and developing a range of AI infrastructure and products such as automation platforms and large language models (LLM's)[15]. For others their experience with AI was limited to the use of ChatGPT, Microsoft Copilot or transcription services as a means of increasing efficiency within their organisation. The varying use of AI offers contrasting perspectives of AI leaders, future adopters and those in between.

Report purpose and approach

This report is the sixth in a series to gain employer knowledge and understanding of local skills priorities. This will ensure the LSIP continues to be evidence-based and actionable, and education and training is responsive to employer and local labour market needs. It will help inform and influence curriculum development and employer engagement. The previous sector reports on Manufacturing, Construction, Lifestyle, Leisure and Culture, Aviation and Financial and Professional Services can be found here.

This work has been a collective effort between the South Yorkshire Chambers, business support organisations (including Sheffield Digital), employers and providers. The employer questionnaire was co-designed. 46 employers listed in Annex one kindly contributed to this report during April to August 2025. They don't represent the whole business community and can only offer a snapshot of the experience of AI in South Yorkshire. The findings should be read with this caveat in mind.

[11] Gartner, Intelligent Agents in AI Really Can Work Alone. Here's How., 2024
[12] IBM, The future of AI: trends shaping the next 10 years, 2024
[13] MOCHAN, A., FARINHA, J., BAILEY, G., RODRIGUEZ, L., MATTEUCCI, F. and POLVORA, A., Materialising the Future - Horizon scanning for emerging technologies and breakthrough innovations in the field of advance materials for energy, Publications Office of the European Union, Luxembourg, 2024
[14] KPMG and the University of Melbourne, Trust, attitudes and use of artificial intelligence, 2025
[15] IBM, What are large language models (LLMs)?, 2023

Report Contents

There are four key parts to this report. The first part (adoption, regulation and ambition, Chapter 1) looks at the role of AI within South Yorkshires business base, its alignment with growth ambitions, its regulation and future workforce skills needs. Chapter 2 assesses current skills including apprenticeships, recruitment and skills gaps and pipelines. Chapter 3 discusses training provision for both current and future employees. The final Chapter (4) reflects on the barriers, risks and threats of AI, how employers have avoided bias in its adoption and concludes with a summary of the employer ask of training providers and partners around future AI support.

Acknowledgments

The research team would like to thank the employers who kindly gave their time to talk about their experience, the providers and employers who steered the research lines of enquiry and the chambers and business support specialists, especially Sheffield Digital who provided willing businesses to speak to.

Artificial Intelligence - adoption, regulation and ambition

This chapter looks at the role AI plays within businesses consulted and how it is being used to meet local growth ambitions. It briefly considers how AI is regulated within the workplace and concludes by considering future workforce skills.

AI usage

"AI is changing the way businesses understand both internal and external processes across a multitude of sectors, from Healthcare to Transport and Banking to Engineering. Gaining knowledge of how AI works is crucial for professionals across sectors, no matter where they work."[16]

The UK AI market is growing exponentially and its role within businesses at a similar pace. The UK AI market was worth more than £72 billion in 2024. Forecasts predict this number to rise to £1 trillion by 2035[17]. In respect to business use, on average one in six UK organisations are embracing at least one form of AI technology[18] and the desire to incorporate AI within operations is a sentiment shared by South Yorkshire's businesses. An AI survey conducted by the three regional Chambers of Commerce last year found that 70% of employers believe that this technology represents a valuable opportunity for growth[19].

Part of this study was to understand the degree to which AI features in current business activity. Based on the consultations it is possible to identify five broad categories of AI use:

- Creators of AI infrastructure including hardware, software, platforms etc.
- Developers of AI products producing bespoke, value adding AI solutions
- AI service providers offering skills and expertise to support AI adoption
- Current adopters of AI products or services
- Potential adopters.

These include both 'pioneers' and 'current or potential adopters or followers'. Most consultees are current adopters of AI products or services, typically to improve business efficiency. The extent to which AI was adopted varied, between the use of ChatGPT, copilot and transcription software such as Otter.AI for research, to workflow automation, summarising and content creation.

"It's a new thing now, and the way we probably use it most is ChatGPT and copilot. We use that for preparation of documents, for writing media pieces and so forth- we use it to do the heavy lifting and carrying."

Only a few employers considered themselves potential adopters in future, citing their current use of AI to be extremely limited or non-existent. This was primarily attributed to reticence

[16] https://www.leeds.ac.uk/online-courses-blog/22885/5-ways-artificial-intelligence-is-changing-business
[17] Forbes, UK Artificial Intelligence (AI) Statistics And Trends In 2025, 2025
[18] Push, AI Business Transformation Stats: UK 2025, 2025
[19] Doncaster Chamber of Commerce, South Yorkshire Businesses Optimistic About The Future of AI and Are Ready To Embrace The Technology, accessed 2025

around its use for data protection or IP concerns and a lack of time to explore and understand its potential applications.

"We're not really using it at all, to be quite honest. It is becoming a big a bigger thing across the industry, especially in stop vehicle detection, I don't think any of its up to the job yet, but it's the way it's headed."

For some employers AI plays a more fundamental role. Four consultees are AI service providers offering consultancy or skills to help others adopt AI. This included the development of an AI accelerator programme for businesses, positioning AI as a key sales driver for client solutions and working on AI workshops to support SMEs. A further four considered themselves creators of AI infrastructure building on site large language models, developing customised AI pipelines and AI automation platforms. Eight firms are developers of AI products producing bespoke AI solutions. Examples included the development of AI powered drone analytics and autonomous systems, AI platforms sold as products or for use in crash detection.

"We have AI functions built into the drone platform so you can detect people, vehicles, or boats. Say for instance, you've got the autonomous missions in terms of flight, flight path missions - that's artificial intelligence, the drone's flying itself."

"We've built a legal management system where lawyers can use this platform to manage their legal work. We call it an end-to-end all-encompassing system that aims to bring together all aspects of a legal professionals work into one environment, so they have their casework management, their time and billing management, it has CRM capabilities and document management."

"We're actually building a physics-based methodology to machine learning and AI that helps mainly small businesses through the platforms they already use, predict their operational needs."

AI Company Policies and Procedures

Despite the increasing deployment of AI within business, the adoption of an associated AI policies to regulate its use is not widespread. Indeed, several recent studies have found that as few as 20% of companies currently have AI policies in place[20].

South Yorkshire's employers were asked about their approach to govern AI use and the existence of AI policies. Whilst the proportion of firms implementing an AI policy was higher than that in the studies mentioned, around half of those consulted admitted to not yet having adopted an AI specific policy, despite AI featuring within business operations.

For some this was attributed to the coverage afforded by broader company documentation such as digital or cybersecurity policies or the ability to add an AI addendum. For others the role of AI was deemed too discrete to warrant an exclusive policy.

