Building the Evidence Base for AI Adoption in West Yorkshire

Final report for West Yorkshire Combined Authority

March 2026

Insight

Insight
Powered by the Growth Company

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Date:	06/03/2026

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Executive Summary

West Yorkshire Combined Authority commissioned GC Insight to develop a robust evidence base on Artificial Intelligence (AI) adoption among SMEs and across high growth clusters aligned to the West Yorkshire Local Growth Plan. This research will be used to inform the design of targeted interventions to accelerate adoption, close the productivity gap and position the region as a leader in digital technologies.

The UK economy continues to expand but at a rate far below historical averages, weighed down by weak productivity, fragile investment, and ongoing global uncertainty. AI presents major opportunities for economic growth and to play a key role in beginning to 'shift the dial' in addressing the UK's poor post-financial crisis productivity rates. The Government has recognised the potential of AI for the UK, positioning it as a frontier technology in its' Modern Industrial Strategy. The West Yorkshire Local Growth Plan also recognises that AI and digital technologies act as enabling capabilities that underpin growth across multiple priority sectors where the region has strengths, including healthtech, financial services, manufacturing and the creative industries.

There is extensive academic and industry research on global and UK-wide AI adoption and its potential economic impact. This study reviews and considers how existing research and data can be used to create economic forecasts and insights specifically relevant for West Yorkshire and its business base.

Estimating economic impact

Key Findings:

- Applying national estimates from the Tony Blair Institute to the West Yorkshire economy suggest a potential GVA uplift from AI of between **£0.6bn to £6.3bn by 2035**.
- Separate sector-based analysis shows that Business, Financial and Professional Services is expected to be one of the sectors where adoption and impacts are greatest. West Yorkshire's existing strength in the sector could lead to the sector adding between **£1.1 and £4.1bn GVA by 2035**.
- Advanced Manufacturing (considered as the wider Manufacturing sector for this analysis) in West Yorkshire could add between **£0.6bn and £2.3bn to GVA by 2035**.
- As AI is a relatively new and rapidly changing technology, the use of **range estimates is most appropriate**. Estimates reflect the uncertain variables about AI adoption and impacts, including the rate of adoption, the extent of labour displacement, and the sectoral composition of local economies.

Existing evidence instead relies on different forecast methods including task analysis, business surveys, and comparisons with previous innovative technology adoption. Sections 3 and 4 of this report provide an overview of findings from the research, and then outlines how this can be used to create approximate range estimates for the West Yorkshire economy.

Taking the findings and approaches from some of the most robust 'task-based' research studies, and applying different adoptions scenarios, the report finds a potential range of additional GVA for West Yorkshire of between **£0.6bn to £6.3bn by 2035.** The overall impact of AI adoption depends on the rate of adoption, the extent of labour displacement, and the sectoral composition of local economies.

Applying findings from existing research on how AI adoption and impact differs by sector, the report considers several adoption scenarios to produce range estimates for high growth sectors (where alignment with definitions is sufficient to draw conclusions). Research shows that Business, Financial and Professional Services (BFPS) is expected to be one of the sectors where adoption and impacts are

greatest, although it recognises that these are likely to be greatest in some sub-sectors more than others. The existing strength of the sector in West Yorkshire means that, depending on adoption rates, BFPS could generate between **£1.1bn and £4.1bn GVA by 2035**. The impact on manufacturing is also significant (although again varied within sub-sectors) at between **£0.6bn and £2.3bn by 2035.**

Barriers and enablers

Key Findings:

- Many AI adoption enablers and barriers apply across sectors, including:
  - **Common drivers:** operational efficiencies that reduce manual processing (freeing staff to focus on higher-value work), quality control that detects patterns and flag anomalies, and an increasing expectation from clients of more personalised and data-led approaches.
  - **Common barriers:** a shortage of technical expertise to implement or scale AI solutions, poorly structured data or fragmented systems, regulatory concerns, a fear of labour displacement, and uncertainty about the potential return on investment of AI.
- A breadth of different use cases for AI that varies significant across sectors, including for example, predictive maintenance in manufacturing, fraud detection in financial services, digital imaging and diagnostics in healthcare, and content creation in creative industries.

The report summarises the drivers, enablers and barriers to AI adoption in each of the Combined Authority's six growth clusters, with evidence and data derived from desk research, interviews with stakeholders, and sector-specific workshops attended by local businesses. Some of the drivers and barriers of AI adoption are similar across sectors (e.g., reducing manual processing), but there are also sector specific use cases where specific applications that are driving activity in individual sectors. For example, the financial services sector is one the most AI exposed sectors with opportunities in customer service, cybersecurity, and compliance. Within manufacturing, AI is improving factory-floor productivity through automation and optimisation and reducing downtime through predictive maintenance. In health and life sciences it is increasingly being used to support and augment clinical diagnostics, driven by the need for efficiencies across the NHS.

Implication and recommendations for AI adoption support

- The Combined Authority is uniquely placed to **coordinate and champion** AI adoption support, convene, and coordinate partners and other intermediaries, and to inform the commissioning of services.
- To maximise the economic benefit of AI adoption in West Yorkshire, the Combined Authority should seek to '**bring forward' AI adoption** through a focus on **awareness and education** that encourages early adoption.
- Coordinated work with the region's universities could support the **transfer of knowledge** and expertise from graduates with **strong AI skills**, into businesses that require technical expertise and the confidence and understanding to invest in AI solutions.
- More intensive diagnostic and action planning to **support the identification of use cases** is required. This should **focus on the priority clusters**, in particular those identified as having the greatest potential for growth through AI adoption (e.g., BFPS and Advanced Manufacturing)
- There are opportunities to embed **peer learning approaches** into AI support provision, and to explore (with partners including universities) and develop access to applied research labs, digital testbeds, content creation studios, and **AI experimentation environments**.

1 Introduction

Introduction

Over the last few years, Artificial Intelligence (AI) technology has grown exponentially, not only in terms of what its capable of, but also in terms of its usage in businesses across all sectors. This adoption presents major opportunities for economic growth and increased productivity but also challenges around ethical, sustainable and equitable AI adoption. Whilst the opportunities presented by AI are global, the UK Government's Industrial Strategy identified AI as a frontier technology where the UK is well placed with strong talent, start-up and scale-up ecosystems and global leadership on safety and governance. West Yorkshire Combined Authority commissioned GC Insight to build the evidence base of what this means for the economy of West Yorkshire and to inform the future targeting of AI support to maximise economic benefits across the region.

The Benefits and Challenges of AI Adoption

The 2025 West Yorkshire Business Survey of over 1,000 organisations found that that 28% currently use AI, up from 17% in 2024. As the integration of AI in day-to-day business practices becomes more normalised, the consequences of not utilising, misusing, or underutilising AI will have greater impacts on businesses ability to be competitive in markets. Although AI and the research concerning it is still in its relative infancy, early indications find that the early adopters of AI can gain competitive advantage.

Research from the OECD[1] finds that the adoption of AI in businesses influences productivity in three ways:

1. **Automation of tasks:** Everyday time-consuming tasks, such as processing data, secondary data research, organisational planning and summarising or editing texts, can be undertaken by most Generative AI platforms. This can free up time to spend on other tasks which are potentially more innovative and/or profitable.

2. **Enhancing skill development:** AI can be used to create more personalised free / low-cost learning pathways which may have been previously out of reach due to the financial or time commitment required. AI can also be used to create feedback and coaching on outputs quickly rather than waiting for human feedback. This can create more knowledgeable and efficient employees who have the potential to make the businesses more productive.

3. **Transforming business operations:** For many businesses, AI holds the potential to radically change the way they do business in such a way that makes them more productive and profitable. AI can help businesses change their customer relationship processes and help free up the workforce to focus on more value adding activities.

Research from the Productivity Institute finds that adoption of AI in companies can play a direct role in allowing them to compete more effectively, with productivity gains and the decreased need for personnel to do the same work as larger firms, meaning smaller companies can compete in spaces they were not previously able to compete in.

Impactful adoption of AI is still at a relatively early stage, and there is evidence of market challenges and potential barriers that need to be overcome to fully realise the potential benefits. Themes from wider

[1] The Effects of Generative AI on Productivity, Innovation and Entrepreneurship (2025) OECD

research reviewed for this study, along with stakeholder consultation highlight the following challenges and barriers for AI adoption:

- **Intellectual property challenges:** Concerns around lack of regulation and assurances of ethical sourcing of the data used to train large language AI models mean businesses may be more cautious around adopting AI.
- **Environmental challenges:** Potential environmental impacts from AI data processing – particularly in terms of water consumption – may have long term effects on climate change. Concerns around these environmental impacts may mean that businesses are hesitant to adopt AI into their businesses.
- **Asymmetry in adoption:** Differences in the extent to which different businesses can afford and have the required knowledge and skills, to adopt AI can mean that the productivity gap may continue to grow. Some businesses with longstanding and deeply engrained 'ways of working' may be more hesitant to change their practices.
- **Labour force challenges / job loss:** Some existing jobs may be lost to the adoption of AI, particularly jobs which require repetitive input (e.g., data entry), or in some freelance industries such as animation or translation services where AI is able to take on the jobs of humans.
- **Truncation of established career progression pipelines:** As there is a significant overlap in the tasks that AI can do and the tasks that early career employees tend to be assigned to, there is a legitimate concern that new graduates / those just starting out in their career will be less likely to be hired to positions, in effect removing the first few 'rungs' of the career ladder.
- **Misuse of AI:** Lack of awareness around the proper use of AI, practically as well as ethically, may mean that AI adoption does not have a strong impact on business growth and health.

Project Scope

West Yorkshire Combined Authority commissioned GC Insight to develop a robust evidence base on AI adoption among SMEs and across identified high growth clusters (aligned to the West Yorkshire Local Growth Plan).

The research will be used to inform the design of targeted interventions to accelerate adoption, close the productivity gap and position the region as a leader in digital technologies. During the development of the study, the Combined Authority was shaping its approach and coordination of the Local Innovation Partnership Fund (LIPF), and interim findings were presented to the CA to inform calls for projects, particularly in relation to frontier tech projects.

The study specifically had the following key objectives:

1. **Provide a range estimate of the economic impact of AI on West Yorkshire and across high-growth clusters**. The application of existing research and data to quantify the potential 'size of the prize' for West Yorkshire. There were two linked elements:
    a. The potential economic impact of AI on the overall West Yorkshire Economy
    b. The potential economic impact of AI specifically on identified West Yorkshire high growth clusters, and how this could inform targeting of interventions.
2. **Identify specific barriers and enablers to AI adoption:** Applying existing and primary research to understand the barriers and enablers of AI adoption, how these apply to businesses in West Yorkshire, and the extent that these are common or differ across high growth sectors.
3. **Understand SME preferences and demand for different types of support:** Capturing the preferences of SMEs about the types of support and delivery mechanisms that would be most valuable and effective, offering insights to the CA and partners to inform future activities.

The study takes a broad definition of AI within the economy, encompassing AI firms (those that develop AI solutions), and the broader business base that has the potential to benefit from AI tools and technologies.

Report Structure

To address the key objectives, the report is structured into six sections including this introduction. Subsequent sections are summarised below with an overview of the key research methods applied for each:

Section 2: AI Policy and Regional Context

Comprised of two key elements:

1. AI's contribution and importance to national economic policies and strategies including the Industrial Strategies and Sector Plans.
2. Alignment with West Yorkshire policies and strategies including the Local Growth Plan, Cluster Action Plans, and Digital Blueprint, as well as the region's role in funding and policy areas like the LIPF, AI Growth Zones, and Investment Zones.

Research methods: Desk based review of national and local policies and strategies

Section 3: AI Evidence Review

An overview of the extensive array of existing evidence, research, and economic forecasts about the potential impact of AI on businesses, tasks, the labour market, and productivity.

Research methods: A detailed desk-based review of academic, industry and government research into AI and its impacts.

Section 4: Quantifying the economic opportunity of AI Adoption

Comprised of two key elements:

1. The potential quantum of the economic opportunity for the West Yorkshire economy as a whole.
2. The potential quantum within each of West Yorkshire's identified priority sectors.

Research methods: Utilising the most robust evidence and forecasts from the Evidence Review, the study uses a series of calculations and informed assumptions to provide range estimates for the potential economic impact of AI.

Section 5: West Yorkshire Drivers, Enablers and Barriers to AI Adoption

A sector-by-sector exploration of the main drivers, enablers and barriers to AI adoption West Yorkshire.

Research methods: Each sub-section draws on both existing research from the Evidence Review, and consultation and engagement with stakeholders and businesses from each of the high growth sectors in West Yorkshire. In total the study undertook:

- 13 one-to-one consultations sessions with stakeholders, including with strategic businesses form each priority sector.
- A total of 6 business workshops covering each of the West Yorkshire high growth clusters with a total of 23 attendees.

- Wider consultation with Combined Authority officers and Universities through emerging findings workshops and CA organised sessions linked to the development of the Frontier Tech LIPF call.

Section 6: Implications for West Yorkshire AI Adoption Support

Recommendations that would effectively support and maximise the economic benefit from AI adoption in West Yorkshire including:

- Key priorities for AI business support, identified through the cluster workshops.
- Possible roles and responsibilities of the Combined Authority in facilitating access to AI adoption support.
- Prioritised support interventions and actions that seek to maximise the impact of available Combined Authority and partner resources in bringing forward the realisation of economic benefits derived from AI adoption.

2 AI Policy and Regional Context

The Role of Artificial Intelligence in the UK Industrial Strategy

Artificial Intelligence (AI) is a central pillar of the UK's modern Industrial Strategy[2], positioned as a foundational, economy-wide technology critical to productivity growth, international competitiveness, and long-term economic security. The Industrial Strategy recognises that the UK is operating in a more volatile, competitive, and geopolitically fragmented global economy. In this context, AI is identified as one of the technologies that will fundamentally reshape every sector.

