



AI for Services

Showcase Report 2020



Innovate
UK





This report was commissioned from London Economics by KTN with funding from Innovate UK and on behalf of AI for Services.

AI for Services is a joint initiative set up by KTN and Innovate UK to bring together Data and Artificial Intelligence businesses and academics with professionals working in the professional and financial services sectors.

This initiative is part of the Industrial Strategy Next Generation Services Challenge programme. Through this challenge, government is supporting industry and researchers to develop next generation services that can transform the UK's services industry. £20 million of funding has been allocated to projects exploring how new technologies could transform the UK accountancy, insurance and legal services industries.

KTN exists to connect innovators with new partners and new opportunities beyond their existing thinking – accelerating ambitious ideas into real-world solutions and as a result drive positive change. KTN occupies a unique position in the UK innovation eco-system siting at the interface of the public and private sector. KTN supports government departments and funders in the delivery of interventions aimed at addressing market and system failures in innovation and enable businesses and entrepreneurs in their innovation ambitions to forge powerful connections, access funding and make investments. For more information, please visit www.ktn-uk.org

Innovate UK is part of UK Research and Innovation (UKRI), a non-departmental public body funded by a grant-in-aid from the UK government. Innovate UK drives productivity and economic growth by supporting businesses to develop and realise the potential of new ideas, including those from the UK's world-class research base.

To see the full report click on the link [here](#)

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Contents

04

Foreword

05

AI for Services Report 2020

06

Introduction

08

The size of the opportunity

11

UK Strengths

13

The state of play: AI & data innovation in the services sector

15

Case studies

18

Adoption among incumbent firms

19

What drivers are shaping AI and data innovation?

20

Where could the UK do better?

21

What will drive adoption of AI and data in the future?

23

The impact of COVID-19

25

What will the future look like?

27

Recommendations



Foreword

AI for Services was established over a year ago to support the objectives of the £20 million Next Generation Services Industrial Strategy Challenge Fund programme by bringing together professionals working in the accountancy, insurance and legal sectors with high growth entrepreneurs and leading academic experts researching and developing innovative solutions in Artificial Intelligence & data technologies.

The rapid growth of the network and popularity of our activities has shown the readiness of the UK services sectors to adapt and has confirmed its appetite in using novel technologies to solve its business challenges. It has also validated the UK's strength in Artificial Intelligence and data technologies coming from the burgeoning start-up scene and the academic research engagement. The recent COVID-19 crisis has only made our work more relevant with firms embracing digital tools in their daily activities to stay open for business. Moreover, businesses are using this newly created work environment as an opportunity to redefine their long-term strategic goals to include specific digital transformation commitments and build future resilience in their activities.

One of our priorities is to develop a better understanding of the adoption and use of AI and data technologies in the UK high value services sector and identify the sectors' strengths and challenges with a view to encourage greater levels of research and development in this area. Our first report provides evidence that the size of the opportunity for the UK is far-reaching by quantifying the historical and economical strength of the services sectors and identifying the benefits AI and data technologies can bring in terms of performance, productivity, competitiveness and access to services. The findings show that the UK is well placed to take advantage of this opportunity with a strong AI and data sector and a thriving well established FinTech cluster. The current state of play of innovation in the insurance, legal and accountancy sectors further demonstrates that transformation is already happening. The report reveals the key drivers shaping innovation and subsequent challenge areas for the UK to address such as translating research into commercial applications, access to funding and skill shortages. Looking at the future of the sector our study confirms the important role AI & data technologies will play and suggest an acceleration of adoption and investment as a result of the COVID-19 crisis.

AI for Services already counts more than 1,300 leading businesses, researchers, firms and investors coming together to support the transformation of the UK services sectors and its global leadership position and demonstrate the opportunity and benefits of undertaking research and development. It also acts as a network of networks to share learnings, discuss common challenges and further encourage innovation transfer.

After reading this insightful report, I hope that you too join AI for Services and help us drive positive change in the sector.

Astrid Ayel
AI for Services Lead
KTN

AI for Services Report 2020

Artificial Intelligence (AI) and other data technologies are set to impact almost every sector of the economy, bringing significant opportunities for UK businesses.

Across the accountancy, insurance and legal sectors AI and data also have the potential to transform the way businesses interact with customers, deliver better, more personal products and services, and bring systemic benefits such as better allocation of capital, better corporate governance and wider and improved access to services.

The AI for Services Report provides up to date insight into the state of play of AI and data technologies for the accountancy, insurance and legal services sectors, based on comprehensive research and new evidence from twenty interviews and two original surveys of industry participants. While LegalTech, InsurTech and AccounTech in the UK are less mature than FinTech sector, transformation is already underway, with significant growth in innovation and technology adoption across the services sector. This study identified a total of 553 AI and data companies working across the legal, accountancy, and insurance services sectors and found evidence of increasing levels of investment by incumbents across all three sectors.

COVID-19 has only accelerated the pace of change, with businesses embracing digital technologies at an unprecedented scale in order to carry on working remotely and stay operational. Despite the short-term pressures, 97% of firms surveyed for this study on the impact of COVID-19 on the services sector agreed that the crisis presented an opportunity to follow on the momentum of digital transformation; 90% also agreed that it accelerated culture change; and 89% indicated that they expected new tech firms and AI providers to emerge in the wake of the crisis. This further highlights the importance of AI and data for the services sector as we emerge from the crisis.

This report highlights that the UK services sector is in a good position to benefit from AI and data, with a strong research base, a thriving industry landscape, a strong funding environment compared with other European markets, targeted acceleration and incubation initiatives, and a supportive policy framework. However, use of AI is often restricted to experimental projects or

minor business functions. Cases of widespread adoption across all business functions, or indeed business model transformations to fully AI and data-centric companies, remain rare at this stage. Moreover, there are a number of challenges facing UK companies, and areas where the UK could improve. These include translating research into commercial products and services; scaling up innovative companies; improving access to funding (which, despite the UK's comparatively strong position in Europe, is significantly more challenging compared to the US and China); access to skilled labour; and structural features of the sector.

This report:

- **Highlights the substantial size of the opportunity and the UK's strength in AI and data technologies;**
- **Discusses the state of play of AI and data innovation in the services sectors and adoption by incumbent firms;**
- **Examines the drivers shaping innovation, and challenges faced by the sector;**
- **Investigates the future of AI and data in the sector, the factors driving adoption and the impact of COVID-19; and,**
- **Provides a SWOT analysis together with actionable steps that actors in the sector can take to ensure the services sector reaps the maximum benefit from AI and data.**

We hope this report proves valuable to policy makers, support organisations, incumbent firms and innovators alike. We would like to thank all individuals and organisations that contributed to this study for the valuable advice and information provided. London Economics would also like to acknowledge the useful guidance and feedback provided by the KTN and Innovate UK throughout this research. Responsibility for the contents of this report remains with London Economics.