"We don't have an AI policy, and I think that's partly because we're on the journey of developing the product…people are using AI in very minor ways that you're not too worried about. When you start physically using it to deliver your product, I think that policy comes with that. At the moment you've just got people like researching or looking at things or editing stuff, it's not embedded in the business yet. It's a little bit like social media. You didn't used to

[20] Business NH, Why you need a corporate AI policy, 2024 and McKinsey, The state of AI, 2025

have social media policies, but then over the last sort of 10 years, you've been building social media policies for staff, and I see AI being very similar."

The majority of those who had yet to formalise an AI policy however referenced the intent to do so in the near future, with several looking to use AI in its development.

"No, we don't, actually [have an AI policy], it is something we should do. We'll probably get AI to write it as well."

The existence of AI policies or regulation was more commonplace in either larger firms or those whose business operations were grounded in AI use. These policies were more often adopted to address data protection and align with industry and governmental regulation as well as providing broad guidelines for staff. For those more AI centric businesses it was not uncommon to have multiple policies to cover different business areas, with one employer commenting on the difficulty in a singular policy providing enough coverage for each form of AI application.

"We have quite stringent controls around it, which means we can deploy AI in some areas of the business in others we cannot. We've got about four or five AI policies relating to AI usage in different areas."

"AI is difficult. You can't realistically have a policy to implement something because the whole point of AI is it's not the same. You're not implementing AI for the sake of saying, oh, we work with AI, people have been working with AI for a long time. Sales people and administrators that use Grammarly. That's AI. That's always been AI."

Several employers with existing AI policies acknowledged that these were still in a draft form, addressing immediate needs such as data compliance but being iteratively improved and considered as live documents that would evolve with AI. Some businesses utilise cross-departmental AI working groups or forums to manage AI usage and keep policies up to date.

"One of the things we have is an internal AI working group. So essentially it is made-up of people from different departments that either have knowledge on or a vested interest in AI, and through that team we developed this policy. But it's one of those things every time we sort of publish a new edition of it, it feels out of date, so we constantly are having to adapt it."

It is worth noting that whilst policies in these businesses are closely monitored, teams are not discouraged from using AI and these frameworks are designed to ensure its use is ethical, in line with regulation and protects company data. There is clearly some good practice which would inform the co-design of resources and guidance for firms looking to develop policies around the importance of AI policies and when and where these should be mandated.

"Yes, there's limits, where it shouldn't be used, things staff shouldn't be doing. But other than that, we are very much encouraging people to use it where use has been found."

Growth ambitions and AI's contribution

Despite some economic turbulence in recent years, employers consulted for the most part had established and ambitious growth plans. Over half those consulted sought to increase their headcount over the next three to five years with an additional six businesses who were open to doing so but more cautiously or as needed. In respect to turnover over half those interviewed specified revenue or turnover growth goals and several exploring acquisitions or investment-driven growth.

Employers were asked how AI would contribute to the achievement of these growth ambitions. Most employers referenced the role AI would play as a driver of efficiency and productivity gains. This came in the form of the automation of administrative tasks such as billing, client or customer relations (including emails and chatbots) or time savings using large language models (LLM's) in research and transcription. Employers also felt AI would contribute to the enabling of scalability, allowing for onboarding of more clients and customers whilst maintaining current resource levels.

"It's a tool that can bring efficiencies, it can probably help with our scalability, it can do some of the heavy lifting and shorten time frames for getting things done. It's just going to evolve with the business, now we would turn to Microsoft Office Suite to produce information and things or manage certain processes, I think AI will just dovetail into that naturally... the nature of the work that we do, we still follow traditional production methods I think AI is going to drive change faster. That's what AI does. It speeds things up."

AI was also anticipated to play a key role in sales and marketing applications. No employers referred to its use in drafting content and social posts, generating leads and in developing personalised marketing campaigns.

"I think one challenge for every SME's is how do we get more customers? So, looking at the ability to streamline or utilise AI to do more of the sales and marketing, say for instance, creating those lead magnets, looking at those outreach courses, there are Sales companies that do the outreach in terms of AI. That proactively contact a profile of a customer ideal profile of a customer. That's something that I'm considering at the moment."

For the other firms, whereby AI is a more prominent feature in their business model, AI's future contribution was seen in the context of product or service development such as platforms and software and hardware, as well as for data analysis and predictive insights including coding.

"AI is probably underutilised at the moment but has potential for us for predictive analysis, to look at trends and look at data that's out there and to see whether we can map opportunity and tailor our approach with a better understanding of the data that's out there but using AI to access that data."

"One of the things that's really been pushed at the moment from AI as a potential use case is co-design of coding. So having an AI system there which is a bit like your large language models where you can give it prompts to write you some text, but you can do the same with computer code."

"Our top priority is maintaining and developing expertise in niche technical areas — particularly engineering knowledge combined with skills in C++, Unreal Engine, and 3D modelling. That combination is rare but essential for our work in virtual reality training for the glass manufacturing industry. We don't just need coders; we need people who understand real-world engineering principles and can translate them into accurate virtual simulations. In terms of AI, while it's not a core skill right now, we anticipate its importance growing in the future, especially if it becomes more viable for automating coding tasks. "

While the consensus amongst South Yorkshire employers was that AI was 'inevitable' or 'foundational' to the future of work, there remains a degree of caution in its adoption. Some businesses highlighted the need for further education on how to most effectively utilise the technology as a driver of growth, whilst others cited the longstanding perception of AI's impact on the workforce.

"I think from an internal perspective we think there's much more we could learn about it; there's some stuff we don't know and then [equally] we don't know what we don't know."

"I don't see AI as a reason for us to have less people fewer people. I see it as a way of making the people who are working for us more value added."

Future skills needs

Firms were asked what future AI specific skills are important for their workforce and how might this affect their investment in skills and their requirements of providers. Given the variety of employers consulted and the extent of their AI use, discussions focused on general, technical, and transferable AI skills.

AI specific skills needs for new and existing staff

In relation to current and future ambitions for AI, employers were asked about AI specific skills required both for new employees and their existing workforce.

General AI tool usage and application skills were mentioned frequently. These centred on the awareness and ability to use AI tools effectively, understanding how to prompt and guide AI outputs. Examples of this included the use of AI in design and marketing, in educational settings and in conducting manufacturing readiness assessments.

"When we think about AI skills, particularly from a business point of view, it's the stuff that people can see. The stuff that is visible that they tend to focus on. So, it's easy to say AI skills is being able to use chat GPT. Now that is what it is but it's being able to understand how you ask the right question of chat GPT to get an answer. And adoption is then about how you build chat GPT into your business. And that takes a certain level of skill and an improvement in literacy,"

"For our current employees, AI skills are not a formal requirement, but we do value a strong understanding of how to use AI tools effectively to support their work. For example, two colleagues regularly use AI for content generation, image creation, and research tasks. They're not using AI to write production code yet, but they're exploring its potential. The key skill is knowing how to prompt and guide AI tools to get accurate, useful outputs - not necessarily deep technical knowledge of how AI works under the hood."