AI is highlighted as one of the most powerful levers available to reverse the UK's long-standing productivity challenges. By enabling automation, optimisation, and new data-driven business models, AI is expected to:

- Raise firm-level productivity.
- Accelerate innovation and commercialisation.
- Support the scaling of high-growth UK companies.

The Strategy explicitly links AI adoption to higher wages, better jobs, and improved living standards across regions.

AI is treated as a frontier industry within the Digital and Technologies sector and embedded across all eight priority growth sectors (the "IS-8"). These include advanced manufacturing, life sciences, defence, financial and professional services, and creative industries. The Strategy emphasises that the greatest economic impact of AI will come from diffusion and adoption across traditional sectors, not solely from standalone AI firms.

To secure long-term advantage, the government commits to building AI capability including the development of AI Growth Zones to accelerate infrastructure, energy access, planning approvals, and private investment, and investment in national computer and data infrastructure. Additionally, UKRI's AI Strategy[3] launched in February 2026 is likely to guide future national funding for AI adoption programmes and strategies.

West Yorkshire Policy Alignment

The Combined Authority's Digital Blueprint[4] sets out a strategy to drive forward digital approaches to help make the region an 'engine room of ideas and creativity'. It sets out a series of priorities including ensuring that the region benefits from **advanced technologies** such as AI, virtual reality and quantum computing. The Blueprint contains an action plan which includes an action to *develop a clear offer for businesses to capitalise on digital transformation and digital innovation, including artificial intelligence, to ensure that all businesses in West Yorkshire are able to flourish through increased efficiency and improved productivity.*

The West Yorkshire Local Growth Plan positions AI and digital technologies as enabling capabilities that underpin growth across multiple priority sectors, including healthtech, financial services, manufacturing and the creative industries, rather than as a standalone sector.

[2] The UK's Modern Industrial Strategy
[3] AI Research and Innovation Strategic Framework, UKRI, 2026, UKRI AI Research and Innovation Strategic Framework – UKRI
[4] West Yorkshire Digital Blueprint, West Yorkshire Combined Authority,

The Combined Authority has produced Cluster Action Plans for each of the high growth clusters identified in the Local Growth Plan. Some of the Plans outline the importance of AI within the clusters and as enabling technologies. Key references include:

- **Business, Financial and Professional Services**: Supporting a 'growth-first regulatory environment' covering FinTech, AI, Open Finance, digital ID, and payments reform. The Plan also outlines that the cluster is one of the region's most productive sectors but that it faces transformational pressures from AI and digitalisation.
- **Digital and Technologies:** The Vision states that the aim is to "*establish West Yorkshire as a premier digital and technological powerhouse in the UK and globally, capitalising on its established strengths in AI, Big Data, cybersecurity, and immersive technologies*."
- **Advanced Manufacturing:** AI is listed as one of the advanced technologies that form part of Industry 4.0 technologies that are leading changes to manufacturing processes. The plan also cites adoption challenges within the sector and that manufacturing businesses are the least likely to be using AI technologies and cites AI as one of the areas where there are sector skills gaps.

The adoption of AI, is feeding into several emerging policy areas at the Combined Authority, including relevance for the Frontier Tech element of the Local Innovation Partnership Fund, ongoing work on a potential AI Growth Zone, and potential future activities announced in the Industrial Strategy like the AI Adoption Fund. The region also benefits from the Made Smarter and the Digital Enterprise programmes, both of which offer broader digital adoption support which can incorporate elements of AI.

3 Evidence Review

Introduction

The UK economy continues to expand but at a rate far below historical averages, weighed down by weak productivity, fragile investment, and ongoing global uncertainty.

Recent data from the Office for National Statistics (ONS)[5] shows that UK economic growth remains sluggish but stable. GDP increased by **0.1% in the three months to November 2025**, following broadly flat performance earlier in the year, with services output growing modestly (0.2%) while construction and production both contracted slightly (–1.1% and –0.1% respectively). Monthly ONS releases also indicate similarly weak momentum: in the *GDP monthly estimate for November 2025*, real GDP grew by just **0.1%**, supported primarily by services, while production fell due to declines in vehicle manufacturing.

AI adoption and its contribution to economic growth

There is widespread recognition, among economists and technology experts, that AI, particularly generative AI, can be a powerful revenue generator. Appropriate implementation of AI tools and platforms, based on identification of business focused use cases, can support more rapid and sustained revenue growth.

Assessing the true impact of AI adoption on revenue and wider economic growth is challenging for two reasons. Firstly, AI is an intangible technology, making quantitative assessment of impact problematic[6] and secondly, AI can be used to carry out a wide range of cognitive tasks across a plethora of internal and customer-facing activities, which makes it difficult to identify the contribution that AI makes to revenues, costs and profitability.

Predictions/forecasts for economic growth and increased GDP

Despite the above challenges in providing an accurate assessment of the impact of AI and its adoption on economic growth, several high-profile organisations have published their own predictions for global economic growth and increased GDP. Two noteworthy forecasts, from PWC and the International Monetary Fund (IMF) simultaneously highlight both the optimism surrounding the impacts of AI adoption and how this optimism can lead to different predictions.

The recently published PWC report[7] revealed that AI has the potential to boost global economic output by up to 15 percentage points 2035. However, this optimistic outcome will depend on trust, responsible and targeted deployment and mitigating the impact of climate constraints.

In its World Economic Outlook[8], the IMF stated that AI represents a significant upside to the global economy if the surge in investment leads to rapid adoption, productivity gains and an associated boost in

[5] *'Gross Domestic Product (GDP)'.* Office for National Statistics. Gross Domestic Product (GDP) - Office for National Statistics

[6] *'The Impact of AI Adoption on Productivity Across FinTech, Retail, and Advanced Manufacturing: A Systematic Quantitative Literature Review Approach'* (September 2025) The Impact of AI Adoption on Productivity Across FinTech, Retail, and Advanced Manufacturing: A Systematic Quantitative Literature Review Approach - The Productivity Institute

[7] *AI adoption could boost global GDP by an additional 15 percentage points by 2035*

[8] *World Economic Outlook: Global Economy in Flux, Prospects Remain Dim* *World Economic Outlook, October 2025: Global Economy in Flux, Prospects Remain Dim*

business dynamism and innovation. The IMF updated its forecast global GDP growth from 3.1% in November 2025, to 3.3% in 2026. Global growth in 2026 will be steady as the AI boom offsets unfavourable trade headwinds.

The Tony Blair Institute's report on the impact of AI on the labour market[9] presents a series of difference scenarios for AI adoption and their respective impacts on UK GDP, with forecasts varying from a conservative £0.6bn to a more bullish £6.3bn

Impact of AI adoption on productivity, efficiency and costs savings

The UK and West Yorkshire's productivity gap

Productivity, typically measured as output per hour worked, is a core determinant of long-term economic growth and living standards. In the UK, persistent weakness in productivity growth since the 2008 global financial crisis has resulted in a widening productivity gap, compared with key international competitors. This 'productivity puzzle' has become one of the most significant constraints on the UK's economic performance and fiscal sustainability.

Recent data from the Office for National Statistics (ONS), and international organisations, highlight the extent of the challenge. UK labour productivity growth has been sluggish for over a decade: historically averaging around 2% per year but rising much more slowly since the financial crisis[10]. In Q3 2025, productivity was only 2.3% above its pre-pandemic level, reflecting this long-term stagnation.

There are several factors that are contributing to this persistent productivity gap, including:

- under investment in physical and digital infrastructure, discussed in greater detail below.
- weak diffusion of innovation and management practises, with middle tier firms struggling to adopt digital technologies including AI.
- sectoral imbalances in labour market challenges, with strong productivity growth in IT and construction, compared with poor performance in health, hospitality and administrative services.

The economic impacts of poor productivity include persistently weak GDP growth, lower standards of living and regional disparity and fiscal pressures. The Office for Budget Responsibility is expected to revise down their productivity growth forecast, and recognise that reduced economic resilience, leaves the UK more vulnerable to external shocks.

Productivity in West Yorkshire is lower than the UK average in terms of GVA per person. On current trends, this productivity gap which is projected to widen. Without concerted action, the Local Growth Plan[11] notes that 'by 2044 West Yorkshire is due to lag the UK average by more than £15 billion'. This productivity gap is driven by lower-than-average levels of innovation and exporting, and a low proportion of high complexity manufacturing activities. The productivity gap also exists in knowledge-based services. The Local Growth Plan states that closing the productivity gap requires growth across West Yorkshire's sectors, focusing on where the region has existing specialism (e.g. Advanced Manufacturing, BPFS and Creative Industries), alongside the 'emergence of new opportunities from within specialist sectors'.

[9] *The Impact of AI on the Labour Market*, OECD, 2024 The Impact of AI on the Labour Market
[10] *'Productivity: Economic indicators'.* House of Commons Library, 2026. Productivity: Economic indicators - House of Commons Library
[11] Local Growth Plan, West Yorkshire Combined Authority, 2024, Local Growth Plan: West Yorkshire and corridors of opportunity

The role of AI adoption in improving productivity and efficiency

As with economic growth and GDP, economic literature has argued that generative AI has the potential to dramatically boost productivity across an array of organisational functions. According to the OECD[12], generative AI can significantly impact business outcomes by driving productivity through three principal mechanisms, all of which have been explored further with participants in our programme of sector-specific workshops.

Firstly, there is the deployment of GenAI to automate key tasks and business processes and to augment, rather than replace job roles[13]. Business leaders are eager to leverage AI to expedite routine tasks and remove the administrative burden for their employees. A recent survey of business leaders[14] found that 69% cited improved efficiency in routine tasks as their top hope for AI adoption. Secondly, there is enhancing skills development and understanding of AI across the workforce and thirdly, there is wider transformation of internal and customer facing business operations. It is argued that these three mechanisms, if adequately considered, will allow staff to use their time more productively, enhancing idea generation and creativity and supporting the design and development of new products, services, or technologies. Research shows that generative AI can help individuals produce more novel ideas and enhance early-stage innovation by combining human expertise with AI capabilities and can support the development of new products services and technologies by providing a broader range of possibilities, accelerating concept creation, speeding up iterations, reducing costs, improving product differentiation and optimising resource allocations.

All these potential productivity and efficiency gains are predicated on the assumption that businesses will invest required financial and capital resources into the identification and implementation of suitable AI tools and platforms. Returning to the survey of business leaders, over the next three years 92% of organisations plan to increase their investment in AI. Approximately 1 in 6 UK organisations (totalling 432,000) have embraced at least one AI technology. According to government research, 68% of large companies, 33% of medium sized companies, and 15% of small companies having incorporated at least one AI technology into their day-to-day business operations[15].

However, this investment into AI adoption is yielding different results and levels of return for different industry sectors. Among the top 25% of spenders, companies in healthcare, technology, media and telecommunications, advanced industries and agriculture, are ahead of the pack, while companies in financial services, energy and materials, consumer goods and retail, hardware engineering, construction, and travel, transport and logistics are spending less and seeing less financial return[16].

According to the Stanford AI index for 2025[17], AI adoption is surging, with the proportion of survey respondents reporting AI use by their organisation increasing to 78%, compared with 55% in 2023. Similarly, the number of survey respondents reporting the use of generative AI in at least one of their

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[12] *'The effects of Generative AI on Productivity, Innovation and Entrepreneurship'* OECD Artificial Intelligence Papers, June 2025. The effects of generative AI on productivity, innovation and entrepreneurship | OECD

[13] *'Leveraging Generative AI for Job Augmentation and Workforce Productivity: Scenarios, Case Studies and a Framework for Action'*. World Economic Forum, November 2024. Leveraging Generative AI for Job Augmentation and Workforce Productivity | World Economic Forum

[14] *'AI can cut costs: But at what cost to the workforce experience?'*. Deloitte Digital, April 2024. AI in the workplace | Deloitte Digital

[15] *'UK Artificial Intelligence (AI) Statistics And Trends'*. Forbes, October 2025. UK Artificial Intelligence (AI) Statistics And Trends – Forbes Advisor UK

[16] *'The State of AI in 2025: Agents, innovation, and transformation'* Quantum Black AI by MiKinsey. The State of AI: Global Survey 2025 | McKinsey

[17] *'The Stanford AI Index'*. Stanford University. Economy | The 2025 AI Index Report | Stanford HAI

business functions has more than doubled from 33% in 2023, to 71% in 2025. However, despite this identifiable surge in the adoption of AI, the financial impacts, while positive, remain small, with most firms stating cost savings of less than 10% or revenue uplift of less than 5% per business function. Businesses using AI state it helps them save time, focus on the most important work, being more creative and enjoy their work more. 79% of business leaders agree that their company needs to adopt AI to stay competitive, but there are concerns surrounding the quantification of productivity gains derived from AI.

Impact of AI adoption on employment

The impact of AI adoption on employment is one of the more polarising issues explored by economists, policy makers and businesses. Sceptics of AI are concerned that its adoption will result in the reduction in entry level employment opportunities and restrict access to the labour market for new entrants. Conversely, proponents of AI argue that it's adoption will lead to new job roles and employment opportunities, associated with the building, management and improvement of AI systems, and the re-shaping of existing roles, as the removal of routine tasks allows for greater focus on higher-order tasks, such as idea generation, creative design and problem-solving and revenue generating activity.

In unpacking the impact of AI on employment and how its adoption may influence future job opportunities and roles, researchers have organised adoption into three key themes[18].