Introduction

The AI for Services Industry Report 2020 comes at a time when the advent of new technologies such as Artificial Intelligence (AI) and other data technologies are set to impact almost every sector of the economy, bringing with it a significant opportunity for UK businesses and the wider UK economy.

In the services sector, the rise of AI and data technologies brings significant opportunities for companies looking to reduce costs, improve efficiency and deliver a better or more personal experience to their customers, as well as for companies and startups innovating within the AI and data space. Given the significance of the services sector for the UK economy, adoption of AI and data technologies in the sector also presents a sizeable opportunity for economic growth. Estimates by PwC (2018) suggest that AI could lead to a gain in GDP of approximately 10% by 2030 for the global financial and professional services industry.

COVID-19 has only accelerated the pace of change, with many businesses previously hesitant now actively embracing digital technologies to carry on working remotely and stay operational. As a result, there is an increased engagement and interest in technology; however, the opportunity now lies in going one step further: changing ways of working and developing new business models.

At the same time, the rise in advanced technologies also brings significant challenges for established firms in the sector, including competition from tech firms and startups. The rise of AI based technologies also brings challenges for regulators, who need to keep up with the ever-changing tech landscape to protect customers and the wider public without restraining innovation.

Proportion of occupations that could be significantly impacted by AI



of all work activities could be automated

Contribution of legal, financial and insurance, and accountancy services sectors to UK economy



billion, or 12% of UK output

No. of AI companies working in the legal, accountancy and insurance services sectors



AI and data companies identified across the sectors



The size of the opportunity

AI and data technologies have the potential to bring about far-reaching economic effects. PwC (2017) estimated that global GDP could be up to 14% higher in 2030 as a result of AI, making AI the biggest commercial opportunity today. More recently, McKinsey (2019) estimated that AI could add some €2.7 trillion (£2.4 trillion), or 19 percent, to the output of European economies by 2030.

In contrast to previous waves of automation, which often affected lower-wage and blue-collar work, AI is poised to mostly affect the work of white-collar, better-educated and higher-paid workers in the service sector, including law, insurance and accountancy (Muro et al, 2019). Impacts arising from this new wave of AI automation can broadly be categorised into three channels (Muro et al, 2019):

- **Impacts arising from substitution of work from humans to AI, thereby reducing costs and potentially improving performance. In the service sector a number of AI applications substituting labour, for example by automating scanning and document review tasks, are already emerging. While this effect is unlikely to lead to mass-unemployment of lawyers, senior accountants and insurers, support staff and paralegals may be impacted.**
- **Impacts arising from automation of complementary tasks, where AI enhances human decision-making, thus freeing up labour time for other tasks and leading to higher productivity. The automation of menial tasks and workflows can allow workers to instead focus their skills on high-value tasks which cannot yet be replaced by AI.**
- **Impacts arising through the creation of new work such as AI architects, Machine Learning engineers and Data Scientists. In the legal, insurance and accountancy sectors, this growth is likely to be felt predominantly in the emergence of innovative technology startups creating solutions for the services sector, and in-house investment into AI and data capabilities by accountancy firms, law firms, and insurers.**

AI estimated to add €2.7 trillion to the output of European economies by 2030

By improving services and making the sector more productive, efficient and competitive, technology creates significant opportunities for UK companies and startups innovating within the AI space. A 2015 study by Chui et al. (2015) suggests that 45% of all work activities could be automated (with this figure increasing over the years). Although fewer than 5% of occupations could be entirely automated, about 60% of occupations could have over 30% of their activities automated.

At the same time, AI and data technologies can also provide significant benefits to end-users, through transforming the way businesses interact with their customers and the personalisation of products and services. One such example is the rise in offerings of on-demand or personalised insurance, with disruptors such as Caura and ByMiles re-imagining car insurance, and others such as Portabl offering insurance for gig economy workers, which are often not reached by traditional insurance offerings and end up underinsured.

AI and data can also help deliver systemic benefits such as better allocation of capital, better corporate governance and better access to services. In the legal sector, for example, several innovations have been developed to assist with accessing justice. This includes alternative dispute resolution processes, automatic document processing and case management software. Examples include LegalBeagles, a legal support community, enhanced by AI technology, which can analyse and scale knowledge to predict best routes for consumers to find solutions to legal issues; and, LEXSnap, a legal search engine helping users find answers to their family law and immigration questions.

The proliferation of AI and data may create a virtuous cycle in which increasing amounts of data are opened up to value-added uses and shared more widely across different entities: companies transitioning from legacy systems and data silos to modern, open data infrastructures carries with it several direct and indirect economic benefits. These benefits can include increases in market size, creation of jobs, greater efficiencies in service delivery, and more innovation in AI technologies.

The special position of high-value financial and professional services

Services dominate the UK economy, accounting for approximately 80% of UK gross domestic product (GDP) and employing around 85% the UK's employees (ONS, 2019a and 2019b).