More specific technical AI skills were or may be required by those businesses at the forefront of AI adoption. This related to software development and programming, machine learning and the use of large language models as well as data analysis and, for one employer, AI integration with cybersecurity. Several firms sought more sector-specific or functional AI use Examples include AI in the context of aerospace engineering, game development and simulation, marketing analytics and targeting or in user experience research. A few firms were considering new AI related roles or jobs with AI responsibilities.

"We are considering looking for a recruit for software development to support doing a lot of the automation internally and understands how to use automation and an AI, but that may well be not necessarily someone who's already got the skill set, but someone who's coming in to be trained as in an apprentice."

"At this stage, we don't see AI skills as essential for new recruits - our immediate needs are focused on core technical skills like engineering, 3D modelling, and Unreal Engine development [a 3D computer graphics game engine]. However, having a basic

understanding of how AI tools work and how to use them for research, content generation, or workflow optimisation would be a bonus. In the future, as AI capabilities in coding and simulation improve, we may look for candidates who can integrate those tools effectively into our development process."

Transferable and applied AI skills

In the context of AI employers were asked to reflect on the transferable and applied skills of their workforce. This related to the more directly linked knowledge and practical real-world examples of using AI, and the wider softer skills that are aligned with its use (covered in more detail here).

These reflections contrasted with the technical AI skill sets focused upon in the previous sub section. Given the constant evolution of AI and the scale of opportunity in relation to its adoption, employees who took a 'learning through experimentation' approach towards AI were highly valued. This related to both the range of AI tools used and the scope to which they are implemented within the business.

"We just encourage that approach of 'be curious and go for it'. I encourage people to make mistakes, because if they're not, they're not really stretching [the limits] of AI."

"It's essentially the willingness to try things. I like people who take on responsibility and have that adaptability and reliability to go and try it, figure it out, see what AI can help them do."

Employers also placed emphasis on staff keeping up to date with AI trends and cultivating internal knowledge and sharing good practice. Some saw these characteristics as important as technical competency. This was especially the case within organisations where AI was not yet fully embedded. Here there was a desire for a bottom-up approach to AI adoption.

"It's evolving so quickly. There will be roles in the future that have an AI element without a doubt so I think probably we need people with skills to be able to unpick that data and to understand the landscape and the opportunity, because if you don't know there's an opportunity there, you can't take advantage of it. So, it's about making sure that we've got people in the business who are keeping abreast of AI trends and understanding how they relate to the business and what that can open up for us."

Artificial Intelligence skills pipeline

Following the review of South Yorkshire's use of AI and future ambitions, this chapter looks at the skills pipeline. It explores the role of formal qualifications and apprenticeships in meeting skills needs and highlights recruitment challenges in areas including technical engineering, sales and the use of AI in applications. It also considers how to inspire the next generation and strengthen the skills pipeline whilst reflecting on the extent to which employers currently partner with education and training providers and their willingness to do so in the future.

The role of formal qualifications

Businesses are finding that formal qualifications are less of a pre-requisite when recruiting than previously. There were comments that the job market is oversaturated with degree-level candidates and more alternative pathways were available. Most employers noted that although qualifications are still of value in relation to the routine use of AI, they hold less weight with the importance instead being on the understanding of AI and how to use AI tools. However, for certain technical or senior roles, qualifications remain essential and respondents within industries such as engineering and data science acknowledged this.

"[Lawyers] will definitely benefit and rise through the ranks faster if they have a more comprehensive understanding of the different AI solutions that are out there."

Further to this, employers consistently emphasised the role of soft skills and attitude when recruiting. With the rapid development of AI, employers are increasingly looking for adaptability, problem solving and curiosity in candidates with many understanding that technical literacy comes through practical learning and experimentation. Despite formal qualifications being extremely beneficial in building foundational knowledge in a particular subject area, it was suggested that many digital skills are best advanced through real-world application often through trial and error helping improve understanding. Clearly this is particularly well suited to courses with on-the-job training such as apprenticeships.

"What matters more is whether someone can think critically, understand technical documents, write risk assessments, and apply themselves across different areas."

"A solid academic foundation is helpful, but real-world skills and adaptability are what we prioritise."

Many employers reported positive experiences with apprenticeships and vocational pathways. Particularly within IT, digital marketing and engineering, the investment into apprentices is extremely valuable and several employers successfully expanded their teams, noting how useful it was to be able to put them through industry specific training.

"We're quite a strong advocate of apprenticeships… there's been times in the recent past where we've had an apprentice on every team, we're very strong believers in that because I think within digital marketing, it's a really practical hands-on way of learning the skills, they get to learn those skills working on real client accounts."

"We've often grown our team via apprentices… soft skills and the right attitude are probably more important than traditional qualifications."

Despite apprenticeships being a respected alternative route, three employers raised concerns or criticised them. For one business, there was a frustration with the levels of compliance required from an administrative perspective which left them feeling that the level of education itself consequently suffered. Another expressed openness but noted that the funding was a barrier.

"We walked away from apprenticeships because all the compliance took away from what our skill and passion is and that is the delivery of training to the learner."

The AI landscape is constantly evolving with new models and technologies emerging making it difficult for qualifications and certifications to keep pace. Some businesses expressed their concerns that the current curriculum is outdated and criticised the provision of AI specific education. The gap in education creates challenges for employers aiming to build the knowledge needed to implement AI effectively with candidates not having the opportunity to develop AI skills and learning.

"We'd be looking for governments to get the exam boards, of course, to get qualifications that recognise that these skills are important so that we can certify our students. We want to offer a very enriching experience for our students, and we recognise that they need a lot more than the content that's delivered through the government's qualifications."

Traditional interview techniques may not be suitable for candidates to demonstrate their technical capabilities for roles with an AI component. One employer highlighted that their assessment is made on performance in the interview and how the candidate fits within the team's culture rather than judging qualifications. Another took a more hands-on approach.

"We do various exercises as part of an interview process from problem solving to implementing some code as well and we find that's the best way of teasing out people's experience."

Hard to fill vacancies

Most employers reported they did not currently have any AI-specific vacancies that they are struggling to recruit for. This is largely attributable to the fact AI technology is relatively new and, for many organisations, yet to be embedded into roles or the workforce. Employers noted instead they had focused on upskilling their existing employees with the expectation that as the AI landscape develops and its application within operations becomes more clear, specific roles will emerge. There are currently few wholly AI roles being advertised by consultees.

"We've not recruited anybody AI specific, we've just been sort of upskilling existing team members… I can't say we've gone out to market to say we're looking for somebody for somebody who's got strengths in an area of AI, that's probably something for the future."