- **Automation:** A range of research studies suggest that once stable tasks, such as data entry, summarisation of qualitative and quantitative data and reviews of legal and policy documentation, are increasingly subject to substitution or replacement. Sceptics of AI argue that its adoption creates a challenge for traditional 'learning by doing' as foundational work that once gave more junior employees experience is disappearing. At entry level, many routine tasks are now being automated, restricting the opportunities for more junior employees to develop their skills, understanding and experience of working in particular sectors, organisational types and job roles. However, as routine tasks become automated, work will shift increasingly towards roles that build, manage, and improve AI systems, or that involve uniquely human skills. Demand is already surging for technology specialists who can create and harness AI. According to the World Economic Forum's Future of Jobs Report[19], Roles for AI and machine learning specialists are projected to increase 40% by 2027.
- **Augmentation:** Reports depict AI as absorbing repetitive or data heavy work, allowing people to focus on judgement, creativity or collaboration. Emphasis here is on AI supporting humans in their roles, allowing them to work more efficiently and providing them with the resource flexibility to devote time to more meaningful tasks. 69% of business leaders stated that AI's absorption of repetitive or data heavy work would improve employee creativity, while use of AI will spark new ideas and inspiration that will improve work quality. Business leaders believe that AI will enable employees to focus more time and energy on bringing their unique creativity to bear in their roles which, in turn will result in higher quality work, revenue generating work and greater levels of overall job satisfaction. That said, business leaders were concerned that, without boundaries, guardrails or examples of defined best practice, and over alliance on AI could sacrifice needed human diligence.

[18] *AI at Work: From Productivity Hacks to Organizational Transformation (COMMUNITY PAPER JANUARY 2026)*. World Economic Forum, 2026. WEF_AI_at_Work_from_Productivity_Hacks_to_Organizational_Transformation_2026.pdf

[19] *'Future of Jobs Report 2025: Insight Report'. World Economic Forum, 2025.* WEF_Future_of_Jobs_Report_2025.pdf

- **Transformation:** Organisations adapt by creating new AI native roles, redesigning roles and rethinking the trajectories of employees' early career experiences.

Sector-specific impacts of AI adoption on employment and skills demand

Further exploration of the impact of AI on employment, within the Combined Authority's growth clusters, highlights some notable changes in skills demand. Adoption of AI has seen increased demand for different IT roles, such as software developers. AI coding assistants, such as copilot and GitHub, can write routine code, reducing the number of junior programming jobs needed, while increasing the need for infrastructure designers and developers to support the implementation of more complex IT and data projects[20]. Within manufacturing, studies show that approximately 59% of all manufacturing activities could be automated using existing technology. One analysis by Oxford Economics estimates upwards of 20 million manufacturing jobs worldwide could be replaced with industrial robots by 2030. However, as with IT, employment opportunities for humans will shift towards the design, development, implementation, management and monitoring of this equipment. While this shift may not offset 20 million jobs, the shift towards this type of technical activity will create new roles and redesign existing roles.

Healthcare is a sector where AI will augment more than automate. It is a sector where overall labour demand is increasing. An ageing population globally is driving huge and unrelenting demand for health care services, which is creating millions of new jobs for doctors, nurses, technicians, home health aides, that AI will struggle to fill due to the continued need for human interactions. That said, and what will be discussed in Section 5 below, AI is increasingly being used in clinical practice. AI diagnostic tools are beginning to handle tasks like reading radiology scans or pathology slides. By 2030, an AI may handle preliminary analysis of X-rays or MRIs, reducing the demand for radiologist's time. Overall, Healthcare is projected to see net job gains, despite AI adoption and automation.

With AI adoption becoming more prevalent, the labour market will offer up opportunities for young people who are comfortable with this kind of technology. Increasingly, recruitment of entry level employees will include a focus on that familiarity with, and understanding of, AI tools and how they can be applied in business functions.

AI Infrastructure

AI adoption is predicated on the presence of a suitable IT and data infrastructure to support the computational power of generative AI tools, platforms and systems. In the last 10 years, and particularly since the COVID-19 pandemic, which arguably marked a watershed moment in technology take-up, the UK has rapidly scaled its AI infrastructure, with 100 new data centres planned and a projected 20% capacity increase by 2030.

In part, this scaling up is resulting from major private-sector investments from companies including Google, Microsoft, Blackstone, and Nscale, who are all establishing large, AI-ready campuses across the UK. Alongside this, government policy, including the establishment of AI Growth Zones, is reinforcing the importance of investment in AI infrastructure and is providing the foundation for accelerated AI adoption.

However, infrastructural constraints remain, with experts warning that grid bottlenecks and slow connection times are hindering the speed at which data-centre capacity can come online, creating a gap between national ambition and actual deployment. As the Tony Blair Institute has argued in several recent reports and articles, despite significant investment, the UK is in danger of falling behind in the AI race,

[20] *'AI-Driven Agentification of Work: Impact on Jobs (2024–2030)'* (26) AI-Driven Agentification of Work: Impact on Jobs (2024–2030) | LinkedIn

controlling just 3% of global computing power required to support an AI-led economy – the US by contrast owns 75% of the world's AI supercomputers. The Institute called for an expedited effort to rapidly scale its AI infrastructure, from data centres, to the energy grid, to planning rules. As the report's author, Keegan McBride argued,

"We have placed AI at the centre of our growth and security goals, but without urgent investment we risk rapidly losing our ability to harness it securely which will significantly impact our economy and security. "With bold reforms to energy, planning and wider regulations, the UK can deliver cost-effective infrastructure for the public at pace and at scale".

4 Quantifying the economic opportunity of AI Adoption

Introduction

This section draws on our review of existing research and data on AI adoption (outlined in Section 3) with the objective of modelling the following:

- The potential quantum of the economic opportunity for the West Yorkshire economy as a whole; and
- The potential quantum within each of West Yorkshire's identified priority sectors.

Overall approach and considerations

To quantify the economic opportunity from AI adoption in West Yorkshire, the study undertook a thorough review of academic and industry research.

Projections vary in terms of method, robustness and the geographies they cover. What is common across all existing research that attempts to forecast AI adoption rates and impacts, is that the newness of the technology, and the pace of change, means they can't draw on evidenced impacts to date. Whilst there is research based on survey activity, this relies on business level self-reporting of AI adoption and impacts, rather than empirical economic data. This means that projections are heavily based on assumptions and the research varies in the level of transparency about the assumptions used. As a result, forecasts vary significantly.

We identified three sources for the calculations and assumptions used in this section. Each source has a transparent methodology based on a detailed analysis of hundreds (or thousands) workspace tasks and the extent these could be automated.

- OECD – A sectoral taxonomy of AI intensity (2024)[21]
- Accenture – Accelerating the UK's Generative AI Reinvention (2024) [22]
- Tony Blair Institute – The Impact of AI on the Labour Market (2024) [23]

We have exercised caution in the sources used in this section. We have **not** relied on the following:

- Research carried out by the AI industry itself because of the risk of optimism bias; and
- Market forecasts without a clear and transparent methodology.

Modelling the potential economic opportunity for West Yorkshire

The Tony Blair Institute (TBI) report uses task analysis, with consideration for sector differences, to calculate the potential productivity gain, and therefore the GDP uplift across the UK. It takes wider factors into account including assumptions on the potential displacement of labour from AI. Each assumption

[21] *'A Sectoral Taxonomy of AI Intensity: OECD Artificial Intelligence Papers'.* OECD, December 2024. A sectoral taxonomy of AI intensity (EN)

[22] *'Accelerating the UK's Generative AI Reinvention',* Accenture, 2024 Generating growth, how generative AI can power the UK's reinvention

[23] *The Impact of AI on the Labour Market*, OECD, 2024 The Impact of AI on the Labour Market

made is transparent and takes an overall more conservative approach when compared to more 'bullish' reports elsewhere, which are less transparent in their methodology.

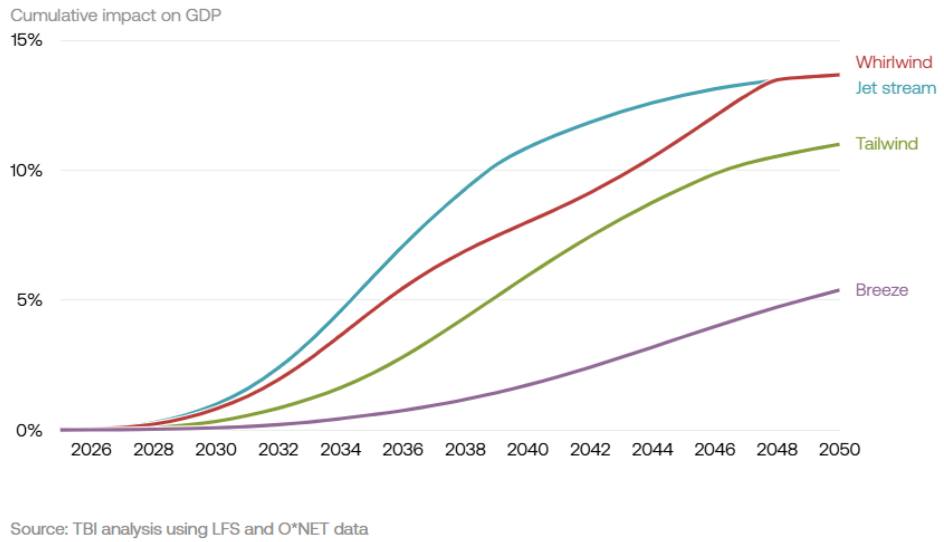
The report presents headline figures as part of a series of scenarios and recognises the significant uncertainty around both the extent of potential AI benefits, and the rate of adoption. It poses several scenarios based on different rates of adoption (to 2050) and the impact on the labour market. Table 4-1 and Figure 4-1 detail the four scenarios.

Table 4-1: Summary of AI adoption scenarios from Tony Blair Institute report:

Scenario	Detail	GDP uplift to 2035	West Yorkshire AI GVA uplift to 2035[24]
Breeze	• Most conservative estimate • Limited gains from AI • Longer to materialise with uncertainty over effectiveness deterring early adopters • Regulatory barriers hindering uptake	0.6%	£0.6bn
Tailwind	• Considered most likely by TBI • Enabled by permissive government policy • Pace of adoption a little faster than the internet	2.2%	£2.3bn
Whirlwind	• Rapid adoption • Global investment in AI and compute capacity resulting in lower costs • Supportive government policy • But more marked impact on labour market reduces economic impact	4.6%	£4.9bn
Jetstream	• Rapid adoption • Global investment in AI and compute capacity resulting in lower costs • Supportive government policy	5.9%	£6.3bn

Source: Tony Blair Institute and GC Insight

Figure 4-1: Illustration of TBI AI Adoption Scenarios



[24] Figures based on 2023 ONS GVA for West Yorkshire plus annualised GVA AI uplift and Office for Budget Responsibility GVA forecasts.

Table 4-1 shows the significant variation in the potential economic impact of AI, ranging from **£0.6bn** to **£6.3bn**. The TBI considers the Tailwind scenario, which assumes that AI adoption will be faster than for the internet, to be the most likely. Under this scenario, West Yorkshire GVA increases by around **£2.3bn** by 2035.

Modelling the potential economic impact on West Yorkshire's priority sectors

A key study objective is to support the Combined Authority's (and its partners) decision making about where AI adoption/utilisation interventions could be most impactful. The study therefore seeks to quantify the potential economic impact on each of the six high growth clusters.

The study found the following challenges in quantifying potential economic impact by sector:

- There is survey-based research which identifies the extent of adoption by sector, however:
  - This cannot be translated into quantified financial values; and
  - It is derived from self-reported data rather than empirical values.
- Sectors are defined differently within the research making it difficult to align to West Yorkshire Combined Authority's definitions in the Cluster Plans.

We undertook the economic modelling over three stages outlined below.

Stage 1: Estimating UK productivity and GVA AI uplift

Our methodology relies on the sources identified earlier – the OECD, Tony Blair Institute and Accenture. These reports each take a task-based approach which reflects:

- That the time/productivity saving of AI for different workplace tasks varies significantly (for some it will have no impact, but others could be highly automated).
- That the prevalence of tasks in different sectors also varies – sectors will have a greater or lesser proportion of tasks that can be automated – and therefore a different potential productivity gain from AI.

Each report has a slightly different approach and terminology, but there are similarities between them highlighted in Table 4-2.

Table 4-2: Summary of AI impact and alignment with West Yorkshire high growth clusters

Growth Sector	Accenture		TBI	OECD
	Approx % Productivity Gain	£ GVA bn	% Time saving	AI Intensity
Business, Financial & Professional Service	21-31% (capital markets, banking, insurance)	25.8	29.4%	High
Advanced Manufacturing	13-18% (industrial)	25.4	24.1%	Low (food, textiles, wood) Medium (chemicals, pharma) High (computer and electronics)
Healthtech	10-16% (health) 16-23% (life sciences)	14.4	N/A	N/A
Green Economy	10-16% (energy, utilities)	4.3	26.5 (energy, water)	N/A
Digital and Tech	26-32% (software and platforms) 20-26% (high tech)	19.5	N/A	High (IT services, telecoms)
Creative	17-24% (comms and media)	13	N/A	High (media)

Source: GC Insight, from figures in Accenture, TBI and OECD reports

Table 4-2 highlights:

- That Business, Financial and Professional Services and has a high potential productivity/time saving, with a high degree of consistency across the three sources;
- That the impact of AI on Manufacturing is also expected to be high, although, as indicated by the OECD, the extent of impacts will vary across different sub-sectors. Research sources also focus more generally on manufacturing rather than specifically Advanced Manufacturing; and
- The challenge of aligning definitions. There was;
    - **Good alignment** between the sources on Business, Financial and Professional Services and Manufacturing;
    - **Some alignment** for Healthtech and Digital and Tech (and therefore added caution should be applied to projections);
    - **Poor alignment** for Green Economy and Creative sectors (and therefore we have not created calculations for these sectors).