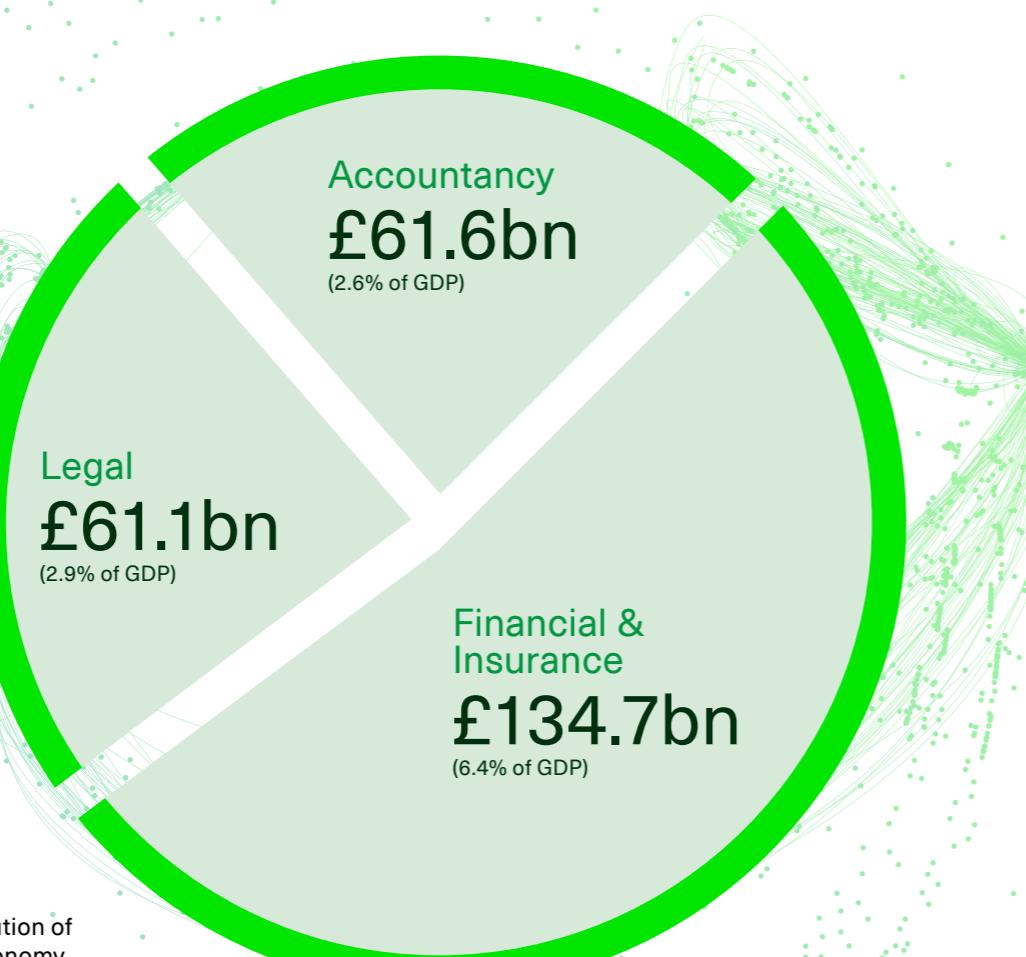


Figure 1. Contribution of services to UK economy

Moreover, the sector is a major source of the UK's global competitiveness, being second only to the US in terms of services exports (totalling £245 billion in 2016) (Government Office for Science, 2018).

Within services, high value financial and professional services are historically particular

areas of UK strength, with London remaining one of the leading UK financial and legal centres world-wide. Today, the legal, financial and insurance, and accountancy services sectors alone account for more than 12% of UK output. This highlights the sizeable opportunity that adoption of AI and data technologies in the services sector presents for the UK.

Note: Based on latest available data converted to 2019 prices.
Source: London Economics analysis of Financial and insurance: Rhodes (2019); Accountancy: Oxford Economics (2018);
Legal: Sharp et al (2020); and Office for National Statistics data

UK Strengths

The UK is well placed to take advantage of the opportunities AI and data bring. The UK already has a strong AI and data ecosystem with:

- **A strong research base, ranking fourth in terms of the number of publications in AI research between 2015 and 2018 and third in terms of number of citations (Figure 2 and Figure 3), and among the top 10 in terms of the number of patents (Figure 4) and patent citations (Figure 5);**
- **A thriving industry landscape, with London alone having an AI supplier base of 758 companies, twice as much as Paris and Berlin combined (CognitionX, 2018), and 35 further AI and data clusters across the UK (Forth, T. et al., 2018);**
- **A strong funding environment compared with other European markets, ranking eighth in terms of private investment in AI in 2018 per million of GDP and AI companies having received the most funding in 2018-19 outside of the USA and China (Figure 6); as well as,**
- **Existing acceleration and incubation initiatives (a non-exhaustive list can be found in the annex to the [full report](#)), and a recognition by Government of the importance of AI and data, resulting in strong policy support as reflected in the Government's four "Grand Challenges", the UK Industrial Strategy, and the Next Generation Services Challenge.**

The UK already has a well-established and thriving FinTech cluster, with over 1,600 FinTech firms, a number that is expected to more than double by 2030, employing over 76,500 people, generating a revenue of £6.6 billion pounds, and attracting \$3.3 billion (£2.5 billion) of VC, PE and CVC investments in 2018 (Department for International Trade, 2019).

While AI and data technologies in other services sector are less mature compared with the UK's FinTech sector, there has been significant growth in the use of AI and data across the services industry. The UK already has an active InsurTech market with hundreds of startups (InsurTech Channel, 2019). This is highlighted by the successful funding rounds of leading UK InsurTechs such Gryphon Group (raised £180 million since inception); Zego (£39.6 million); and Bought by Many (£22.5 million).

Similarly, the UK already plays a significant role in the global LegalTech market, with London and Belfast identified by the Law Society (2019) as two of ten emerging LegalTech scenes globally, alongside Hong Kong, Singapore, San Francisco, Toronto, Atlanta, Madrid, Tel Aviv and Kuala Lumpur.

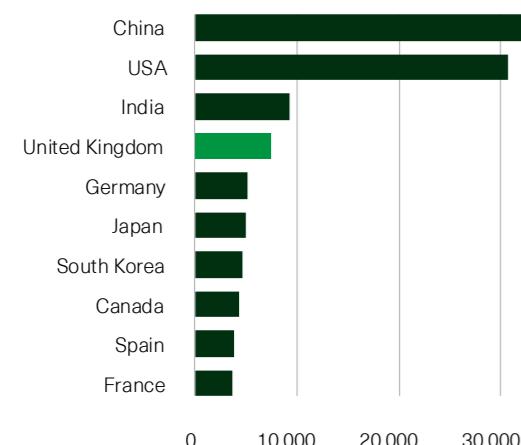
The strength of the UK LegalTech sector is highlighted by the success of AI document analysis firm Luminance, who have raised \$23 million in funding overall since their founding in 2015 and now count several of the world's top law firms as their clients; Ravel Law, who offer computer-assisted legal research and raised over \$15 million in funding since being founded in 2012 and were subsequently acquired by LexisNexis; and Tessian who use AI to protect law firms from data breaches and have raised a total of nearly \$59 million since their foundation in 2013.

The AccounTech market is less mature in comparison. Nevertheless, high growth UK startups such as The Accountancy Cloud, Crunch, and My Digital Accounts have also emerged in this segment.

¹ See Grones, G. (2020), from which this data was obtained, for a fuller list of the Top 20 InsurTech companies, by funds raised, in the UK.

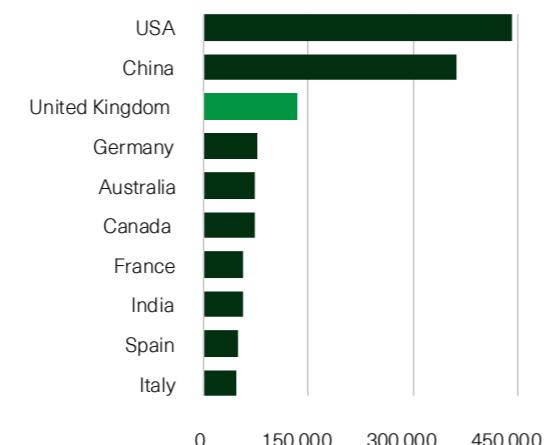
² Based on data obtained from Crunchbase as of August 2020.