Generally, of those employers using AI, the hardest vacancies to fill were highlighted as being in more specialist technical areas particularly within engineering. These roles often require strong technical skill along with industry-specific knowledge meaning the pool of candidates is much smaller. One employer in the engineering industry expressed their challenges in finding people with the necessary blend of skills highlighting further how a solid foundation is crucial, but individuals need to have the ability to move into coding. Additionally,

sales and middle management roles were mentioned by employers as continually difficult roles to fill.

"Finding people with both technical accuracy and domain-specific understanding is a major recruitment barrier."

Further to this, employers raised broader concerns surrounding the impact of AI on the recruitment process itself rather than vacancies. The increase in AI-generated CVs creates challenges for employers when recruiting as it is harder to identify suitable candidates. One business also reported issues with AI-driven recruitment agencies citing that it led to extensive numbers of applications that become impossible for employers to sift through.

"The recruitment process is now being largely pushed by agencies by AI because it seems to be the most effective, and that becomes quite a challenge from an employer point of view… and you cannot use AI to process them because that would be against GDPR."

Inspiring the next generation and developing the skills pipeline

Employers were confident that future generations would enter industry with an understanding of AI and a willingness to work with it. Employers shared practical examples based on personal and professional experiences on how best to inspire future generations and develop the skills pipeline. They highlighted the significance of practical experience, role models, early engagement, industry partnerships, and the identification of skills gaps and career pathways.

The provision of work experience and 'real life' experiences was regarded as a priority for inspiring the next generation and offering insights into industry and the use of technology in business. Apprenticeships and placements provided an opportunity to instil expectations around professionalism and punctuality.

"It's that kind of real work, real life exposure and just making sure that what they're learning in a formal setting, they can actually put into practice in a live work environment."

The concept of role models was mentioned by numerous employers. They felt that sharing personal career journeys including unconventional routes helps inspire young people, especially in industries that might be less obviously attractive to young people. Examples included mentoring work placements/apprentices, as well as guest speakers going into schools, colleges, and universities to showcase their experiences and the opportunities available within industry. For SMEs with capacity and resource barriers, support through education partnerships would help.

"I showed what opportunities my job gave me. I then described what that career journey could look like, and then what I've been able to achieve as a result."

Some employers felt there was a disconnect between career aspirations of young people and the reality of industry needs. This was a particular challenge in younger age groups. Employers felt that the best response was early engagement, through developing industry-education partnerships with primary and secondary schools to help broaden horizons. This included introducing a variety of roles, connecting students with real opportunities, matching skills to job roles, and highlighting careers that make a tangible difference.

"Show that it is exciting and impactful, so you know, we would find a lot of people are interested in our business because we are not just another insurance company doing something with risk. We're doing work that benefits society."

Provider engagement

Employers had a range of strong partnerships in place with education providers. Partnerships vary from networking and informal links through to formal programmes, most of which have emerged through local networks, chamber activity, and community initiatives. Activity within these partnerships varied dependent on education level. Collaboration with schools often involved businesses delivering STEM ambassador programmes, engaging students in projects, and employer-led learning days. Partnerships with colleges predominantly involved employers offering work experience placements and apprenticeship programmes. While, at university level, employers are delivering guest lectures, providing industry placements, delivering and participating in AI roundtables, and recruiting directly from universities.

Many employers are engaging in such activity for not-for-profit causes, such as social value. For example, many businesses had industry-education partnerships in place with a primary emphasis on aligning academia with industry needs. Ensuring learning outcomes become more practical and relevant to the needs and skills gaps within industry.

"One of the first things I did was build a relationship with the university…I'm very keen on bridging the link between industry and academia."

Some employers engage with specific groups of young people with additional needs such as special educational needs and disabilities. This engagement involves outreach activities such as technology challenge days, and co-creation projects (e.g. animations about autism).

"For more personal reasons than anything else we've focused in on young people with additional needs…so special education needs and disabilities."

"We don't necessarily do it for aiding our own recruitment…I do it purely because it's a good thing to do."

Most consultees presented a wide range of best practice in this field, with the activity mentioned, along with many employers sitting on boards of governors at local schools, colleges and universities. However, some identified the need to balance goodwill with business realities. Many large firms identified that most of their engagement was done out of goodwill, however, a reliance can't be placed on these employers, and in many cases particularly for smaller businesses there needs to be mutual benefits or incentives. Some of the smaller businesses with capacity and resource limitations identified that they'd generally be open to collaboration if it was to help develop the talent and skills pipeline tailored to their recruitment needs.

"*We are not actively working with providers now, but open to collaboration if it helps develop talent with the right mix of engineering knowledge and digital skills tailored to our niche."*

AI is playing a more integral role in industry-education partnerships. AI is being viewed as an important and growing skill area, with some employers having an interest in hiring AI-specialised graduates in the future. Employers wanted the education and learning system to adapt and shift towards teaching AI much more routinely within curricula.

"AI should be changing education…there will not be a child out there in school who isn't using it in some form."

Training the employees of tomorrow and offering the skills for today

This chapter looks at employer approaches to training and offers some insights for providers on training provision. It highlights how businesses are keeping pace with the rapid evolution of AI and the role of soft skills. It reflects on areas of best practice in relation to employment, skills and training and concludes with the potential for future AI business-focused offers.

Training models and the AI support landscape

Across South Yorkshire, the availability and visibility of AI support varies widely. While there are pockets of expertise, many organisations depend heavily on internal knowledge, self-directed learning, and personal networks rather than on established, clearly signposted support systems.

A strong thread in the interviews was the belief that AI adoption begins internally through curiosity, trial, and problem-solving with outside help sought only when a clear need arises.

"Pretty much an internal thing, which is generally where we start. We usually start with an itch that we scratch, and then as we get further along, we identify where we can access support that will speed that process up. I'm comfortable in my ignorance and my willingness to fail and learn… I would love to sit down with somebody who knows what they're doing and learn from them, but at the same time, I have no fear."

"We've got enough clever people internally. I'd go to my network if I needed to. Other people out there are also embracing AI, and maybe I'll talk to them if I feel they're more in their comfort zone. I met a guy yesterday who's started an AI-driven business…I'll go and have a chat and learn from him."

For providers, this highlights the importance of engaging with businesses before they actively seek external help with AI. Many early adopters are confident experimenters, but they still face moments where expert guidance could accelerate their progress. Making that expertise visible and approachable at an early stage would help convert latent curiosity into structured implementation.

Some organisations do tap into structured support, often via professional networks, industry associations, local business groups, or council-led initiatives. Yet awareness of these channels is uneven, and several consultees described the AI support landscape as fragmented and difficult to navigate:

"It would be really useful if there was something available from either the government or from industry that was able to advise on the use of AI and support people in developing that. At the moment, it's essentially best practices from credible sources, and then trying to adapt that for our context."