The Accenture report, unlike the other two sources, takes the potential productivity gain and applies it to UK GVA figures to arrive at potential per annum GVA benefits from AI adoption. These calculations, whilst useful to demonstrate the potential 'size of the prize', effectively assume the following:

1. That all the time saved through AI use is 'pure' productivity gain (and does not result in reduced employment and therefore output).
2. Annual GVA figures assume all benefits are fully realised, and therefore figures need to be applied to more realistic AI adoption curves (see Stage 2).

Stage 2: Applying calculations to West Yorkshire

Table 4-3 applies the Accenture calculations to West Yorkshire by calculating the proportion of UK GVA generated by West Yorkshire for each sector.

Table 4-3: Applying UK GVA productivity gain calculations to the West Yorkshire business base

Growth Sector	WY proportion of total UK sector GVA (from Data City)	Productivity gain (UK GVA from Accenture report) £bn	WY GVA £m per annum
Business, Financial and Professional Service	4.5%	25.8	£1.2bn
Advanced Manufacturing	2.7%	25.4	£686m
Healthtech	1.8%	14.4	£259m
Green Economy	3.0%	4.3	£129m
Digital and Tech	2.1%	19.5	£410m
Creative	3.6%	13	£468m

Source: GC Insight using Accenture projections and GVA calculations for UK and West Yorkshire from The Data City.

Stage 3: Overlaying calculations with AI adoption scenarios

Overlaying the above analysis with different adoption scenarios allows calculations to be made. We have, for the purposes of these projections based our analysis on the following:

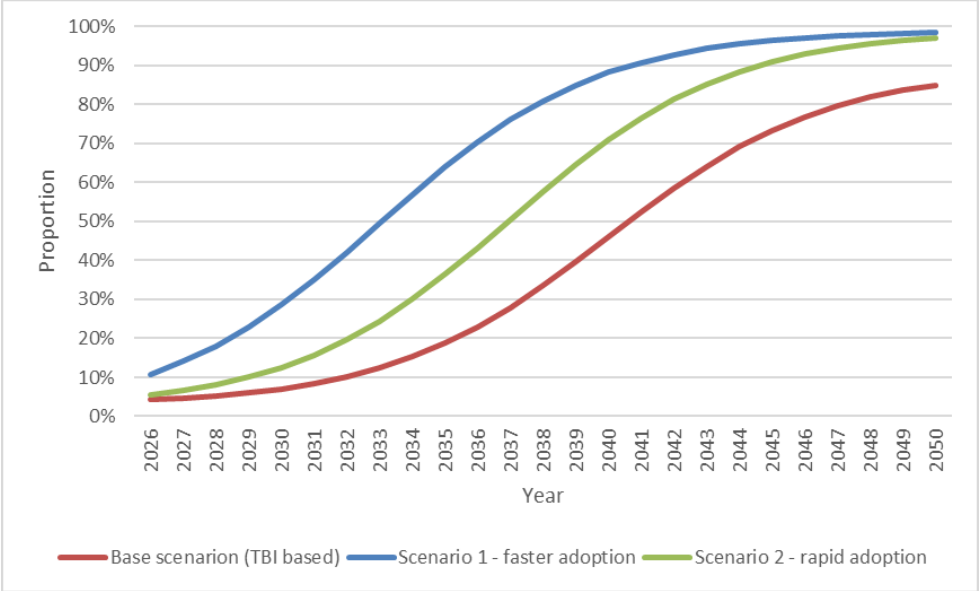
- That 100% adoption would lead to the GVA figures outlined in table 4-3, and therefore, for example, 10% adoption would lead to 10% of the GVA realised per annum.
- For each sector, total GVA calculations are based on summing per annum West Yorkshire GVA figures for each year where the rate of adoption equals the proportion of total benefits accrued.

Our analysis uses three scenarios outlined below:

- **Base scenario**: A version of the 'tailwind' scenario considered to be most likely in the Tony Blair Institute report. The 'S' shape of this curve is consistent with wider research on technology and innovation adoption including by Everett Rogers in his 'Diffusion of Innovations'[25] research.
- **Scenario 1 – faster adoption:** An adoption curve which, although similar in shape to the 'tailwind' curve, achieves faster adoption earlier, resulting in most adoption benefits by 2045.
- **Scenario 2 – rapid adoption:** Similar in shape to the TBI 'jetstream' scenario based on rapid adoption, lower costs, and supportive policy environment (including potential regional investment in AI adoption support)

[25] Rogers, E (1962) *Diffusion of Innovations*.

Figure 4-2: GC Insight AI adoption scenario models



Source: GC Insight, with 'base scenario' informed by Tony Blair Institute 'Tailwind' scenario.

Scenarios use the same assumed adoption rates across all sectors, and do not account for any regional variation in adoption rates across the UK. Table 4-4 models the GVA per annum against the three AI adoption scenarios. Figures have not been included for the Green Economy and Creative sectors due to poor alignment of sector definitions between the Accenture calculations and West Yorkshire's high growth clusters.

Table 4-4: Applying GVA per annum figures to AI adoption scenarios in Figure 4-2

	Base scenario	Scenario 1 -faster adoption	Scenario 3 – rapid adoption
Business, Financial and Professional Services	£1.1bn	£2.0bn	£4.1bn
Advanced Manufacturing	£0.6bn	£1.2bn	£2.3bn
Healthtech	£0.2bn	£0.4bn	£0.9bn
Digital and Tech	£0.4bn	£0.7bn	£1.4bn

Source: GC Insight using Accenture projections and GVA calculations for UK and West Yorkshire from The Data City

Summary

- The potential economic impact of AI for West Yorkshire could be between **£0.6bn to £6.3bn by 2035**.
- There is a high degree of consensus that Business, Financial and Professional Services is expected to be one of the sectors where adoption and impacts are greatest. West Yorkshire's existing strength in the sector (contributing 4.5% of UK sector GVA) could lead to the sector adding between **£1.1 and £4.1bn GVA by 2035**.
- Advanced Manufacturing (considered as the wider Manufacturing sector for this analysis) in West Yorkshire could add between **£0.6bn and £2.3bn to GVA by 2035**.
- The difficulty in accurately forecasting the impact of AI, and the number of assumptions required, means that using **range estimates is appropriate**. Forecasts should be seen as illustrative but can be used to show the **potential 'size of the prize'** for West Yorkshire, and for informing the **targeting of AI adoption support**.

5 West Yorkshire Drivers, Enablers and Barriers to AI Adoption

Introduction

A Sectoral Taxonomy of AI Intensity

For policy makers, and organisations like the Combined Authority, to adequately assess the impacts of AI and to capitalise on the opportunities afforded through digital transformation and the uptake of technology, it is important to understand how AI 'diffuses' and how it can affect different economic activities, industrial sectors and specific roles, responsibilities and tasks.

A useful starting point for our sectoral review of drivers, enablers and barriers to AI Adoption, is the OECD's sectoral taxonomy of AI Intensity[26]. This taxonomy outlines different facets that characterise the extent to which AI can be adopted in different sectors and summarises these into an overall low/medium/high assessment.

Those sectors rates as having a high degree of AI intensity include 'Manufacturing of Computer & electronics', 'Media', 'Telecommunications', 'IT services', 'Finance & insurance', 'Legal & accounting' and 'Scientific R&D'. Although definitions do not perfectly align, these sectors correlate strongly with the key growth clusters in West Yorkshire.

What follows is a summary of the drivers, enablers and barriers to AI adoption in each of the Combined Authority's six growth clusters, with evidence and data derived from extensive desk research, interviews with stakeholders, and sector-specific workshops attended by local businesses. Each sub-section starts with confirmation of the sector's AI Intensity.

[26] *'A Sectoral Taxonomy of AI Intensity: OECD Artificial Intelligence Papers'.* OECD, December 2024. A sectoral taxonomy of AI intensity (EN)

5a: Advanced Manufacturing

Table 5-1: AI Taxonomy - Advanced Manufacturing

OECD Sector denomination	OECD summary indicator of AI intensity
Computer and Electronics	High
Electrical equipment	Medium
Machinery and Equipment	Medium
Transport Equipment	Medium
Other manufacturers	Medium

Source: OECD sectoral taxonomy of AI intensity

Defining Advanced Manufacturing

Advanced manufacturing is not defined as one industry, instead it is an umbrella term for manufacturing activities that integrate advanced technologies, automation, digitalisation, specialised knowledge and R&D intensity. The Department for Business and Trade (DBT)[27] defines advanced manufacturing as *'production processes that integrate advanced science and technology, including digital and automation, to manufacturing. These processes rely on R&D, innovation, specialised knowledge, knowledge networks and a highly skilled workforce'*.

Much of the research and evidence on AI adoption focusses on the broader manufacturing sector, rather than specifically referencing advanced manufacturing and engineering. Given the potential of AI to impact production processes across all sub-sectors within manufacturing, and the way manufacturing is broken down in key research sources, this study takes a broader view of manufacturing and does not attempt to break down into those that solely align with the DBT definition.

Drivers of AI Adoption for Manufacturing Businesses

When discussing drivers of AI adoption with workshop attendees, cost reductions and efficiency gains, improved productivity, quality improvement and acceleration towards Industry 4.0 and autonomous production environments were all identified and discussed.

'For me AI and the correct adoption of it, is about improving products and their quality, improving productivity and making efficiencies on the factory floor, and looking for digital or AI solutions to some of those common production bottlenecks.

This perspective is also supported by recent research into AI Adoption rates in different industries[28], which found that 49% of manufacturers surveyed reported efficiency as their top benefit of AI Adoption, with 40% also seeing AI as important in improving productivity. The main drivers of AI adoption in manufacturing, derived from literature and workshop discussions are summarised in Table 5-2, below:

[27] *Policy Paper: Industrial Strategy Sector Definitions List*' Department for Business & Trade, December 2025. Industrial Strategy Sector Definitions List - GOV.UK

[28] *AI Adoption Rate by Industry'* GPT Zero Team, March 2025. https://gptzero.me/news/ai-adoption-by-industry/

Table 5-2: Key drivers of AI adoption in manufacturing

Cost reduction through predictive maintenance and efficiency gains[29]	Predicting when equipment or machinery will likely fail. More than 30% of medium-sized and large manufacturers actively use predictive maintenance and 85.2% of those reported a significant decrease in unplanned downtime. Predictive analytics can reduce downtime, reducing costs, extending equipment lifespans and improving health and safety records.
Productivity and Automation gains[30]	AI is being adopted in manufacturing to improve productivity on the factory floor, in production lines, across the workforce, and for training purposes. According to a survey of 1,400 global decision makers (including 105 from manufacturing) 77% view AI as critical for improving productivity and efficiency, with manufacturers reporting automation of routine tasks as saving employees an average of 10 hours a month.
Data volume and the need for intelligent decision making	Manufacturing businesses are now generating massive volumes of data and AI is critical to unlocking value from it. The IDC projects that manufacturing will accumulate 92 exabytes of data by 2030[31] and that this will require unified data platforms and AI driven intelligence to manage it.
Acceleration towards Autonomous and Smart factories	Autonomous operations reduce labour demands, enhance consistency and support 24/7 manufacturing environments. This includes using Generative AI and Digital Twins in the production process, discussed in greater detail below.
External pressures, including labour shortages, supply chain disruptions and market volatility	Globally, AI adoption has surged due to labour shortages and supply chain disruptions. According to a recent McKinsey report[32], business executives expect disruption from geopolitical tensions, climate issues and technology shifts to increase 15-25% over the next five years, making AI a resilience tool

Adoption of AI: Tools and Business Uses

AI use in manufacturing is rapidly increasing, and it is recognised as a sector with one of the highest automation potentials. Tasks involving predictive physical work, including product assembly, machine operation and packaging, can be easily handled by robots. According to workshop participants, *'AI adoption is accelerating, with a lot of firms implementing solutions across production, inventory management and customer services'.* Workshop participants identified several areas where AI is being used:

- **Predictive Maintenance:** AI enables manufacturers to anticipate equipment failures before they occur, reducing downtime and maintenance costs: *'We are looking for feedback from the actual machines, how is it operating, does the machine tell us what maintenance it needs? Can we pre-empt and issue and reduce the time that our machines are not functioning'.*
- **Quality control and assurance:** AI-powered computer visions systems are being used to inspect products in real time, allowing for quicker identification of faults and defects. AI driven machining optimisation is being used to reduce dimensional errors and improve process consistency, while

[29] *'The Impact of AI-Powered Predictive Maintenance on Manufacturing Efficiency'.* BOSC, March 2025. (26) The Impact of AI-Powered Predictive Maintenance on Manufacturing Efficiency | LinkedIn

[30] *AI drives manufacturing transformation: Nearly three-quarters of leaders predict biggest productivity boom in a century'*, Teamviewer, April 2025. AI drives manufacturing transformation: Nearly three-quarters of leaders predict biggest productivity boom in a century

[31] *Charting the AI-driven future of manufacturing'.* IDC Global IDC - Charting the AI-driven future of manufacturing

[32] *Adopting AI at speed and scale: The 4IR push to stay competitive'.* February 2024, McKinsey and Company Adopting AI in manufacturing at speed and scale | McKinsey

precision modelling adjusts machining parameters to improve part tolerances. *'For us, AI tools are reducing material waste, improving accuracy of production processes and this is having positive knock-on effects in other areas'.*

- **Generative design and innovation:** AI uses constraints (e.g. weight, geometry, materials, cost, and durability) to generate hundreds or even thousands of design variations, from which engineers can pick the best option, while AI augmented CAD systems can convert sketches into solid models, suggest product features based on previous designs and automate different configurations. *'The key thing is we are always looking at ways to shorten the design cycle, trying to actually improve time for new products to market in a world that is becoming more and competitive. We need to find ways to improve the flow of information and to improve the cycle time. Once we have designed the product, AI can then step in to shorten production timings'.*

Enablers and Barriers of AI Adoption

Existing programmes, initiatives and funding opportunities

Workshop attendees recognised how business support can help to enable AI and technology adoption and that there were some existing business support programmes that included elements of technology adoption support. These include Made Smarter which offers digital adoption support specifically for the manufacturing sector including digital roadmapping, digital leadership training, support from technology specialists, peer networking and potential grant support for adoption projects. Whilst the focus is broader than AI adoption, many supported projects invest in data systems (E.g., ERP systems) and automation, and the technologies implemented often include elements of incorporated AI functionality. Consultees also highlighted how regional higher education applied research strengths can support AI adoption including specialisms at the University of Leeds (including the Leeds Institute for Data Analytics), Leeds Beckett University (Digital Transformation Support), University of Huddersfield (Precision Manufacturing, Robotics) and University of Bradford (AI and Analytics programmes).