Figure 2 Number of AI publications between 2015 and 2018



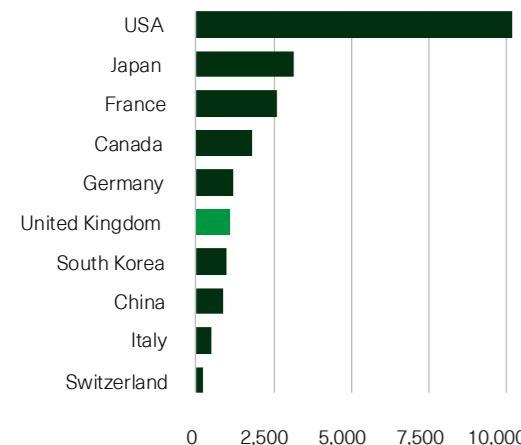
Source: London Economics; Data source: Artificial Intelligence Index Report 2019 / Microsoft Academic Graph

Figure 3 Number of AI citations between 2015 and 2018



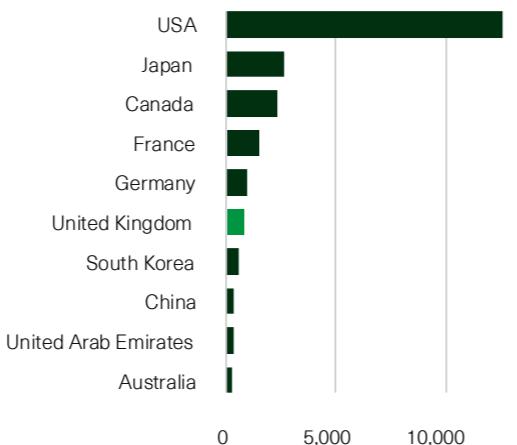
Source: London Economics; Data source: Artificial Intelligence Index Report 2019 / Microsoft Academic Graph

Figure 4 Number of AI patent publications between 2015 and 2018



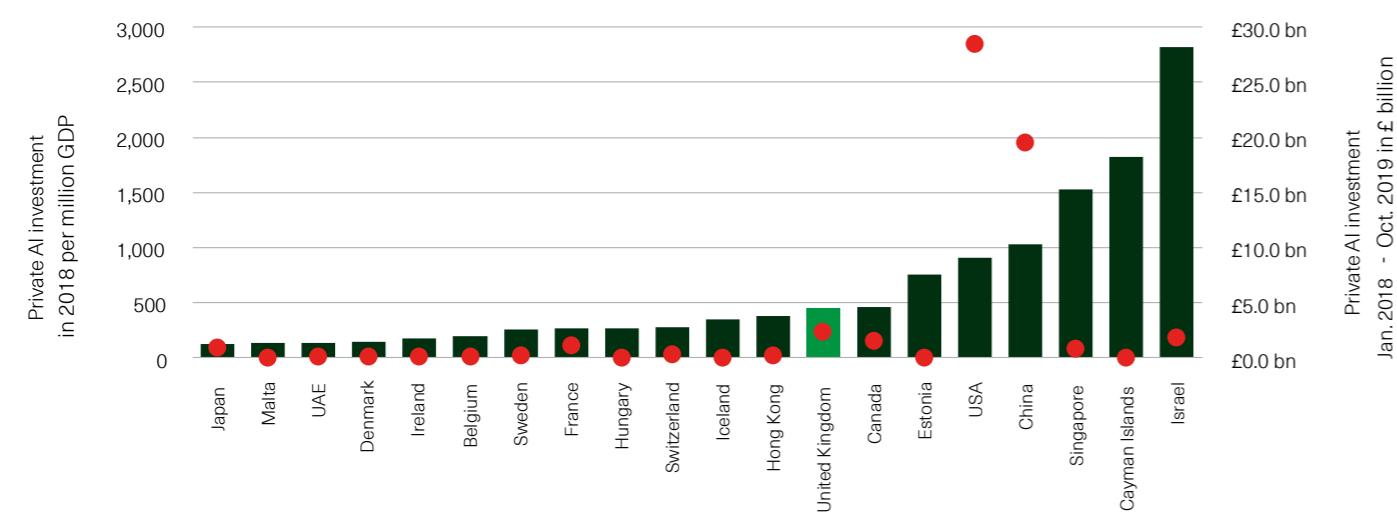
Source: London Economics; Data source: Artificial Intelligence Index Report 2019 / Microsoft Academic Graph

Figure 5 Number of AI patent citations between 2015 and 2018



Source: London Economics; Data source: Artificial Intelligence Index Report 2019 / Microsoft Academic Graph

Figure 6 Private investment in AI (£ bn in 2019 prices)



Note: Bars represent private AI investment in 2018 per million of GDP; dots represent private investment in AI between Jan. 2018 and Oct. 2019 in £ bn. Data obtained from the Artificial Intelligence Index Report 2019. Original data reported in billions of current US\$ and converted into Sterling using the Bank of England average annual exchange rate for 2019. 2018 GDP data obtained from the World Bank.

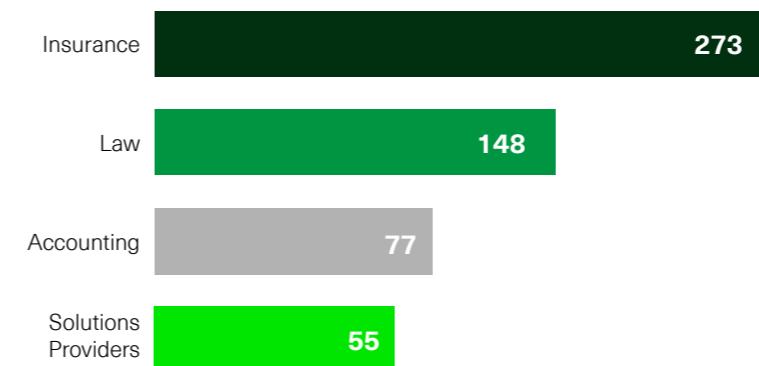
Source: London Economics; Data source: Artificial Intelligence Index Report 2019 / CAPIQ, Crunchbase, Quid, 2019, World Bank

The state of play: AI & data innovation in the services sector

AI and data technologies are already transforming the services sector. Our research identified a total of 553 AI and data companies working in the accountancy, legal and insurance services sectors. Moreover, incumbents are increasingly investing in, and adopting, AI and data technologies, highlighting the fact that AI and data innovation is already taking place across the sector.