"It's knowing where to start… I wouldn't have a clue, to be honest. I know we need servers, I know we need a computer and some software, but I can't link any of them together. I'd need some external knowledge."

Several organisations raised concerns about the limitations of vendor-led training. While useful for understanding a specific platform, it can leave gaps in understanding and can be hard to apply wider strategic thinking:

"I don't think we can rely only upon training from vendors, because that's specific to how AI is implemented within their products, which isn't necessarily giving a wider understanding."

"We've done AI training that was about 50% useful, the sales process side was great, but the rest was heavily focused on Microsoft tools, and we're a Google-based business. It just didn't apply."

This demonstrates that there is a need for independent training that isn't tied to one product, helping organisations plan their AI use whatever systems they have.

Interviewees also recognised that the sub-region has a strong base of digital agencies and technology companies capable of delivering AI-related services, but these tend to be positioned as bespoke consultancy rather than packaged products. While this flexibility can be valuable, it can also be a barrier for organisations looking for something off the shelf:

"The city (Sheffield) has always been strong in digital agencies. They may not talk about AI, but they're exactly the kind of people you want to help you deploy it, find the right thing, or build a custom application. The issue is that it's presented as consultancy, not as a product. Many people want something they can just buy."

"Other cities with stronger funding ecosystems are better at turning out companies that provide AI products. That's okay we just need to recognise that AI isn't always something you buy from a website; sometimes it's about getting advice and expert ideas to build what you need."

In summary, the current AI offer in South Yorkshire is rich in talent but lacks clear signposting. Much of the existing expertise is hidden in informal networks or embedded in consultancy models that are not always visible to potential adopters. Businesses often progress through experimentation until they hit a barrier, at which point they may struggle to find the right help quickly. For providers and brokers, the opportunity lies in being visible in those early stages, offering guidance that is both sector-specific and product-agnostic, and presenting services in ways that are easy to understand, access, and implement.

Keeping pace and the importance of soft skills

Across South Yorkshire, employers see keeping pace with new technologies, especially AI, as an ongoing journey rather than a one-off task. There is real enthusiasm about the possibilities, but also a clear sense of how fast things are moving and how hard it can be to decide where to focus. Many said the sheer volume of information available about AI can be daunting and make it difficult to know where to start.

"I follow certain people who are really specialised in AI… and every time I look at it, I think, wow, that's just overwhelming with the amount there is to know. Even I don't know where to start. That's why I value having a place I can go like workshops, webinars, regular updates from somewhere I trust so we're not left trying to figure it out alone."

Some organisations deal with this by making AI part of everyday work: rather than treating it as a distinct activity, it is being built into existing processes and ways of working.

"If you try to keep up with everything, you'll get lost in the noise. What works for us is weaving it into how we already work. Every new project starts with research on the best AI tools, the newest processes. It's not an extra task; it's part of doing the job well."

Others set aside specific time and resources sending staff to conferences, arranging supplier training, or allocating work hours for exploring new tools. Smaller businesses sometimes rely more on curiosity and individual drive, with staff encouraged to try things out and share discoveries with colleagues.

Some companies have found value in letting knowledge flow both ways. Younger, more tech-confident employees often show senior colleagues new tools or ways of working, while experienced staff share the judgment and decision-making skills that come from years in the industry.

There is a clear role for training organisations to act as trusted guides for navigating the AI ecosystem. Employers want someone to make sense of the noise and give them focused, practical updates. Blending AI technical skills with the ability to adapt and creating ways for staff to learn from each other across generations, would match the needs expressed by many businesses.

If keeping up with AI is the first challenge, the second is making sure people can work well together in this changing environment. Employers stressed that AI and automation can do a lot, but they cannot replace other human skills that keep relationships, teams and projects on track.

"Although we're in a technical industry, we're actually a people business. Our job isn't just fixing a problem it's dealing with the person who has that problem, in a rational, human way. You can have all the technical ability in the world, but if you can't talk to people, you'll end up with unhappy customers."

This focus on people applies inside organisations as much as it does with customers. Some employers worry that working with new systems can isolate staff, so they are keen to keep teams connected and talking to each other.

"People who are going to train on new systems might feel a little isolated at first. It's important to keep them connected and talking to each other, sharing what they're learning. Otherwise, you risk the technology creating silos."

Many also linked people skills to trust and credibility both inside and outside the business. Strong communication skills help explain complex or technical AI ideas in a way others can understand. Critical thinking was another priority, with some warning that AI outputs should not be accepted at face value. Being able to question results, explain why they might be wrong, and suggest alternatives was seen as vital.

Company culture shapes how these skills develop. Some businesses make a conscious effort to promote empathy and understanding, encouraging staff to see colleagues as individuals rather than as job titles or labels. A few noted a generational difference: younger recruits may be confident with AI technology but less experienced in face-to-face communication, while older staff may be the other way around. This mix means both groups have something valuable to learn from each other.

People skills should help shape training programmes. Practical exercises that mix technical and human challenges for example, explaining AI results to a non-technical audience, or leading a project team with both remote and on-site members can help staff get better at

using technology while keeping collaboration strong. Offering opportunities for different generations to share knowledge could also build confidence on both sides.

Employment, skills and training best practice

South Yorkshire employers using or exploring AI told us they hire for potential and build flexible, neurodiversity-friendly environments because those conditions accelerate upskilling into AI-enabled roles. They cautioned against over-automated CV screening that overlooks non-standard talent, preferring practical tasks or short portfolios that show how candidates approach real problems often including an AI-assisted option alongside a from-scratch one.

Several employers also said “grow your own” is paying off as AI reshapes work. These employers are using apprenticeships and placements to move people into analytics, automation and AI-assisted content roles. Training is sequenced to confidence: people take formal courses when they’re ready, with study time and mentoring built in; meanwhile, real project work gives hands-on practice, so they become productive with new AI tools quickly.

Employers and providers are making the path from learning to work explicitly AI-fluent. Live briefs during the academic year now include data handling, prompt design, and basic model-use standards so learners experience the tools, deadlines and quality standards they’ll face in the workplace.

“We are offering real-world experiences with real employers and getting people ready to walk straight into work, not just a purely academic experience…every learner takes part in employer projects during the year. The relationships with industry are strong and that’s what makes the offer feel different and valuable.”

Employers also emphasised that continuous, visible investment in skills keeps capability rising as AI tools shift. Teams typically set goals monthly, celebrate completed courses, and fund role-relevant certifications (from AI literacy and data protection to platform badges) alongside bite-size internal sessions. Progress is shared so people can see a future with the organisation.

“We set goals annually and review them monthly, training, wellbeing, development, it’s all in the check-ins, not once a year….we train people in what the business needs and what they’re excited by, and we put the certificates on the wall, so progress is visible.”