Costs and return on investment uncertainty

Workshop attendees highlighted that economic and market pressures have led many manufacturing businesses to enter survival mode and to restrict their investment in AI. Their reticence to invest in AI tools also reflects the initial piloting and implementation costs of digital technologies and a lack of clarity over the expected Return on Investment (ROI) from these technologies. As one participant argued, *'AI is a largely abstract consideration for businesses. The technology is intangible and you cannot easily gain an immediate return on what can be a significant outlay'.* There is some evidence, from programmes like Made Smarter, that manufacturing companies tech needs are more basic than expected at the outset of the programme.

Data and infrastructure limitations

Availability of data within the manufacturing sector has been identified as an enabler for AI adoption, but IDC's research considers data both a challenge and a catalyst. The research argues that manufacturing companies are 'deluged by data'. Indeed, their 2024 DataSphere[33] research predicted that all manufacturing industries would accumulate 92 exabytes of data from multiple internal and external sources, which the research goes on to argue underscores the importance of unified data platforms. Workshop and stakeholder consultations highlighted similar challenges with manufacturing businesses capturing large volumes of data, creating challenges in how to organise (and prioritise it) in ways that allow AI tools to be effective. *'A more fundamental issue is how businesses have got their data organised, how they have got their systems working and how their existing infrastructure supports use of data'.*

[33] *Worldwide IDC Global DataSphere Forecast, 2024–2028*. May 2024 Worldwide IDC Global DataSphere Forecast, 2024–2028: AI Everywhere, But Upsurge in Data Will Take Time

5b: Business, Professional and Financial Services

Table 5-3: AI Taxonomy – Business, Professional and Financial Services

OECD Sector denomination	OECD summary indicator of AI intensity
Finance and Insurance	High
Real Estate	Medium
Legal & Accounting	high
Other business services	Medium

Source: OECD sectoral taxonomy of AI intensity

Defining Business, Professional and Financial Services

The Department for Business and Trade split these businesses into Financial Services businesses and Professional and Business Services.

Financial Services encompass a broad range of businesses that manage money and provide financial services to individual businesses, and governments. Fintech firms are important in this space as they use technology to improve and automate the delivery and use of the financial services bringing them into direct contact with AI tools and technologies.

Professional and Business Services provide specialist advice and support, including to other businesses, enabling firms in all sectors to maintain and grow their operations. Activities covered under this definition include legal and accounting services but also broader business services including advertising and market research and office administration and support.

When assessing the adoption of AI and specific use cases, this distinction between financial services (including fintech) and Professional and Business Services, becomes important. As will be discussed in greater detail later, financial services (including fintech) has adopted AI across both operational and client customer facing activities, while business and professional services have been slower to adopt AI and have tended to use it more for back-office processes, as exemplified in the legal services sector.

Drivers of AI Adoption for Business, Professional and Financial Services businesses

According to a recent Microsoft article, written by their Corporate Vice President of Worldwide Financial Affairs [34], *'financial services companies are among the most advanced adopters of AI globally, even though they operate in one of the heavily regulated environments'.* The article goes on to argue that the reason for this is that financial services firms understand the long-term transformative power of AI in a disruptive and rapidly evolving landscape.

More specifically, financial services have the highest concentration of '*frontier firms that embed AI agents across every workflow to drive speed, agility and scalable innovation*'. Table 5-4 identifies some of the main drivers behind AI adoption among businesses in this disparate growth cluster:

[34] *AI Transformation in financial services: 5 predictors for success in 2026,* Microsoft, December 18th 2025. AI transformation in financial services: 5 predictors for success in 2026 - Microsoft Industry Blogs

Table 5-4: Key drivers of AI adoption in business, professional and financial services

Operational Efficiency and Automation[35]	AI adoption is strongly driven by the opportunity to automate high-volume processes, improve productivity, and streamline operations across customer service, cybersecurity, and compliance. In financial services, nearly half of current AI use cases focus on enhancing customer service through automated assistants and real-time insight tools. Large-scale automation also strengthens fraud detection and anomaly monitoring.
Value creation and pressure for Return on Investment[36]	Businesses increasingly adopt AI to deliver measurable value, shifting from experimentation to re-architecting core processes for speed, agility, and innovation. Frontier firms in financial services demonstrate that focused, high-impact AI investments can generate returns three times higher than slower adopters, reinforcing industry-wide pressure to pursue AI initiatives that yield clear commercial outcomes.
Changing client and market expectations	Professional services firms are adopting AI rapidly as clients increasingly expect providers to use AI-enabled tools, creating competitive pressure to modernise service delivery. Organisation-wide AI adoption in professional services nearly doubled to 40% in 2026[37], reflecting escalating demand for faster and more efficient workflows supported by generative and agentic AI[38].
Risk Management, Compliance and Fraud Detection[39]	AI is increasingly essential for managing organisational risk, particularly in regulated industries like financial services where fraud detection, Anti Money Laundering (AML) processes, and real-time threat identification are top priorities. Around 40% of institutions now prioritise AI for cybersecurity and fraud-related use cases due to its ability to enhance compliance efficiency and detect anomalies more accurately. Growing regulatory scrutiny — with bodies such as FSOC elevating AI as both opportunity and systemic risk — further incentivises institutions to adopt AI to strengthen governance, transparency, and defensive capabilities
Innovation Pressure & the Shift to Agentic AI[40]	Firms are moving beyond early generative AI adoption and preparing for agentic AI, motivated by a need to stay ahead of technological change and to maintain their competitiveness. Professional services organisations show widespread use of GenAI and are now investing in next-generation agentic tools, signalling a transition towards more autonomous and dynamic AI capabilities.
Data-Driven Personalisation & Insight Generation[41]	AI adoption is propelled by the need to turn large volumes of data into personalised, real-time insights that improve decision-making and customer experience. Financial institutions are already using AI to deliver hyper-personalised planning support, optimise service interactions, and provide analytics-driven intelligence to staff and clients. Additionally, AI supports predictive modelling and enhanced digital experiences, enabling organisations to leverage data assets more effectively

[35] *2026 AI Business Predictions'.* PWC, 2026 AI Business Predictions: PwC
[36] *AI Transformation in financial services: 5 predictors for success in 2026,* Microsoft, December 18th 2025. AI transformation in financial services: 5 predictors for success in 2026 - Microsoft Industry Blogs
[37] *2026 AI in Professional Services Report: AI adoption has hit critical mass, but now comes the tough business questions'.* Thomson Reuters Institute. 2026 AI in Professional Services Report: AI adoption has hit critical mass, but now comes the tough business questions - Thomson Reuters Institute
[38] Agentic AI refers to autonomous systems capable of independent reasoning, planning, and multi-step execution to achieve specific goals with minimal human intervention
[39] *'AI in Financial Services 2025: Turning Intelligence into Impact'.* Rackspace Technology, 2025. AI in Financial Services 2025: Turning Intelligence Into Impact
[40] *2026 AI in Professional Services Report: AI adoption has hit critical mass, but now comes the tough business questions'.* Thomson Reuters Institute. 2026 AI in Professional Services Report: AI adoption has hit critical mass, but now comes the tough business questions - Thomson Reuters Institute
[41] *AI in Financial Services'.* Resources Global Professionals (RGP) AI in Financial Services 2025

Adoption of AI: Tools and Business Uses

Business and Professional Services firms

Workshop participants stated that the sub-sector has been slower and more reluctant to adopt AI, and where AI has been adopted, tools have largely been 'off the shelf' (e.g., Copilot, ChatGTP) and have focused on efficiency improvements in 'backroom' administrative functions. This approach to AI Adoption and use was most prevalent when talking with solicitors and Legal Services firms.

'AI adoption for us, has largely been confined to non-legal work. There are AI tools embedded in our practice management system, and the firm has paid for these as part and parcel of wanting a connected workspace. As a firm, we are more comfortable adopting AI as part of our CRM and operational processes than for legal work'.

This perspective supports the literature on AI adoption across the legal sector, with multiple independent studies showing that law firms and legal departments lag behind other sectors in both depth and breadth of AI implementation. Adoption of AI tools in law practices is increasing but at a much slower rate than other parts of the business, financial and professional services sector. According to recent research by allaboutAI, only 21% of law firms use generative AI and where adoption is happening, this is primarily in larger firms, with 39% of large firms (defined as practices with 51 solicitors or more) using AI, compared with just 20% in smaller firms[42].

Workshop participants highlighted that AI tools are supporting the drafting of documents, particularly where their structure and their content is often repeated.

'In our legal practice, we have started using AI in the drafting of lease agreements and conveyancing documents, where the legal work is very black and white. If there is sensitive information being discussed, there needs to be control over the content and quality of any document'.

Financial Services

There was a strong indication from workshop participants that financial businesses are experimenting with different anthropic[43] and entropic[44] AI tools and looking to progress their adoption to more technical areas.

Focusing on Fintech, AI tools are enabling *'financial institutions to make better investment decisions based on market forecasts, mitigate customer risk with accurate underwriting and fraud detection, and automate complex operations like portfolio management and accounting*[45].

AI use within financial services includes:

- Fraud detection and financial crime prevention[46]: AI-driven fraud detection systems
- Credit scoring and underwriting: Analysing credit, histories, balance sheets and building accurate risk profiles to enable faster underwriting.
- Trading, portfolio optimisation and market forecasting: Automated decision-making, and portfolio optimisation

[42] AI in Law Statistics, allaboutAI, 2026, AI in Law Statistics 2026: Adoption, Accuracy, Profitability & Future Outlook
[43] Anthropic AI Tools: AI systems designed to augment, mimic, or enhance human-centric capabilities.
[44] Entropic AI Tools: AI applications that automate routine, repetitive, or "high-entropy" tasks (low-order data processing and administrative workflows)
[45] *AI in fintech: use cases, solutions, trends and implementation challenges, December 2025*
[46] *'AI Pays off: Survey reveals Financial Industry's latest technological trends'.* NVIDIA, February 2025. AI Pays Off: Survey Reveals Financial Industry's Latest Technological Trends

- Customer experience and personalisation: Chatbots, virtual assistants, and generative
- Automation of back-office and operational processes: accounting, reporting, AML checks, and real-time monitoring of working capital.

Enablers and Barriers of AI Adoption

A key driver for the adoption of AI within BFPS, is the personalisation of services, tailored more explicitly to individual need. This personalisation of services and greater interaction, between service provider and service user, gives rise to both an enabler and a barrier to AI adoption – the need for human interaction.

'AI can help individuals and businesses to personalise services more readily, but I think there will always be that need for face-to-face contact and that may well continue to limit AI adoption in certain areas. There are plenty of opportunities for AI to help but we need to be careful'.

The above quotes point to a significant barrier discussed with workshop participants. *'Decisions made in business, finance and other professional services businesses have direct human impacts, whether you are accepted for a mortgage or a credit card in financial services, contractual agreements in legal and commercial services and even deprivation of liberty in criminal cases'.*

This facet of decision-making poses legal, moral and ethical questions surrounding the use of AI and brings into sharp focus two related areas of compliance and regulation. As already referenced, BFPS is one of the most regulated sectors. Despite this regulation, there is still significant adoption of AI but it needs to be in the right areas and focus on the right activities that augment individuals' role and activities. Human activity can be actively participated in the operation, supervision or decision-making of AI in human-in-the-loop (HITL) systems or processes. In HITL, humans are involved in AI workflows which can help to ensure accuracy, safety, compliance, accountability, or ethical decision-making[47]. HITL allows humans to fix incorrect inputs and can provide an audit trail around decisions which can support transparency. This approach may help to mitigate some barriers to AI use in highly regulated sectors by reducing risk.

'AI is great at doing credit checks and trawling data to help humans make a decision and that is the point. It is about supporting humans to make the right decisions, not taking the decisions out of their hands'.

The second barrier is data. The last quote identifies the role AI is playing in analysing and interpreting large volumes of data to help people make decisions. However, as one workshop participant stated:

'AI, and the outcomes it produces is only as good as the data that feeds it. If you provide rubbish data into the system, you are going to get rubbish outcomes'.

Concerns over data are not restricted to the amount and quality of data used, but also where the data is stored, both geographically and technologically. Workshop participants highlighted concerns over what tools are being accessed, the source of data being used by AI is and how that data is being processed:

'We are slower to adopt, compared with other businesses and sectors, but with good reason. Data protection is important to us. We are processing personal and sensitive data and all the mechanisms surrounding how this data is processed is important and represents a huge reputational risk'.

[47] *What is human-in-the-loop?*, IBM, What Is Human In The Loop (HITL)? | IBM

5c: Health and Life Sciences

The OECD taxonomy does not neatly align to health and life sciences. The closest match is the broader Scientific R&D classification (rated as 'high') which is significantly broader.

Defining Health and Life Sciences

The Department for Business and Trade define 'Life Sciences' as *'businesses involve in the developing and/or producing their own pharmaceutical products and all businesses whose primary business involves producing medical technology products, ranging from single use consumables to complex hospital equipment, including digital health products'*.