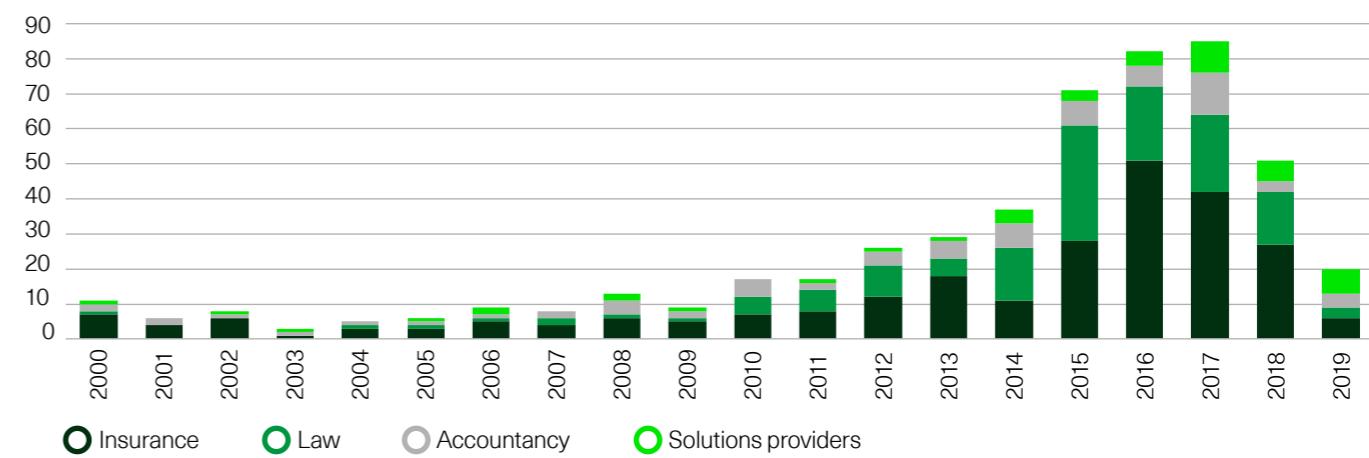
The InsurTech segment is the largest of the three segments, with InsurTech firms accounting for nearly half of all identified companies. LegalTech companies were significantly less prevalent than InsurTech companies, accounting for 27% of identified companies. The AccountTech segment was identified to be the least active of the three segments in terms of the number of AI and data startups, with tech firms in this sector only accounting for approximately 14% of identified companies. Around 10% of companies identified were companies providing AI and data solutions for the services sectors, but without a specific focus on any one of the three sectors.

Figure 7 Sectoral split of identified companies



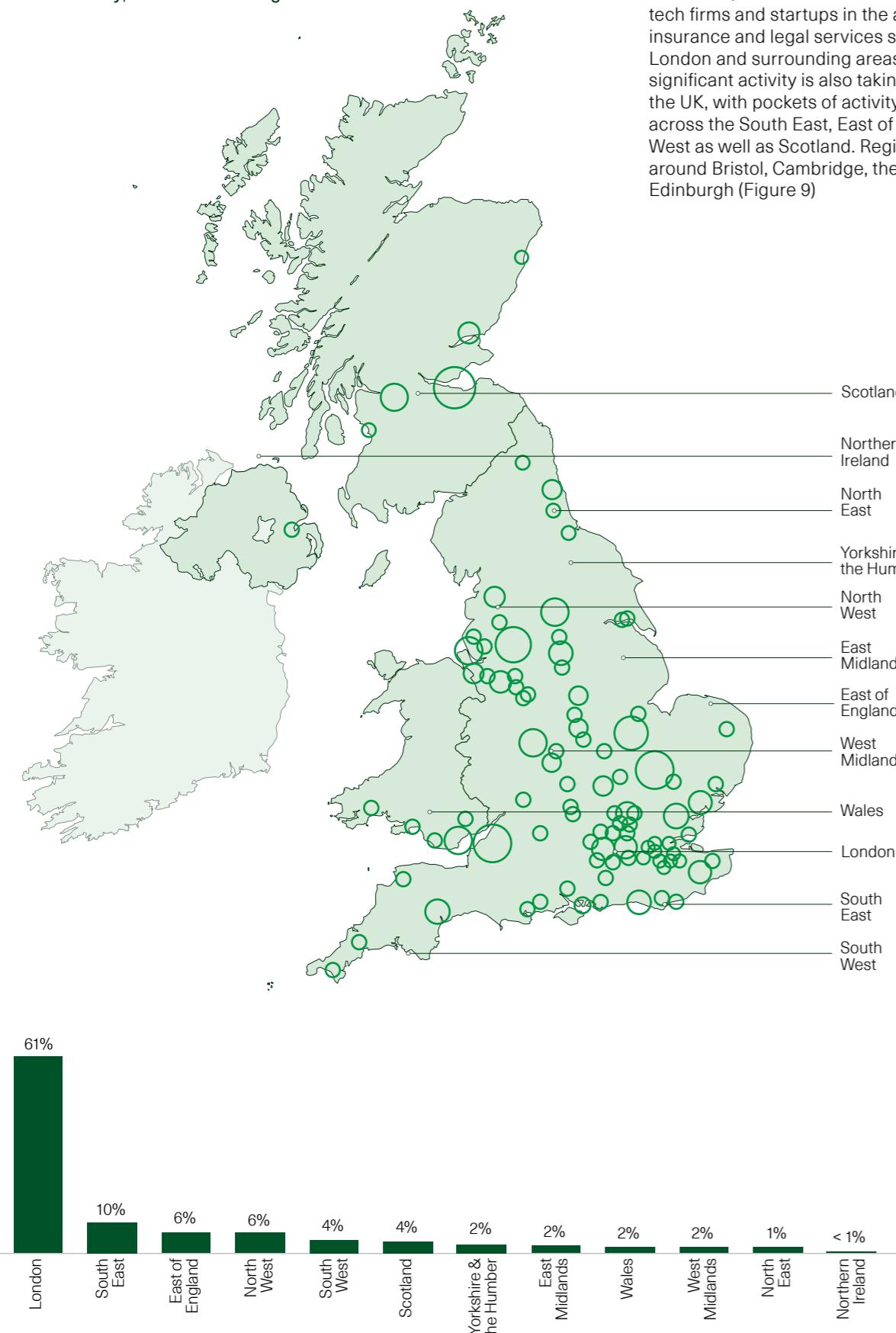
Note: Solutions providers refers to AI and data solutions for the financial/professional services sector without a specific focus on any one of the three sectors. A small number of companies identified were placed at the intersection of two of the three sectors, these were assigned to the sector that most closely matched their activities to avoid double-counting. Only includes companies identified that are still trading. Therefore, Companies founded that have since stopped trading would not be captured. Therefore, figures for earlier years may be underreported. Data for 2019, and to some extent 2018, is likely to underestimate new company formations due to time lags between company formations and the databases picking up the new firms. Source: London Economics

Figure 8 No. of UK AI and data tech startup formations over time



Sources: Crunchbase, BvD Fame, the Digital Insurer InsureTech Directory, the InsurTech Industry Directory, the LegalGeek Startup Map, and the exhibitor list of Accountex 2020.