Transparency, internally and with clients, is part of the skills offer. Employers share the real state of the business so people can plan their development, and they’re explicit about when AI or outsourcing is used to protect reputation and set expectations on quality and price. The simple rule holds: if you wouldn’t be comfortable disclosing a method, don’t use it.

“We don’t hide results good or bad. People can only plan their work and growth if they know where the business really is.”

“If you don’t want to tell a client you’re using an AI tool, you probably shouldn’t be using that tool in the first place.”

Learning sticks when people get time and space to explore. Giving teams, especially developers and analysts, protected time for independent research and small experiments keeps organisations agile. Short workshops, hack-style sessions and fail-fast pilots (LLM

sandboxes, simple automations, data-quality checks) help strategies form around what works.

"We build in time for independent research so people can try new tech and show how it could help the business."

"Don't write a perfect data or AI strategy first run small tests, learn fast, and let results shape the plan."

Supportive structures help people stay and grow as roles evolve with automation. Monthly check-ins cover workload impact, training needs and wellbeing; approachable leadership and small, regular rituals keep teams connected and surface issues early.

"We plan social time as part of the rhythm and keep leaders approachable—little things, done regularly, keep the team connected."

"Check-ins aren't just about targets; they're also about training needs and how people are doing."

Inclusive outreach changes outcomes for those furthest from the labour market, particularly when basic digital skills and AI literacy are built into friendly, community-based support. Pairing specialist coaches with wrap-around help and a focus on confidence, alongside CVs, has moved young adults into jobs and training.

"A friendlier setting with targeted, wrap-around support gets people to turn up—and then move into jobs or training."

"Engagement rises when the space feels safe and human; that's when the skills work starts to land."

Internal capability rises fastest when everyone has a baseline in data and AI use, with clear next steps to specialise. Internal trainers, short role-based sessions, and easy routes to external certification give everyone a common baseline and multiple ways to progress.

"A dedicated internal training function brings everyone up to a common standard and speeds up onboarding."

"We mix external certifications with team-led sessions and reward the effort, people know how to get better and why it matters."

Engaging with AI support offers

Employers were asked how they would like to engage with future support designed to address gaps in AI information, knowledge and confidence. The options covered workshops and information sessions, bitesize courses, tailored online tools and resources, introductions to AI experts or advisers, keynote speakers, new training provision or courses, and support for leaders in developing their AI knowledge. The insights below set out what organisations said they would find most useful, why, and the conditions that would make them more likely to take part.

There is broad openness to engaging with every format when the content is practical, specific to sector and role, and easy to fit around the working day. Employers emphasised

that a single approach will not reach everyone and that a mix of learning modes is needed so people can choose what suits them best.

"We could be very interested in all of those, because there would be somebody within our establishment that would take advantage of all of it, to be honest."

"Workshops work, because we have a range of different learning styles within our business. Some of my team go online and find podcasts and modules and YouTube videos and all sorts of things, and they are good at picking up the knowledge from those. Others need to get a bit more hands on. And then some need to go away from the workplace and be immersed in it."

A clear difference emerged between organisations that already feel confident with AI and those that are still exploring their first steps. Confident adopters often see themselves as contributors as much as learners, and they want spaces to share practice while continuing to deepen their capabilities. Early stage adopters want orientation that can be quickly applied and grounded in real work.

"We are very well placed to provide a lot of support in terms of using it in the workplace, efficiencies, things like that. If the support existed and we thought there was a knowledge gap internally, accessing that would be something that we would do."

"Show people how to use AI in a secure, ethical and compliant way. Help them experiment with AI and assess the productivity gains. There are a lot of people who are interested but do not know where to start."

Rather than emphasising general awareness, sessions should be framed around specific, practical outcomes. Employers want to know exactly what the session will help them achieve and which tools or techniques will be introduced. By defining the scope clearly and showing how it applies to a particular work flow or problem, employers feel sessions would demonstrate immediate relevance and make it easier to justify their investment and time.

"For that to be successful the message needs to be clear. Come to this workshop because we are going to show you how to do something specific rather than just saying come and learn about AI. You might get a few technical people there, but you are not necessarily going to speak to everyone. It is getting an offering together that has a little bit more meat on the bones."

"I need to know what that AI actually is. Is it a workshop on ChatGPT? Is it a workshop on vision systems? If it was tailored to our field then yes."

Short, focused courses appeal to teams that need learning they can act on straight away without being away from their day job for long periods. The preferred structure begins with clear orientation and quickly moves to live examples that show how similar organisations have already applied the ideas.

"What is AI and how can I use it in my sector? Then how I have used AI in my sector. That is quite distinct. That sort of knowledge transfer is where we are because everybody is playing. I am not seeing a lot of that knowledge transfer going on at the minute."

Tailored online tools and resources are valued as a practical complement to live sessions. They help time poor teams, support dispersed workforces and allow people to revisit materials when they need them. Employers still look to in-person encounters for inspiration and for the networking that helps ideas take root.

“Online resources are probably useful if they are practical. But in terms of inspiration, you cannot beat face to face seminars and speakers that also offer a networking opportunity. They bring businesses together and there is a shared experience and that is always helpful.”

“Workshops, online webinars, online courses. It is a mixture because everybody learns in a different environment.”

Introductions to experts and advisers are seen as especially helpful when those experts understand the realities of a given sector. Employers prefer support that continues beyond an initial event and allows them to test ideas with someone who knows their context, with clinics and small peer groups frequently mentioned.

“Intros to AI experts. Yes absolutely. You would have to be in our field for sure.”

“We are in the process of doing that already and it may be that we could deliver some in partnership. It is something we could look at working on together.”

Keynote speakers are most valuable when they form part of a wider occasion and lead naturally into practical follow-on activity. Inspiration has a place, especially for audiences that are uncertain, but it works best when it opens doors to hands-on learning and real-life examples.

“We would go to a keynote if there was an event on. We would happily go to it, but we probably would not have one just for us.”

“People are still wary and perhaps a little bit unsure, but when you show them that it can just be a friendly utility and these are the things you can do with it, that helps.”

Leadership support is regarded as essential. Employers want structured help for senior teams to set direction, commission safe experimentation and empower internal champions who can carry learning across the organisation. They also asked for model policies, ethics guidance and places to compare approaches with peers.

“We should have someone that is a champion of understanding AI and the advancements of it. Then that knowledge is shared internally across the greater team.”

“It would be nice to have a shared policy that someone else had done and we adopt that. Maybe someone to interface with to explore the problem and collectively go right, this is the environmental impact and this is best practice.”

A small group felt confident to continue learning independently for now, usually because they already track tools closely and have not faced problems they could not solve. For many others, willingness to engage depended on the value they expected to receive, the quality of delivery and a clear link to business outcomes.

“We like to research what is new on the market ourselves. We have not had a problem that we have not been able to solve, so it is not an area that we are currently lacking.”