This definition incorporates bioscience and health technology businesses, which is where our workshop participants' businesses operate. Biopharmaceutical services are involved in developing or producing their own pharmaceutical products and supplying these to the NHS and other public and private sector health service providers. Core medical technology businesses' primary activities involve developing and producing medical technology products, which are, again supplied to the NHS and other health services.

Drivers of AI Adoption for Health and Life Science businesses

The drivers behind AI Adoption in Health and Life Sciences are simple and centre on two issues, the need for operational and financial efficiency, and the role of AI in supporting patient and service user experiences and medical outcomes.

The NHS is under significant financial pressure, with many NHS Trusts and Primary Care Trusts (PCTs) operating under significant budgetary constraints. AI tools can be used to find efficiencies and savings in two main areas, nonclinical and clinical activities. Use of AI in clinical areas focus primarily on diagnostic enhancements and importantly, support or augmenting the roles and activities of medical clinicians and practitioners. Workshop participants highlighted inefficiencies in different areas of diagnosis and stated that there is a drive to adopt AI to support more accurate and timely diagnosis.

The critical point for participants was that deployment of AI in the NHS must be targeted in the right areas, particularly given the financial and budgetary constraints discussed above.

Adoption of AI: Tools and Business uses

AI adoption and use in the Health and Life Sciences Sector is principally divided between supporting administrative processes, like workflow management and orders processing, and customer/patient facing uses, which centre on triaging and diagnostics.

Administrative adoption of AI in Health and Life Sciences

In seeking efficiencies in administrative process, workshop participants discussed the use of AI tools in several areas:

- Using AI to automate **internal processes** relating to product ordering, invoicing and organisation of workflows.
- Clinical systems that GP practices use to **facilitate patient triage** and completion of standardised reports and documents e.g., filing of blood tests and completion of lab reports.
- Several workshop participants identified an opportunity for AI to support paramedics to more **rapidly complete patient forms**, allowing them to get back on the road to deal with patients. *'Using AI here would save significant resource and reduce the time taken to hand patience over'*.

Clinical and diagnostic enhancement:

Clinical and diagnostic enhancements are where AI is making a real impact in the health and life sciences sector. There are numerous examples of AI tools being used to expedite patient diagnosis and to support traditions, and specialists with this responsibility.

'There has been a real explosion in the use of digital imaging tools for reviewing X-rays and scans. The systems are incredibly adept at identifying bone fractures and spotting tumours or other anomalies'.

AI adoption in health and life sciences is supporting humans to more effectively and efficiently make judgments and decisions that impact patient well-being. With an ageing population leading to a greater requirement for health services, workshop participants highlighted that AI will become increasingly important.

Enablers and Barriers of AI Adoption

Organisational infrastructure that supports AI research and adoption

Workshop participants identified local assets that would serve to support and expedite AI adoption, particularly within a diagnostic setting. Reference was made to the National Health Innovation Campus at Huddersfield University and the role that is playing on support digital transformation and AI Adoption:

'This campus is a multi-million pound development that has been designed to improve health outcomes and drive health innovation across the whole of the north of England by bringing together the NHS, industry and community partners. It represents a positive example of collaboration between the NHS, the private sector and local communities'.

The campus plays a direct role in advancing AI adoption in Health and Life Sciences by enabling cutting edge research and innovation in areas such as AI enabled healthcare applications, diagnostics, medical technologies and digital health solutions. According to their website, there are variety of projects looking at AI powered accessibility tools for mobile health apps, the use of AI to improve education, engagement and tailored support for underserved populations and AI enabled research opportunities for students and researchers in areas including disease detection, intelligent surgery support tools and predictive modelling.

Workshop participants also drew attention to the Leeds Innovation Arc Science Park, a city centre health and life sciences innovation district that brings together universities, NHS hospitals, industry partners and data science infrastructure to support research, technology development and commercialisation. The park is also home to the Leeds Institute for Data Analytics (LIDA), which is applying advanced data science, digital technologies and artificial intelligence to real world healthcare challenges.

'We have several universities, science parks and facilities that arguably place West Yorkshire at the front of AI adoption within the health and life sciences sector. For me, the key is unlocking the opportunities that this organisational infrastructure a network of partnerships can provide and also ensuring that investment is targeted at the right technologies and the right issues'.

Use of appropriate data platforms

Despite the organisational infrastructure, the array of expertise in development of AI products and tools, and the undoubted willingness of businesses and individuals in the sector to pilot tools and make real strides in adoption of AI, there were concerns regarding the use of non-UK cloud platforms, which are not tailored to the needs of the NHS, and which are expensive to use. Workshop participants argued that these cloud platforms could and should have been developed in the UK, which would strengthen the domestic AI infrastructure, whilst also ensuring that sensitive data remains in the UK.

5d: Digital and Technologies

Table 5-3: AI Taxonomy – Digital and Technologies

OECD Sector denomination	OECD summary indicator of AI intensity
Telecommunications	High
IT Services	Medium

Source: OECD sectoral taxonomy of AI intensity

Defining the Digital and Technologies sector

The digital and technologies sector develops and applies advanced technologies and digital tools to drive transformative changes in our economy and society. These technologies are foundational and enable other innovations and transformations across different sectors. The definition of the digital and technologies sector encompasses advanced connectivity technologies, artificial intelligence, cyber security, engineering biology, quantum technologies and semiconductors. Compared with the other sectors and growth clusters considered, the digital and technologies sector, includes AI itself.

Drivers of AI Adoption for Digital and Technology businesses

Many of the drivers of AI adoption in digital and technologies businesses have already been explored in our discussions of other growth clusters, and include:

- competitive pressure to accelerate innovation, build new products and stay ahead in fast moving markets[48].
- Demand for efficiency, automation and cost reduction.
- Increased global investment in AI technologies to future proof service offers.
- advances in cloud, compute and digital infrastructure.
- the proliferation of agentic AI and GenAI across digital workflows.
- Access to data and increasing use of AI for analysis and insight generation.
- Regulatory, market and customer expectations.

Workshop participants acknowledged these drivers but also highlighted several specific drivers of importance to the digital and technologies sector:

The role of young people in driving AI use

Workshop participants highlighted the role of the next generation in further developing AI technologies and its use:

'Millennials and young people have a real interest in this technology and the ability to write content at scale, to draft code and to maximise the benefits of AI technologies and technologies businesses. They will drive the adoption of AI in the coming years, and this sector is at the forefront of allowing that'.

Clients expecting the use of AI in service offers

The expansion in AI adoption is also driving customer and client expectations regarding future use. *'Increasingly, we are working with clients who are expecting us to use AI as part of our service offer. They regularly ask us are you using GitHub or Copilot? If not, why not? There is now the expectation that you can turn client requests round far faster, why do you need 5 developers when you can do it with one. There is definitely client demand which is driving our adoption of AI internally'.*

[48] *'The state of AI in 2025: Agents, innovation and transformation'.* McKinsey, November 2025. The State of AI: Global Survey 2025 | McKinsey

Rapid expansion of start-up Digital and Technologies businesses

Workshop participants proposed that AI is allowing fledgling businesses to more rapidly expand their business activities and reach a critical mass in terms of revenue, more quickly than would be possible otherwise. AI can be used to make day to day business administration tasks including recruitment, finance and accounting, and marketing, more efficient allowing more time for product development and sales.

Adoption of AI: Tools and Business uses

A combination of desk research and discussions with workshop participants have identified the following uses of AI technology, within this growth cluster.

Table 5-5: Key drivers of AI adoption in digital and technology businesses

Software Development and Engineering automation	Digital and technologies firms are using AI to accelerate coding, automate testing, debug software, generate documentation and optimise deployment pipelines. AI assisted development is one of the primary use cases in the technology industry.
Product Innovation and New AI-Driven Features	AI enables companies to create smarter and more personalised digital services, tailored to the needs of users. AI is directly enabling innovation within Digital and Technologies cluster, fuelling new product lines, platform enhancements and differentiated customer experiences.
Content Creation and Personalisation	Generative AI is increasingly being used to generate personalised content for customers. AI tools are being used to more rapidly and efficiently create digital content and are becoming integral to the development of creative content.
Customer support, Sales and Marketing	Workshop participants spoke of the increased use of AI agents, chat bots and virtual assistants to support with customer engagement personalised marketing to support sales.
Cybersecurity and threat detection	Digital and Technologies companies are using AI detect anomalies, predict cyber-attacks and automate responses to threats, all of which reduce security workloads.

Enablers and Barriers of AI Adoption

Concern over the rationale for adopting AI

There were concerns among participants that the drive for AI use, across many industry sectors, comes from the proliferation of available AI tools, rather than the identification of formal business user cases and needs.

'It is important that businesses don't fall into this trap. Adoption is currently based on the availability of AI tools and the apparent desire to be involved, and not on the identification of business processes that could benefit from AI use and that could solve a genuine efficiency problem'.

The pace of technological change

'People are worried about making a decision now in case the outlook changes in a couple of weeks' time. AI is changing so rapidly, clients are not sure what AI tools to implement or when to implement them'.

Based on our discussions with workshop participants, there appeared to be a degree of anxiety among businesses regarding what AI tools to invest in, where to implement them within the operational or client facing business infrastructure, and when to implement them. This anxiety or apprehension is exacerbated because of the pace of change in AI technology and tools. Businesses are unclear which tools are the most appropriate for their activities, which versions of those tools are the most up-to-date and effective and are concerned that when they have adopted a tool, it will soon become out of date.

'In defining and clearly articulating the business use cases for AI adoption, you become less concerned with whether the tool is the most up-to-date or technologically advanced and more concerned whether that tool is suitable for what the business requires'.

Young people as a catalyst for AI Adoption

According to workshop participants, the Digital and Technologies sector, alongside Creative Industries, discussed later, is an attractive sector for young people to move into. This perception is born out in comparative workforce data, which shows that the digital and technology sector has a younger workforce profile, with only just over one fifth of UK IT workers over the age of 50. International comparisons reinforce this trend with, for example the average age of a US 'Internet worker' being 34.6 compared to the general workforce of 42.3.

'The young people entering the industry have a real and genuine interest in AI, have experience of using AI tools and can arguably drive adoption and innovation as they progress through their careers. However, to maximise the benefits of young people and their inherent interest in technology, it is important that companies invest in these tools and also invest in the education and personal development of their staff'.

Senior leadership and managers within businesses need to encourage, not only the recruitment of young people into their industry but also invest in their ongoing personal and professional development. As one workshop participant stated:

'The younger generation are impatient; they become easily restless and are quite demanding. Businesses need to invest in these young people, maintain and retain their interest and ensure that they develop their skills and experience. If they do this, young people can become the current and future adopters of innovative technologies'.

5e: Creative Industries

The OECD taxonomy does not neatly align to Creative Industries. The closest match is the more specific 'Media' category which is rated as 'high'.

Defining Creative Industries

Creative Industries encompass a broad group of sectors built on individual creativity, skill and talent, with economic value generated through the creation and commercial exploitation of intellectual property. They span activities ranging from publishing, film, TV and broadcasting to computer programming, design, advertising, architecture, cultural education and the performing and visual arts, as defined through associated Standard Industrial Classification (SIC) codes. Within this wider ecosystem, the sector also includes key frontier subsectors: Advertising and Marketing, Film and TV, Music, Performing and Visual Arts, and Video Games, which all represent high-growth, innovation-intensive industries that rely heavily on creative content, digital production and specialised cultural expertise.

Drivers of AI Adoption for Creative Industries

In combining extensive desk research and discussion with workshop participants, Table 5-6 provides a summary of the main drivers of AI adoption among creative businesses. These drivers include a focus on productivity and efficiency gains, through to the use of AI in enhancing digital content creation.

Table 5-6: Key drivers of AI adoption in Creative Industries

Productivity and efficiency gains[49]	AI is being widely adopted among creative industries to enhance productivity, automate routine tasks and reduce costs. In creative agencies AI is being used to streamline workflows, accelerate content production and improve task efficiency. According to workshop participants generative AI is also transforming how creative products are being produced, distributed and consumed. AI tools are helping creators reach wider audiences with fewer resources.
Innovation and creativity enhancement	A major driver behind AI adoption is its ability to expand creative possibilities. AI Is transforming the creative process through generating complex texts, high quality images, and videos in just a few minutes. Tools can support creative thinking and act as a research tool in stages prior to artistic production[50]. According to recent research by Goldman Sachs[51], Generative AI could automate up to 26% of tasks in the arts, design, entertainment, media, and sports sectors.
Competitive advantage	The creative industries are undergoing a major technological shift and AI adoption is increasingly seen as required for maintaining competitiveness and competitive advantage, particularly within fast moving sectors like screen industries, advertising, gaming and design. Taking film as an example, several reports highlight that AI tools are becoming essential for studios seeking to scale up and produce higher quality outputs. [52]

[49] *Creative Economy Outlook 2024 - Chapter III: Digitalization and artificial intelligence in the creative economy*

[50] *'AI Could automate up to 26% of tasks in art, design, entertainment, and the media'* UOC Research. How AI is changing professions like design, art, and the media | UOC

[51] *'The potentially large effects of artificial intelligence on economic growth'*. Goldman Sachs Economics Research, March 2023. Global Economics Analyst The Potentially Large Effects of Artificial Intelligence on Economic Growth (BriggsKodnani)

[52] *'BFI and CoSTAR launch report on generative AI for the screen industries'*. British Film Institute, June 2025. BFI and CoSTAR launch report on generative AI for the screen industries | BFI

Demand faster, scalable content production	According to workshop participants, generative AI is supporting the creation of high volume and rapid turnaround content, which is important in areas such as marketing, film and design. *'As a marketing agency, we need to get content out to the market as quickly and efficiently as possible. AI is allowing individuals and businesses to generate content very quickly and to push that content out to large volumes of people. We can scale up content generation almost exponentially using AI tools in the right way'.*
Data Driven Insights	AI supports tasks like content analysis, recommendation systems, segmentation, detection and metadata tagging, all of which help creative organisations gain insights to inform design or editorial decisions[53]. Film and TV organisations, such as the BBC and the British Film Institute National Archive are already using AI for structured metadata generation and the classification to improve accuracy and operational efficiencies.
Digital Transformation and Market Pressures	AI adoption is increasingly being tied to broader shifts in digitalisation across the creative industries. Organisations are adopting AI to keep pace with new digital distribution models, changing consumer expectations, the need for personalised and real time content and increasing global competition.