Figure 9_ AI & data tech firms/startups in the accountancy, insurance and legal services sectors



³ Sources: Crunchbase, BvD Fame, the Digital Insurer InsureTech Directory, the InsurTech Industry Directory, the LegalGeek Startup Map, and the exhibitor list of Accountex 2020.

Note: Map excludes companies with headquarters in London in order to avoid scaling issues relative to the rest of the UK. Source: London Economics

Case studies

Discover how AI & Data is being used in the full report case studies

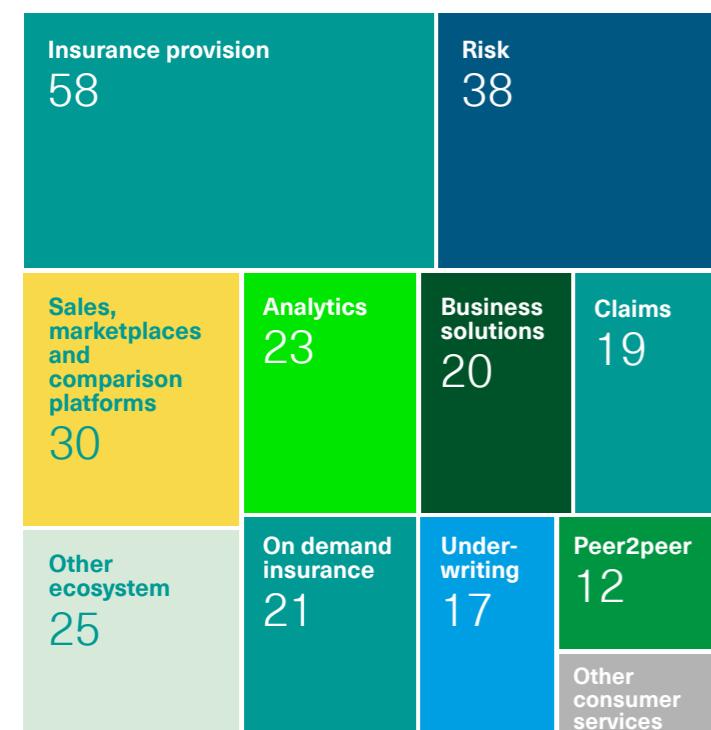


Innovation in the AccounTech segment

The AccounTech segment was identified to be the smallest and least mature of the three services segments examined in this study. Among AccounTech companies identified in this study innovation is focused on:

- **Accountancy software – particularly cloud accountancy software and other online or app-based solutions, but also integration with other business platforms.**
- **Cashflow management, invoicing and expense management - including automated data entry, real-time processing of invoices and expenses, and cashflow management and prediction tools, as well as, business management solutions - such as document, workflow and practice management solution, helping to improve or automate workflows and routine tasks.**
- **A number of more specific solutions focused on tax and payroll services as well as companies in the wider ecosystem - such as AI and data consultancies focused on accountancy, analytics and intelligence software for accountants, as well as comparison sites - were also identified.**

Figure 10_ AI and data companies in the insurance sector, by segment



Innovation in the InsurTech segment

A significant proportion of AI and data companies in the insurance sector are using AI and tech to offer insurance products - in particular to provide a more consumer focused, personalised, or simpler service, compared to 'traditional' insurance services - or are focused on particular niches such as insurance for freelancers or young drivers, cryptocurrency insurance, and drone insurance, among others.

On-demand insurance solutions, and, more recently, peer-to-peer solutions have also gained popularity among InsurTechs. One interesting trend in insurance provision is the rise of Internet of Things (IoT) sensors enabling personalised insurance pricing. For example, in flood insurance IoT sensors can be used to provide property level flood data, automatically triggering a claim if the sensors detect unusually high water levels (e.g. Flood Flash).

Note: Other ecosystem covers companies that did not fit in other categories, such as AI consultancies focused on the insurance sector. Further details on a large number of InsurTechs can be found in the Digital Insurer InsureTech Directory, and the InsurTech Industry Directory. Source: London Economics

Figure 9_ AI and data companies in the accountancy sector, by segment



A large number of InsurTechs also provide services targeted at insurers themselves:

- **Solutions aimed at helping insurers assess or manage their risk are leading among such services - e.g. using AI and machine learning to offer improved risk modelling, predictive analytics to anticipate future risks, data-sources such as tracking or IoT sensors, but also solutions aimed at helping insurers with compliance and regulatory risks.**
- **Claims are also an area that is seeing a lot of innovation with AI being used to provide faster claims settlement or to reduce fraud - e.g. Tractable use AI to assesses car damage and expedite claims and settlements in real time.**
- **Analytics solutions aimed at utilising AI and data to provide insight across a range of topics also account for a significant proportion of InsurTech activity more generally. For example, CyStellar utilises geospatial data from satellite images, drones and IoT sensors to deliver insights for**
- **Marketplaces and comparison platforms, and other solutions aimed at improving the sales and resales of insurance also account for a large proportion of InsurTech activity.**

Innovation in the LegalTech segment

According to the Law Society (2019), innovation in the LegalTech segment in the UK remains more focused on efficiencies and automation than on delivering 'new types of law'. This is reflected in the solutions of LegalTech companies identified for this study. In contrast to the insurance segment, few provide technologies aimed at disrupting the legal sector. Instead, innovation is focused on delivering products and services that help law firms undertake their activities:

- **A large proportion of identified solutions is targeted at helping law firms manage their practices - e.g. helping law firms with recruitment and outsourcing, finance and operational solutions, or solutions to manage and gain new clients.**
- **A large proportion of companies are also working in the Document & Contracts space, helping law firms extract and make sense of information from documents, help with contract generation, as well as contract and document management systems. A number of companies were also providing solutions focused on the whole document lifecycle.**
- **Risk management and compliance, matters - e.g. products organising a department's client work - and rights management, and knowledge management are also areas with significant activity. A prominent example is ThoughtRiver, who provide legal contract and portfolio reviews as well as comprehensive risk assessment for each contract.**

Around 20% AI and data startups identified have developed consumer solutions directly seeking to improve access to justice. These include legal marketplaces connecting clients to law firms that suit their needs (e.g. myBarrister). But also solutions providing direct legal services such as automated generation of wills (e.g. Arken.Legal, Farewill), legal assistants providing direction to the most appropriate legal resources (e.g. DoNotPay), services providing help to consumers with their legal matters (e.g. LegalBeagles, LEXSnap), as well as other services designed to improve access to justice.