“It depends on the content and the expected outcome. If it is something that is going to benefit me as a company then yes. It depends on the level of maturity, the delivery format, the outcome, the cost and the quality of the provider.”

Future Outlook

This final chapter looks at the barriers to AI integration and development and the risks and threats it poses. It reflects upon how South Yorkshire's business base have avoided bias in AI adoption and technology development and considers how partners can best support business needs.

AI barriers

As with all new technology and systems, a lack of knowledge is the greatest barrier to AI adoption and embeddedness. This challenge was felt across different business sizes and sectors. Understanding specifically how AI can be beneficial for business processes was highlighted as a major challenge, with the majority of those not in the AI sector already stating that they do not have a strong understanding of the multiple functions of different AI software.

Whilst some thought of AI as a purely generative piece of software, with ChatGPT and Copilot being common but limited examples of use, few felt comfortable articulating how different agentic AI models and processes could be applied to more advanced business operations. To improve awareness of the potential uses of AI in the workplace some businesses would like to better understand the links between different AI models and business processes. Though very few businesses discussed actively choosing not to use AI, AI readiness in terms of progressing from individual use of ChatGPT, Claude and Copilot towards more systemised and standardised AI use was a barrier due to a lack of knowledge.

"The biggest barrier is most people don't know what [AI] can do or what it does, so it's not really a barrier to them adopting it but they don't actually know that they could adopt, so that the education piece is massive."

Interviewees stated that younger people who have grown up with AI are typically more confident in identifying the uses for AI. Though this is somewhat of a generalisation, it could be suggested that given early exposure to AI, young people moving into the workforce may be more confident in the use of AI. Businesses with an older workforce therefore may experience greater difficulty in adopting AI due to an increased likelihood of a lack of familiarity with AI models.

"The younger generation far exceed the knowledge that we have in this topic area, we're going to have to move with the times and be aware of what is happening in this space."

Another barrier to AI adoption and progression within businesses in South Yorkshire is a resistance to training. Scepticism regarding the capability and accuracy of AI and a fear of being outperformed by AI contributed to a reluctance to embed AI in daily practice. This was especially true of those working in data engineering and code. It was also a concern for those working with AI within diverse communities, stating that accurate, human interaction is key to establishing a meaningful dialogue, transparency and trust. However, one business identified thar fear and resistance are often a natural part of shifting technological processes, and that adequate communication, reassurance and training can result in people developing a more confident relationship with AI.

"I think that from an employee perspective it will be that…you're a turkey voting for Christmas."

"Like with all these things, you might see a resistance. … and I think I'll be the same [with AI]. There'll be that fear, resistance and [then] acceptance."

Eight businesses referenced barriers in relation to market uncertainty. Economic and political instability has affected business priorities, with some highlighting that it is becoming increasingly difficult to invest in long-term opportunities such as AI that will require upskilling and bespoke development. They are instead focusing on short-term issues. This suggests that whilst businesses may be willing to adopt AI, low confidence regarding return on investment, especially as businesses costs are increasing, is a major barrier to adoption.

"What we've seen during more uncertain times is people still want to do it [adopt AI], but they're very hesitant to commit [and] to spend and so on, that's always been our challenge."

This was further emphasised by two businesses who highlighted clear gaps in relevant support. This was particularly evident for those working in more specialist sectors such as material manufacturing, digital infrastructure and cybersecurity. It was felt that there is a lack of bespoke educational opportunities for these businesses, resulting in slower adoption.

"There may be an [intervention] which is relevant to certain businesses, and they'll just keep on progressing further away from the rest of the business stock. Support needs to be in place. There are things like Made Smarter in manufacturing, but what about non-manufacturers?"

AI risks and threats

Data security was the most frequently highlighted risk of AI, with 17 businesses identifying this issue. There was a concern that AI adoption could make an organisation more susceptible to hacking, with one business citing the recent Co-op and Marks and Spencer's breaches as a reminder of the importance of strong cyber security and ensuring a human-element of control over matters relating to sensitive data.

"The way that these hackers got in [to Marks and Spencer's] was via AI. Imagine, there's two people in the room currently. There was a call where there was four people, two of them weren't real people which is mad. There are things like that flying around, so there's always going to be loads of nervousness."

"We deal with a lot of people's personal information; they're putting in their address, phone number, e-mail address, credit card information…That is kind of nerve wracking for us because we would never want anything to happen, any breach or anything like that, that would put us and the clients in any danger."

Concerns were not just related to the fear that hackers could break into data but also reflected a fear that AI could result in sensitive information leaks. Data leaks and a lack of control over where and how company data is used was highlighted as a key concern for many, especially for those working with confidential or personal information. Whilst disabling settings that allow AI to learn from inputs, and regulating the type of data inputted were highlighted as steps already taken by businesses to reduce the risk of losing control over data storage, standardised internal policy was sometimes lacking, fuelling data leakage concerns. More education on data protection, regulations and the storage of digital data could benefit businesses in South Yorkshire.

"It's an intellectual property business so we want to make sure first and foremost that we don't leak IP into the public domain via this means."

"I want to talk about what's out in the public domain, how it's used and how it's abused."

The second most common risk cited was discussed by 15 businesses and related to the inaccuracy of generative AI content. Though results often sound plausible and professional, the output of AI is heavily influenced by the input and the sources the programme draws from. As such, information collated by programmes like ChatGPT can present incorrect information as accurate, requiring careful questioning and unpicking. If the content is taken at face-value, there is a strong risk of onward transmission of incorrect information. Whilst these risks can be negated by critically analysing output, some businesses discussed their belief that the use of AI can lead to a reduction in critical thinking, with employees becoming too dependent on AI generated outputs. A perceived risk of a drop in quality regarding products or services has therefore led to some local businesses expressing hesitancy in embedding AI.

"The immediate risks that we've seen is [people] becoming too dependent on the answers that AI give you and not recognising that it might not always be the right answer."

"If you ask [AI] for something, it's intention is generally to help you so it will conjure up stuff that helps you, even if it's not rooted in fact."

The third most common risk, cited by 11 businesses, focused on the belief that AI could result in job loss, a fear that could contribute to low workplace morale. Whilst the increase of automation largely impacted people in elementary occupations, the development of AI will likely impact those working across all occupational levels, from those in elementary work to those in managerial and technical roles. As such, the fear of job losses is pervasive across sectors and seniority. Businesses could envisage a future of large scale unemployment, poverty, and a loss of human uniqueness and creativity. Though the positives of AI were acknowledged during other stages of the consultation process, with many using programmes like ChatGPT or Copilot at least on a personal basis, there was a strong sense of concern that AI may devalue, not enhance, people's skills.

"Some people scared to death, that they're going to lose their jobs …they know that part of AI is, can you do it quicker? [There's a] psychological and mental aspect to it, where a lot of people are scared to death. I think from that point you've got to worry on the workforce."