Adoption of AI: Tools and Business uses

Large Language Models (LLM)

Although discussed within the context of creative industries, Large Language Models (LLMs) have become foundational tools across multiple sectors. Within creative industries, individuals and businesses are using LLMs to support concept development, script writing, copywriting and broader workflow automation[54]. As one workshop participant stated:

'We are using ChatGPT extensively to help us generate text, draft scripts, research themes or concepts and assist with analysing and structuring what we call long form content'.

Image and design tools in advertising, film and TV

Businesses are using generative visual tools to help in areas such as design, advertising, film and TV pre-production. According to workshop participants, tools such as Midjourney and Adobe Firefly enable rapid creation of concept art, mood boards, visual assets and design explorations. These sorts of AI tools accelerate early-stage ideas creation and can support visual experimentation at far larger scale.

'We are increasingly hearing from individual content creators and small businesses who are seeing the use of AI tools for audiobooks, voice over work and commercials. They can get their audiovisual content out very quickly, but there are ethical and contractual considerations associated with this type of activity'

Music and sound production

AI has been embedded in music production for decades, with tools used to support composition, sound design, and advanced postproduction workflows. AI tools offer functions such as automated mastering, noise reduction, music composition and audio texture generation. They assist in producing soundtracks, refining mixes and generating original audio content.

[53] *'Artificial intelligence and creative industries: advances prior to 2025'.* University of Bristol. Artificial Intelligence in Creative Industries: Advances Prior to 2025

[54] *'Advances in artificial intelligence: a review for the creative industries'.* Advances in artificial intelligence: a review for the creative industries - PMC

Video, animation and VFX

AI is playing a significant role in streamlining production and post-production processes in the film industry, supporting automation, content enhancement and accessibility. For example, VFX and animation AI tools are automating labour intensive tasks such as rotoscoping, scene tracking, pre-visualisation and generative animation. They enable more ambitious creative outputs to be produced at a far lower cost. These AI tools are making organisations more operationally efficient and are unlocking new ways of organising and managing data and media archives[55].

Gaming and Interactive Media

The gaming sector uses AI extensively to support personalised content generation. This might include developing interactive and online worlds, character animation and narrative development. Generative tools are supporting designers in production of large-scale environments, the automation of repetitive animation tasks and in generating adaptive unresponsive dialogue systems.

'The Park VR is a really good example of a local business developing and merging AI with virtual reality. A couple of years ago they released a virtual gaming experience called The Break In, which was really positively received. It was all about generating responsive and immersive gaming experiences for players'.

Enablers and Barriers of AI Adoption

Reflecting the workshop participants, which included a representative body for the Film and TV industry, discussion centred on maintaining artistic integrity and the role of regulation which can be considered as both barriers and enablers of AI adoption within the creative industries.

Artistic Integrity, Copyright and Regulation

As discussed above, AI tools are enabling individuals and businesses to rapidly generate audio and visual content, which can then be shared with larger audiences at the touch of a button. The ease with which content can now be generated, in many instances without the individual needing to be present, raises different ethical, moral, legal and regulatory considerations.

Workshop participants discussed the importance of artistic integrity, copyright law and awareness of the rights of individual content generators. Referencing artistic integrity, one participant stated:

'Integrity is all about making the consumer of AI aware what it is they're looking at, being told about that and for the content generator to be able to give consent or refuse consent for their content to be used'.

Consideration was given to the creation of toolkits for content generators, to help them be aware of how they can challenge contract terms and commissions, identify what clauses they want to see within contracts mechanisms that can be used to protect the content they generate. Discussion also focused on the suitability of current regulations surrounding the use of AI.

'For me, there is adequate regulation in place to support the industry, but it is about how this regulation is enforced. There is case law being generated as we speak, and there is regulation around what people are allowed to scrape, what counts as publicly available content and there are already opt out capabilities, but this all has to be legally enforceable'.

[55] *'AI in the Screen Sector: Perspectives and Paths Forward, A Foresight Lab Report'.* CoSTAR, UKRI and the Arts and Humanities Research Council, June 2025 bfi-ai-in-the-screen-sector-perspectives-and-paths-forward-2025-06-v1.pdf

5f: Green Economy

The OECD taxonomy does not neatly align to the Green Economy sector.

Defining Green Economy businesses

Defining the Green Economy is challenging as it does not denote a specific industry sector. The UK government defines the Green Economy as the economy wide shift towards low carbon, resource efficient, and environmentally sustainable economic activity. This definition includes both conventional industries that are transitioning to low carbon practices, together with dedicated environmental goods and service sectors, for example renewables, energy efficiency and clean transport.

Drivers of AI Adoption for Green Economy businesses

Table 5-7: Key drivers of AI adoption in Green Economy businesses

Productivity and efficiency gains	Green Economy businesses, (e.g., renewable energy operators, energy efficiency installers, EV infrastructure providers, and recycling firms increasingly) operate in cost sensitive and data intensive environments. AI supports their capacity to optimise energy generation output, manage fluctuate markets, and fulfil continuous reporting obligations. It does this through predictive maintenance, fault detection on renewable assets, automated energy pattern analysis and optimisation of heat pump or retrofit operations.
Support for net zero transition and sustainability goals	AI enables automated carbon accounting, accurate forecasting of renewable energy generation, optimisation of storage and grid balancing and verification of emissions.
Competitive advantage and growth opportunities	The Green Economy is one of the fastest growing segments of the UK industrial landscape and AI is a major enabler of competitive advantage. For example, it can accelerate clean tech product development, can help firms win contracts requiring consideration of environmental sustainability, and can support smart infrastructure roll out such as EV charging networks and district heat systems
Cost reduction, automation and data-driven decisions	The high cost and labour intensity of environmental compliance, emissions monitoring, ESG reporting, and renewable asset management create strong incentives for Green Economy businesses to automate their activities. AI tools and technologies can be used to automate data capture from sensors, to analyse energy consumption patterns, to identify evidence and to conduct real time monitoring of environmental conditions. These businesses generate large quantities of geospatial, engineering, and sensor-based data, making AI not just beneficial, but essential for rational decision making.

Adoption of AI: Tools and Business uses

Discussions with workshop participants primarily identified adoption of AI tools to support and streamline internal business operations and functions. For this reason, uses of AI among Green Economy businesses has largely come from secondary, desk-based research and understanding.

The Green Economy sector in West Yorkshire, and across the rest of the UK, is undergoing rapid expansion, driven by ambitious national and regional Net Zero commitments and targets, and by the growth of industries in renewable energy, low carbon building technologies, hydrogen, district heating and alternative fuel vehicles.

AI in renewable energy optimisation

Green Economy businesses and activities are significantly anchored to renewable energy, particularly wind and solar power. Increasingly, AI is playing a critical role in optimising how renewable energy systems are functioning. Machine learning models are being widely used to conduct predictive maintenance for wind turbines, to identify early signs of mechanical stress or component failure to reduce downtime and extend their life. AI is also being deployed to support forecasting of energy generation based on weather data, which is, in turn enabling better planning and integration into the wider electricity grid.

Low carbon building technologies and energy efficiency systems

Building technologies, including heat pumps, insulation systems and wider retrofit markets, have represented, and continue to represent, a major growth area for the UK and West Yorkshire. Smart building systems use AI technology to analyse energy use patterns, automate heating and cooling, and identify opportunities for reducing energy consumption. This support both cost savings and emissions reductions. Building retrofit programmes also benefit from AI tools that model building performance, forecast the impact of different retrofit interventions and optimise sequencing and prioritisation across housing stock.

AI in electric and alternative fuel vehicles

As with building technologies, the alternative fuel vehicle subsector is another area for significant growth and another where AI can be and is widely applied. In this sub sector, AI helps local businesses optimise the placement and operation of electric vehicle charging infrastructure by predicting demand at different geographical scales. Machine learning also supports the monitoring of battery health, enabling more accurate prediction of battery degradation patterns, which can be used to improve life cycle management. There is also evidence of AI tools being used to optimise transport routes and model emission reduction strategies, including dynamic traffic optimisation and emission modelling.

Hydrogen, District Heating and Climate Adaptation Technologies

AI technology is being used to enhance these systems through enabling precise management of hydrogen production and distribution, improvement in the efficiency of district heating flow modelling, and supporting regional climate resilience planning. AI is helping to model future climate scenarios, predict flooding patterns, assess heat island intensities and identify infrastructure vulnerabilities, enabling local authorities and businesses to make data-driven adaptation decisions.

Energy from waste and circular economy systems

Businesses in this field are increasingly relying on AI to enhance operational efficiency. This includes use of computer vision systems to identify and sort materials into waste streams, to improve recycling rates and to reduce contamination. Predictive maintenance models are also improving reliability and efficiency in energy from waste facilities by anticipating equipment failures and route optimization tools are helping waste collection and recycling operators to reduce fuel usage, cut emissions and increase collection efficiencies.

Carbon accounting and environmental monitoring

Carbon accounting, emissions measurement and environmental monitoring are pivotal to the implementation and assessment of net zero plans. Tools enable businesses to automate carbon footprint calculations, process emissions data in real time and produce more accurate reporting outputs. Environmental services providers are using AI powered sensor networks in areas such as air quality, water quality and soil monitoring to streamline data collection and improve response strategies. Other

organisations are increasingly using scenario modelling systems, supported by AI, to help predict emissions trajectories and to evaluate the impact of different decarbonization initiatives.

Enablers and Barriers of AI Adoption

In exploring enablers and barriers with workshop participants, emphasis was on identification of sector and industry-specific examples, which focused on areas including renewable energy, retrofit and climate adaptation activities, to name just three.

Strengthening of regional green-tech clusters and supply chains

West Yorkshire's rapidly expanding green-tech and low-carbon supply chain, valued at £8.1bn and projected to grow to £11.1bn by 2026, creates favourable conditions for AI adoption[56]. The scale and diversification of local activity in hydrogen, district heating, retrofit, climate adaptation and renewable energy, provide firms with natural entry points for AI tools such as predictive maintenance, energy-system optimisation and carbon-tracking software.

Availability of regionally coordinated green-business support

The Combined Authority's programmes, ranging from sustainability audits to carbon-footprint tools and specialist advisory support, help build the operational readiness required for AI deployment[57]. These schemes provide structured data, emissions baselines and digital processes that AI solutions can build upon, particularly in retrofit, energy-efficiency and low-carbon construction markets.

A strong digital and data ecosystem aligned with climate-tech needs

West Yorkshire's digital economy, home to 9,700 tech businesses and specialist organisations such as the Leeds Institute for Data Analytics (LIDA) and Open Innovations, gives green-sector SMEs access to advanced data expertise[58]. This ecosystem supports the integration of AI into environmental monitoring, materials optimisation, lifecycle analysis and green-infrastructure planning.

Policy momentum linked to Net Zero 2038 and regional growth plans

The region's commitment to achieving net zero by 2038 and the prioritisation of the green economy within the £7bn West Yorkshire Growth Plan incentivise experimentation with AI to accelerate emissions reduction, improve retrofit productivity and scale low-carbon energy systems[59]. This policy direction signals long-term demand certainty, encouraging firms to adopt AI capabilities that improve performance and competitiveness.

Sector-specific skills shortages in environmental data and climate analytics

Green Economy SMEs often lack the combined expertise needed to integrate AI into low-carbon engineering, emissions modelling or building-performance analysis. Nationally, the skills gap is the

[56] *'West Yorkshire's green economy - sector mapping study'*. Green Economy, 2026 West Yorkshire's green economy - sector mapping study
[57] *'West Yorkshire launches green economy action plan'*. Place Yorkshire, 16 December 2025. West Yorkshire launches green economy action plan - Place Yorkshire
[58] *'Data analytics and artificial intelligence applications in West Yorkshire'*. Data analytics and artificial intelligence applications in West Yorkshire article business.gov.uk international
[59] *'Support for green economy businesses'*. West Yorkshire Combined Authority, Green economy - Business support

leading barrier to AI adoption, and in West Yorkshire this gap is intensified by shortages of workers with climate-data, digital-retrofit and environmental-modelling skills[60].

Fragmented and immature data infrastructure within green supply chains

AI deployment in the Green Economy depends on structured datasets, such as building-performance data, emissions inventories, materials-flow data and energy-system telemetry. However, many SMEs in retrofit, renewable installation or waste-management rely on legacy systems and unstandardised data collection, limiting the viability of AI-driven optimisation or predictive modelling[61]. This mirrors wider national findings on data readiness barriers for SMEs.

Fragmented and immature data infrastructure within green supply chains

West Yorkshire expects significant expansion in low-carbon infrastructure, retrofit activity and clean energy deployment by 2030. While this growth creates demand for digital solutions, it also places operational pressure on firms, leaving limited time to explore or pilot AI tools, particularly for smaller businesses juggling delivery deadlines and workforce shortages.

Summary of cross-sectoral drivers, enablers and barriers to AI Adoption

Having explored drivers, enables and barriers to AI adoption within each of the growth cluster workshops, it became clear that there were common issues emerging under each of the three themes.