Figure 11_ AI and data companies in the legal sector, by segment



Note: Further details for a large number of LegalTech startups can be found in Legal Geek's startup map. Source: London Economics; classification adopted from (Legal Geek, 2019)

Adoption among incumbent firms

Adoption among incumbent firms is more difficult to establish, with definitions of AI and data varying widely. However, the evidence points to huge variations in uptake of AI and data technologies.

What is clear is that, although examples where AI and data technologies have delivered benefits to services companies are already emerging, the full effects are yet to materialise. Many incumbent firms are already investing in, and adopting, or are planning to adopt in the near future. For the time being, use of AI is often restricted to experimental projects or use in some limited business functions. Cases of widespread adoption of AI and data technologies across all business functions, or indeed business model transformations to fully AI and data-centric companies, remain rare at this stage.

Within large accountancy firms, adoption of AI is comparatively advanced. All Big 4 accountancy firms already use AI, for example, to extract information from documents, to detect anomalous events, assess compliance, or to help them make informed decisions when providing advice to customers (Faggella, 2020). Most large accountancy firms outside the Big 4 are also either using AI in some form or have at least experimented with AI/data technologies. In response to a 2019 survey by Thomas-Bryant (2019), more than a third (35%) of accountants surveyed regarded their firms as early adopters of technology. Moreover, 58% agreed that they would use some form of AI within the next three years to help them automate tasks and improve the way they run their businesses.

Similarly, the insurance industry is already actively interested in AI and data, with many incumbent insurance companies increasingly investing. In 2016, 1.33% of insurance companies were investing in AI (Deloitte, 2017), as of 2019, 87% of insurers are investing more than £3.9 million in AI each year, with more than half planning to transform their existing business processes over the next three years (Genpact as cited in Jefferies, 2019). Moreover, in response to the 2019 Annual Global CEO Survey by PwC (PricewaterhouseCoopers, 2019a), 80% of insurance CEOs said that AI was already a part of their business model or would be within the next three years. However, despite this, full-

scale uptake of AI and data by insurers across the business also remains low at this stage. According to a recent analysis by Gartner (Harris-Ferrante 2020), "the 2019 Gartner Financial Services Technology Survey found that 51% were investing in AI: 7% were deployed enterprise-wide, 13% had limited roll-out/deployment, and another 31% were in short-term planning or actively experimenting." While this number has likely risen, widespread and pervasive adoption of AI across the insurance industry has yet to happen.

Major law firms as well as many mid-sized firms also appear to be using, or at least experimenting with using, some form of AI. Indeed, several incumbent firms are actively investing in LegalTech or have set-up their own acceleration programmes. Similarly to accountancy and insurance, adoption outside of large practices is mixed. Moreover, uptake of AI and data technologies by law firms themselves also appears concentrated on established technologies such as legal research solutions Luminance and Kira. This is consistent with the Law Society (2019) findings that the rise in the number of LegalTech companies seen in the last few years, has not translated into an acceleration in the rate of LegalTech adoption among legal practitioners.

Uptake in other areas of law such as barristers' chambers and courts is slow, with the impact of LegalTech not felt particularly widely yet. The consequences of COVID-19 will be interesting to observe here. Social distancing has meant that traditional court hearings are not feasible for the time being. Therefore, many courts are now experimenting with digital technologies. Indeed, even Britain's supreme court, for the first time in its history, is now conducting cases entirely by video link. Could such unprecedented adoption also bring a significant shift in the uptake of AI/data?

What drivers are shaping AI and data innovation?

Several drivers, from both the supply and demand sides, influence and shape innovation in AI and data technologies in the services sector. Key drivers include:

Increasing efficiency and productivity

AI and data technologies can lead to improved productivity and lower costs and can be used to improve processes such as fraud detection, data analysis, document review and customer interaction. As AI and data technologies become more sophisticated, the level of efficiencies potentially gained also increases, therefore providing further incentives for firms to adopt.

Changing workforce and skill demographics

As AI and data technologies have evolved, so too has the workforce. Education curriculums have changed to provide training in skills and concepts which have been introduced into the market as a result of new technology – for example, the inclusion of LegalTech modules in some university curriculums (The Law Society, 2019). Additionally, the uptake of higher-education computer science training has also been increasing in the UK. These changing skill sets among the workforce in turn aid adoption of AI and data technologies by allowing firms to more easily implement and utilise these technologies.

Rising and shifting customer expectations

Changing customer expectations are a further common driver of innovation across the three services sectors. One example of this phenomenon is the emergence of a new generation of customers that have grown up with technology. This new type of customer demands higher quality products and customer service, but is also fluid in, for example, their insurance needs, willing to shop around and wants to be recognised as having their own unique needs (PricewaterhouseCoopers, 2019). AI and data technologies can help firms to meet changing customer demands.

New disruptive entrants

Changes in customer expectations, combined with the emergence of new technologies, in turn have enabled disruptive new competitors to enter the services sectors. Incumbent firms therefore increasingly need to invest in technological advances in order to capture part of this slice or indeed to remain competitive.

A comparatively strong AI and data ecosystem

The UK's comparatively strong AI and data ecosystem provides a strong foundation for continued innovation in the services sector and thus helps to foster innovation.

On the supply side, adoption of AI and data technologies in the services sector appears to be driven by both the uptake by large incumbents, such as 'Magic Circle' law firms, 'Big 4' accountancy firms, and large insurers, as

well as, through new entrants, who specialise on providing and utilising tech-related products, such as InsurTech, LegalTech or AccounTech firms, entering the services sector.

Where could the UK do better?

Overall, the UK services sector is in a good position to reap the benefits of AI and data technologies. Nevertheless, there are a number of challenges and barriers facing UK companies and innovators as well as areas where the UK has room for improvement; these include:

Divide between academic research and commercial applications

While UK AI and data research is excellent, the study findings suggest that the UK is not as good at translating research into commercial products and services, creating a gap between academic research and commercial applications.

Access to funding and the scale-up challenge

The UK has a comparatively strong funding environment. Nevertheless, access to funding was identified as a particular challenge faced by AI and data companies. A number of Government and private funding schemes as well as acceleration and incubation initiatives to help innovative startups already exist. However, accessing funding remains a particular challenge faced by many companies seeking to scale, with scale-ups needing larger funds than startups, but fewer investors able to provide follow-on investments at later stages.

AI and data skills shortages

Access to staff with the right skills to exploit AI and data technologies remains a key challenge for, and barrier to, adoption of AI and data. However, it is not only trained data scientists and AI professionals that are required. More and more an understanding and appreciation of digital technologies is also required among lawyers, insurers and accountants in order to make the most of the benefits AI and data can offer. This highlights the need for change in academic courses as well as upskilling of the current workforce.