"What concerns me is the use of LLMs and anybody generating content and then putting that content on LinkedIn and it's clearly been written by an LLM[21]. For me that absolutely devalues what we do as a business."

Avoiding bias in AI adoption and development

Businesses working in developing and creating AI products and services identified the importance of taking a standardised and systematic approach to avoiding bias in AI. This could include internal frameworks or policies or following sector specific guidance. There was an acknowledgement that bias quite often exists in pre-trained models, with those involved in the training AI often using regulated or standardised content.

Biases in official datasets were discussed with demographic imbalances and historical omissions continuing to impact current data. This is especially true in the case of protected characteristic data, which may require rebalancing or bias auditing. This method of bias mitigation does require greater technical know-how, with those adopting or looking to adopt AI may be at risk of using biased data.

[21] LLM – Large Language Model

"A lot of these are big platforms that are owned by certain people that may have a vested interest in how these systems perform and how they bias them…AI is more of a Wild West whereby things can get manipulated, can be subtly controlled and you may not even realise it."

"There is an educational need for people to evaluate the outputs of AI systems and compare them against protected characteristic data from the Data Protection Act, and … see if they're giving bias of one form or another."

For both those adopting and developing AI, the importance of internal policies, frameworks and guidance was highlighted. Some companies discussed limiting the number of AI applications used, for instance only permitting the use of Copilot but no other forms of AI. One company has blocked the unauthorised use of ChatGPT on workplace devices, showing the clear step taken to prevent the use of systems that could introduce bias. In the instance that a company has an AI policy, acceptable AI platform use is often dictated clearly within the policy. For those working with LLMs or agentic AI, businesses need to align with regulatory frameworks such as those set by Ofqual to ensure the use and development of AI is safe and unbiased.

"We're training our own large language model specifically for education, specifically with the exam board materials and with the educational books in terms of theories of education to help with planning tools."

The most common mitigation strategy used to avoid bias in AI is the use of human oversight and critical assessment. Whilst some companies use AI to generate social media posts, emails and business cases; very few feel confident in posting or submitting artefacts produced solely by AI. Those with expert knowledge in an area are often called upon to review AI generated content or critically analyse the outputs of LLMs. As noted earlier being able to create effective prompts, reframing queries or sense checks, often by asking specific or standardised questions to an AI model is an important part of adopting generative AI.

"The data and information that gets thrown back out of large language models needs picking apart. It should not be accepted verbatim as truth. It needs critical analysis and critical thinking to ensure that it is accurate, that it's not defamatory, that it's not in in breach of copyright."

"You can utilise AI, but it's not the finished item. I think everything needs that human proof element over it. We've got a good in-house counter approval whether it's AI or not AI."

The ask of training providers

A third of businesses operating across a variety of sectors discussed the importance of tailored support that highlights how AI can be used within their business to improve operations and increase productivity. Businesses that are developing or are creators of AI typically offer this service, with many of those operating in the AI sector understanding that businesses may need specific or tailored training to make the impact of AI seem tangible to their day-to-day activity.

Seeing AI in practice through business-specific training can also increase confidence in AI software, making adoption more likely. This is specifically the case when a business is looking to adopt generative AI software as opposed to agentic software, with those working in complex sectors such as Advanced Manufacturing, feeling that generative software can lack the "*meat on the bone*" that is needed for more high-level operations. To improve the AI offer

to businesses, organisations would like to see training providers consult more frequently with industry bodies to gain a deeper understanding of how to tailor training content to need.

"The single most important thing training providers could do to better meet our AI needs is to offer highly specific, industry-relevant training... Generic AI training isn't that useful to us. What we need is targeted, technical support that helps us bridge the gap between AI and the niche engineering requirements the [sector]."

"Have a more specific goal. Instead of, 'we want to help support businesses adopt AI', narrow it down into something that you can track that's manageable. 'We want to help these types of businesses do this in their business and we're going to create a training for X, Y and Z'."

The importance of awareness raising was also highlighted by businesses that are looking to adopt or have recently adopted AI. Further demystification of AI is needed to support businesses to adopt the models most applicable to their organisation. To support this, businesses highlighted the potential role of the chambers and others as convening bodies, signposting organisations to businesses that create, develop or supply AI services and training. Signposting to organisations that can support AI adoption was seen as vital, with some businesses that had not yet embedded AI into their operations discussing a fear of being left behind or being unable to keep pace with further changes in their industry.

"Some people are ultimately ignoring AI for now, which is it's fine, but it's coming up everywhere.… the key thing in all this [is] bringing some of that straightforward information to the surface in a friendly, accessible way… [businesses] in the slightly more antiquated or traditional industries many probably won't know where to start."

Eight businesses explicitly discussed the importance of financial support for businesses looking to adopt AI. Subsidised training could encourage experimentation with AI within SMEs, supporting them to trial different models and AI systems. Businesses would also like to learn more about possible grants, assistance with purchase agreements, deals available from providers and creators of AI services to make the adoption of AI more financially viable. For those who have embedded AI, support to pay licensing fees would be appreciated. AI resources could be pooled or AI infrastructure shared amongst smaller firms to enable them to keep pace with some the larger, faster developing players.

"Especially new businesses who don't have set models and are smaller, they can't really afford to adopt it as early or as put so much money and effort into it."

Despite some concerns, there is a clear appetite for AI adoption across businesses in South Yorkshire, with many becoming acutely aware of the potential advantages AI can bring in terms of productivity, efficiency and cost effectiveness. Additional opportunities for training, building on the services of those already providing AI to businesses in the sub-region, would help to consolidate the benefits of AI adoption, providing tangible, industry-specific outcomes for those looking to use AI more frequently. With innovative tech businesses and academic institutions based in Sheffield, the region is well-placed to harness to potential of AI, highlighting the importance of raising awareness of uses, providing meaningful opportunities for training, and supporting smaller businesses to keep pace with technological advances.

Appendix one: consultees

- 10xMarketing
- 24IT
- AAG
- Abbeydale Training
- Altitude PR
- Ambispace
- Balliante
- Barnsley Council
- Bravand
- Brook Consult
- CBM-Logix
- Chellan
- CIA (Cyber Intelligence & Advisory)
- Clyde PC
- Compleat
- Connectus
- Courtyard Sheffield
- DeeperThanBlue
- DigitalXRaid
- Dolphin
- Economit
- EnsioVision
- Enzygo
- Everyone Active
- FluidOne
- Geppetto
- Gravitate Accounting
- HiveIT
- Hybrid Air Vehicles
- Iprosurv
- IT Helpdesk
- JibbaJabba
- MatterBee
- MultiWebMarketing
- Objective Creative
- Opteran
- Pendo.IO
- SEOWorks
- SUFC Community Foundation
- The Floow
- TheCurve.IO
- Tubr
- University of Sheffield
- Doncaster UTC
- VRMT
- YSF

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