Cross-Sectoral Drivers of AI Adoption

Table 5-8: Key cross-sectoral drivers of AI adoption

Cross-sector Drivers	Explanation
Operational Efficiency (Time Saving)	AI is increasingly used to streamline routine or labour-intensive tasks, reducing manual processing and freeing staff to focus on higher-value work. Organisations see time savings as an immediate and tangible benefit, particularly where demand pressures or workforce constraints make existing processes unsustainable.
Operational Efficiency (Cost Reductions)	By automating repetitive activities, optimising workflows, and improving resource allocation, AI offers opportunities to reduce operating costs. These savings can come from lower workforce inputs, improved asset utilisation, or reduced error rates that limit work duplication and waste.
Quality control and improvement (e.g., diagnostics, content, coding)	AI enables more consistent and accurate outputs across a range of functions—whether supporting clinical diagnostics, improving content quality, or enhancing code reliability. Its ability to detect patterns, flag anomalies, and standardise outputs helps organisations improve quality while maintaining speed.

[60] *'Major barriers to AI adoption remain for UK businesses, despite growing demand, new report reveals'.* Tech UK, March 2025. Major barriers to AI adoption remain for UK businesses, despite growing demand, new report reveals

[61] *'AI adoption – Unlocking growth potential for Small Businesses'.* Digital Catapult and the National Innovation Centre for Data, October 2025. AI-adoption---Unlocking-growth-potential-for-Small-Businesses.pdf

Competition and competitive advantage	As more organisations integrate AI into their operations, adopting these tools becomes a way to stay competitive. AI can provide faster service delivery, deeper insights, or more personalised products, helping organisations differentiate themselves in crowded markets.
Innovation and technological advances	AI is seen as a catalyst for innovation, enabling new business models, products, and services that were not previously viable. As the technology matures, organisations are motivated to experiment and explore its potential to transform how they operate and deliver value.
Meeting client expectations and responding to market trends	Clients and stakeholders increasingly expect AI-enabled solutions, whether in the form of faster turnaround times, personalised experiences, or more data-driven insights. Adoption is often a response to these shifting expectations, as organisations seek to remain relevant and aligned with broader market trends.

Cross-Sectoral Barriers to AI Adoption

Table 5-9: Key cross-sectoral barriers of AI adoption

Cross-sector Barriers	Explanation
Financial constraints and uncertainty around ROI	Many organisations struggle to justify upfront investment in AI due to limited budgets and uncertainty about long-term returns. The benefits can be difficult to quantify in advance, particularly for smaller organisations or those with competing financial pressures.
Skills and knowledge gaps, lack of AI expertise	A shortage of technical expertise, ranging from data science to AI governance, slows adoption across sectors. Without in-house capability or access to specialist support, organisations often lack the confidence to implement or scale AI solutions safely and effectively.
Data readiness and infrastructure limitations, especially in SMEs	AI depends on high-quality, well-structured data and the infrastructure to process it. Many organisations, particularly SMEs, face challenges such as fragmented systems, legacy technologies, or insufficient data governance, which restrict their ability to adopt AI tools.
Cultural resistance and fear of job displacement	Concerns about workforce impacts, alongside broader uncertainty about the role of AI, can create resistance to change. Employees may worry about job displacement or loss of autonomy, which can slow adoption unless supported by clear communication and change-management activity.
Regulatory and ethical concerns	Uncertainty around evolving regulation, combined with concerns about fairness, accountability, and privacy, creates hesitation, particularly in sectors handling sensitive data. Organisations want assurance that AI tools comply with legal requirements and align with ethical standards before progressing.
Time constraints preventing uptake of AI opportunities	For many teams, day-to-day operational pressures limit the capacity to explore or pilot AI solutions. Without dedicated time or resource to test new approaches, organisations struggle to move beyond initial interest and into practical implementation.

6 Implications for West Yorkshire AI Adoption Support

Introduction

This final section considers the implications for how West Yorkshire Combined Authority and its partners can maximise the economic benefit for the region through effective and targeted support.

Section 4 shows how increasing early adoption can have a significant effect on the technology adoption curve to bring forward the realisation of the economic potential of AI. Different types of business support needed to encourage AI Adoption among West Yorkshire businesses have been considered. Interventions have been prioritised and ordered to reflect their likely impact on bringing forward the realisation of economic potential.

Discussions with stakeholders and businesses from West Yorkshire's key growth clusters have highlighted the increased pressure for SMEs to adopt new digital technologies and adapt to emerging market and consumer expectations surrounding the use of AI. It is important that AI Adoption support is reflective of, and tailored to, their immediate and longer-term needs, and that it also aligns to the adoption and growth potential of specific sub-sectors and businesses[62].

The Role of the Combined Authority in AI Adoption

An important aspect of this research is to identify and explore the possible roles and responsibilities of the Combined Authority. Rather than being a direct deliverer of services, stakeholders and businesses consistently positioned the Combined Authority's roles as:

- a convenor of, and champion for, AI support.
- a commissioner of services that align with business needs.
- coordinating support and how that support is funded.

A recurring theme across our engagement with stakeholders and businesses, was the view that the Combined Authority is uniquely positioned to bring together the right mix of actors, including SMEs, sector bodies, universities, NHS partners, technology providers, investors and other intermediaries. The Combined Authority plays an important role in:

- Creating a shared regional approach for digital adoption, aligned to key sectoral and growth cluster strengths.
- Enabling cross-sector collaboration, such as linking creative industries with technology firms.
- Aligning national, regional and local technology adoption programmes, reducing duplication, ensuring consistent messaging, and simplifying access for businesses.
- Convening and managing communities of practice, including AI business champions, early adopters and specialist networks.

[62] For example, our earlier consideration of the Business, Financial and Professional Services sector/cluster

Prioritising AI Adoption Support

'A modern business support offer for West Yorkshire should be multi-layered, flexible and, above all, tailored to the diverse needs of SMEs across our key growth clusters and stages of AI adoption maturity'.

Discussions with workshop participants and stakeholders have identified several themes or types of support. Reflecting the role that AI business support should play in expediting adoption of AI tools, this sub-section has prioritised types of AI support according to their capacity to impact positively on the scenarios for potential economic impact on West Yorkshire's growth clusters detailed in Section 4, including how support can target and increase early adoption.

Priority One: Education, Awareness Raising and Skills Development

SMEs across West Yorkshire require greater awareness of what AI and emerging technologies can offer, alongside improved digital literacy and foundational skills. Many businesses are uncertain about where to start, fear of making the wrong investment, or have misconceptions about the capabilities and limitations of AI. The 2025 West Yorkshire Business Survey found that 28% of businesses use AI, leaving 72% that don't use it at all. Increasing the awareness and knowledge of AI plays a pivotal role in increasing the number of early adopters and expediting economic impacts, and there is a clear role for the Combined Authority. Future support could include:

- **Foundational skills and literacy:** Introductory sessions explaining core AI concepts, common tools, and realistic expectations of impact; Clear, jargon-free guidance on data security, intellectual property, ethical considerations and regulatory responsibilities; Practical training and explainer resources tailored for non-technical audiences.
- **Sector-specific use-case awareness raising:** Tailored content and awareness raising for growth sectors, for example:
    - ***Manufacturing:*** E.g., predictive maintenance, quality control, robotics, automation. This is already integrated within the exiting Made Smarter programme.
    - ***Creative Industries:*** E.g., content creation tools, rights management, copyright, ethical use of generative AI.
    - ***Healthcare and Life Sciences:*** E.g., data governance, workflow optimisation, clinical safety considerations.
    - ***Professional Services:*** E.g., automation of document handling, risk management, compliance and process efficiency.

Actions for the Combined Authority:

- Commission provision of **foundational AI literacy programmes** targeted at non-technical SME leaders and staff. These programmes could be delivered via workshops and information sessions. The Combined Authority could design and implement (or coordinate with partners) a **region-wide awareness raising campaign,** bringing on board relevant training organisations, businesses and wider stakeholders where needed.
- Production of accessible **toolkits and guidance** on different topics including, but not limited to data readiness, ethical use, intellectual property, procurement of AI tools and workforce impacts.

Priority Two: Addressing AI knowledge and skills challenges through collaboration with West Yorkshire Universities

West Yorkshire's universities represent a significant pipeline of AI-literate talent that can directly support SME innovation and capability building. Recruitment of recent graduates, particularly those from data science, computer science, engineering, business analytics and digital humanities programmes, offer SMEs access to individuals with up-to-date technical knowledge, strong digital confidence and an appetite for applying emerging AI technologies in practical settings. For many SMEs, graduate recruitment can provide an effective way to introduce new skills into the organisation, especially when paired with structured support or supervision. Graduates can quickly deliver value through tasks such as data preparation, automation of routine processes, development of AI prototypes, or conducting horizon-scanning to identify relevant tools and use cases.

Knowledge transfer placements, such as internships, industrial placements, collaborative research projects, or formal Knowledge Transfer Partnerships (KTPs), offer a highly flexible way for SMEs to access specialist expertise without needing to commit to permanent recruitment from the outset. These placements allow businesses to embed a graduate or postgraduate within the organisation for a defined period, with academic oversight and access to university facilities. This model has proven particularly effective for de-risking innovation, enabling SMEs to test new ideas, trial emerging AI tools, and build internal capability with structured support from academic experts. Placements can also help translate research insights into practical commercial applications, creating a bridge between theoretical knowledge and operational adoption.

Actions for the Combined Authority:

- Development of partnerships with West Yorkshire universities that **make it easier for businesses to access student placements** (and wider university facilities and expertise) to build SME's understanding of AI use cases, technology identification and AI implementation.
- Work with universities to **make graduate recruitment more visible and accessible to SMEs**, including:
  - coordinated regional graduate fairs or sector-specific recruitment events,
  - simplified matching services connecting SMEs with AI-literate graduates,
  - joint promotion of graduate internship schemes, and
  - targeted support for microbusinesses to take on graduates for the first time.

Priority Three: Diagnostics, Maturity Assessments and Strategic Support

A key issue, highlighted during discussions, is supporting SMEs to identify business use cases and where AI could best be implemented to maximise efficiency and productivity benefits. SMEs require help to understand their starting point before committing to investment. Diagnostics and strategic support enable businesses to clarify their needs, avoid repeating common mistakes, and make better decisions.

This could include:

- **Readiness and Capability Assessments:** These are structured assessments of data maturity, leadership and workforce skills operational readiness and organisational culture/appetite for change. The diagnostic assessments help businesses to identify appropriate next steps, including whether adoption of AI in certain areas is even necessary.

- **Use Case Identification and Prioritisation:** While many businesses have a clear sense of their operational challenges, they often struggle to translate these into viable technology use cases. Support should help SMEs to identify where AI or digital tools may offer value and business benefit; prioritise opportunities based on return on investment, feasibility and risk; and avoid adopting technologies that are not directly aligned to their business needs and completed assessments.

Actions for the Combined Authority:

- **Introduce standardised AI/digital maturity assessments** to help SMEs understand their starting point, where AI could best be implemented and the AI tools that could be implemented to address identified business use cases.
- **Commissioning AI adoption advice focussed on growth clusters.** This should focus on the priority clusters, particularly those identified as having the greatest potential for growth through AI adoption (e.g., BFPS and Advanced Manufacturing)
- **Coordination of AI adoption support programmes,** promoted through the CA/Growth Hub to help SMEs navigate the breadth of provision to access the right interventions without the need to access multiple agencies and/or support providers.

Priority Four: Peer Learning, Communities of Practice and Knowledge Sharing

Businesses emphasised the importance of learning from peers, rather than relying solely on external experts. Businesses value opportunities to hear real-world examples, see practical and workable demonstrations of AI technologies and share knowledge and experiences. These different environments encourage collaboration and foster a more cohesive regional innovation culture.

Aspects of a future business support offer for AI could include:

- **Peer Learning Networks:** Cross-sector communities of practice that help SMEs to share case studies, present challenges and solutions to AI adoption, discuss practical implementation barriers and learn from early adopters.
- **Workshops and knowledge exchange:** Several BFPS and advanced manufacturing businesses identified a role for workshops that bring together businesses, adopters, experts and technology providers to discuss topics including barriers to adoption, practical steps for facilitating AI implementation, lessons learned from successful pilots and sector-specific challenges and opportunities.

Actions for the Combined Authority:

- Convene and coordinate formal **peer learning networks** that bring SMEs together across sectors to share real-world experiences of AI adoption. These networks would provide structured opportunities for businesses to present case studies, articulate challenges, and exchange practical lessons learned. The Combined Authority could act as the neutral facilitator, ensuring that the networks remain inclusive, representative and accessible to SMEs at different stages of maturity.
- Recognising the value of early adopters as demonstrators, the Combined Authority could **create a community of practice specifically for organisations with practical experience of implementing AI.** This group could serve as a trusted source of insight for businesses

beginning their adoption journey. Organisations could be supported to document their experiences, host site visits, or provide demonstrations of tools and processes.

- To ensure learning is captured and shared widely, the Combined Authority could develop a digital platform housing:
  - case studies from early adopters
  - templates and checklists
  - recordings of workshops or demonstrations
  - guidance on overcoming common barriers
  - sector-specific examples of high-value use cases
  - This resource hub would make peer learning accessible to SMEs unable to attend events in person

Priority Five: Safe Experimentation Environments ('Playgrounds' or 'Sandboxes')

A common theme across the different cluster workshops was the value of hands-on experimentation. Many businesses stated that experimenting with tools, testing workflows and working on live problems was more impactful than traditional training. Key features of these 'playgrounds' or 'sandboxes could include:

- **Low-Risk Spaces for Exploration:** These might be digital or physical environments where SMEs can test AI tools without committing to long-term investment; Facilitated sessions enabling businesses to explore technologies using their own examples or data; Structured support to help convert experimentation into actionable plans.
- **Prototype and Pilot Support:** Experimentation environments should enable pilot development, prototype creation, testing content creation workflows, validating tools before procurement.

Actions for the Combined Authority:

- **Work with universities** to explore opportunities to develop access to applied research labs, digital testbeds, content creation studios, and AI experimentation environments.

Insight