Access to incumbent firms

AI and data startups often have difficulty accessing incumbent firms. Of course, gaining market traction as an innovator in any sector can be difficult. Moreover, many providers have emerged in the InsurTech and LegalTech scenes over the last few years, which means the landscape can be confusing for law firms and insurers and knowing which products will deliver real benefits for them can be difficult.

Structural features of the services sector

Structural features of the services sector pose an additional challenge. For example, the partnership model, prevalent among many legal and accountancy firms, and the billable hour model in the legal sector, mean that finding time and funds for the exploration of AI and data technologies can be costly for partners and may thus not be a priority. At the same time, while many firms have innovation or technology officers, they often do not make the decisions on what to adopt or invest in. In some cases, there may also be cultural factors preventing adoption, such as a reluctance to explore new technologies or a limited understanding of AI and data, particularly among senior decision makers.

Legacy systems and data 'silos'

Challenges also exist around legacy systems and infrastructure, and data 'silos' which need to be addressed prior to being able to fully exploit the benefits of AI and data for the services sector.

Other challenges

In addition, there are a range of other challenges such as ethical and liability concerns, cybersecurity, and privacy and data protection issues, and regulatory challenges to name but a few.

What will drive adoption of AI and data in the future?

AI and data will play an ever more important role across all sectors of the economy in the future.

Advances in data availability and openness of data, the lowering of technological barriers and increased competitive pressure, changing attitudes in the industry, and government funding provide further encouragement for the uptake of AI and data technologies within the services sectors:

- **Increases in the availability of data: Increases in the uptake of technologies that result in an increase in the volume, granularity or quality of data available to firms in the services sector could lead to an increased uptake in the adoption of AI and data technologies.**
- **Increases in the openness of data: Alongside an increase in data, the potential creation of open source protocols, standardisation, and more complete metadata can provide a further opportunity for the usage of AI and data technologies. As data becomes ever more ubiquitous, campaigns such as Open Banking, the Open Insurance Initiative, and the right to data portability (GDPR) encourage the opening and ethical sharing of customer data (Husseini, 2018). This would result in an increase in availability of data access, particularly for non-incumbent players, that can be used to create innovative AI and data based products and services. (McKinsey, 2018).**
- **Lowering of technological barriers: The introduction of automated machine learning techniques can further increase the accessibility of AI and data technologies by alleviating skills barriers (Silbert, 2019). However, uptake of automated techniques will depend on the benefits techniques provide to accountancy, legal and insurance firms and their associated risks.**
- **Industry attitudes and perceptions: Changing perceptions of AI and data technologies within the services sector may further contribute to an increased uptake of these technologies. In a 2018 survey by Accenture (Sachdev & Tottman, 2018), 84% of insurers in Ireland and the UK believed that AI will either significantly change or completely transform the industry over the next three years (2018-2021). In 2019, 54% of insurers in the UK market stated that they were currently investing in AI (PricewaterhouseCoopers, 2019b) and 87% of insurers were found, in a separate study, to be investing more than £3.9 million (\$5 million) in AI each year (Genpact as cited in Jefferies, 2019). Additionally, 58% of accountancy firms interviewed in the UK and other developed nations stated that they looked forward to adopting relevant AI applications they believed would be developed within the following three years (Thomas-Bryant, 2019).**
- **Government policy: Alongside a change in industry perception, increased encouragement and support from the UK government may further contribute to the uptake of AI and data technologies. In 2018, the AI sector deal was launched to support the UK's industrial strategy, part of which includes the development of the AI sector in the UK (gov.uk, 2019). The next generation services challenge was also launched as part of this industrial strategy to investigate how AI and data technologies could transform the UK services industry (UKRI, n.d.). As part of the challenge, £20 million of funding are provided for R&D projects utilising AI and data within the services sectors.**
- **COVID-19: In the wake of the lockdown the world is undergoing at the time of writing, technology is being adopted at an unprecedented scale. Many businesses that were previously hesitant are now actively embracing digital technologies. At the same time, COVID-19 is likely to also have a significant impact on startups and other innovators in the sector. The crisis is likely to exacerbate funding challenges startups are facing, with less funding likely to be available. The impacts of COVID-19 are discussed in further detail in the next section.**

89% of firms surveyed indicated that they expected new tech firms and AI providers to emerge in the wake of the crisis.



The impact of COVID-19

The COVID-19 crisis and consequent public health measures have had and will continue to have a profound impact on society and the way people work.

In addition to the unprecedented change in working patterns, there has been a surge in demand for cloud-based services as employees have transitioned to remote working. As a result, cloud services have established their importance in enabling business continuity across many sectors and have shown that companies that had already established remote-working cloud processing capabilities were better placed going into the crisis.

Increased cloud usage could in turn lay the foundations for more widespread future adoption of AI and data technologies, since cloud providers offer pre-packaged Machine Learning capabilities that allow firms to take advantage of tools such as Natural Language Processing APIs and computer vision APIs (Soral, 2020). In the short run, cloud-based technologies represent a bright spot in a much gloomier wider market. In particular startup activity and innovation is likely to be significantly reduced in the short term, with the majority of investors responding to a survey by 500 Startups, a global VC fund and seed accelerator, believing that Covid-19 will have a negative (32%) or somewhat negative (36%) impact on early-stage investment activity in 2020. Most investors believed that the impact could last between one and two years. (500 Startups, 2020)

Established firms are also responding to the significant uncertainty by cutting or postponing non-essential spending. As a result, a fall in AI systems spending across multiple sectors in Europe is expected in 2020 (Vernon et al., 2020). According to a recent Gartner press release, "worldwide IT spending is projected to total \$3.4 trillion in 2020, a decline of 8% from 2019, according to the latest forecast by Gartner, Inc. The coronavirus pandemic and effects of the global economic recession are causing CIOs to prioritize spending on technology and services that are deemed "mission-critical" over initiatives aimed at growth or transformation" (Gartner, 2020). Adoption of AI and data technologies by services sector firms is therefore expected to be significantly impacted in the short term, putting further pressure on innovators and solutions providers.

⁴ See ABI Research (2020) and SmartVault (2020) for further details.

A crisis for tech startups could pose an opportunity for established solutions providers who may be able to gain market shares and strengthen their hold on the market, as well as, for incumbents able to strengthen their in-house capabilities through acquisitions of failing startups or stepping up hiring of those with advanced technical and data skills. Further adoption of AI and data may therefore be driven by consolidation of firms in the market as well as acquisitions strengthening in-house talent, skills and tools available for incumbent firms.

Despite the short-term pressures, 97% of firms surveyed, for this study, on the impact of COVID-19 on the services sector agreed that the crisis presented an opportunity to follow on the momentum of digital transformation; 90% also agreed that the crisis accelerated culture change; and 89% indicated that they expected new tech firms and AI providers to emerge in the wake of the crisis.

Over the medium to long term, respondents believed that an increased focus on improving operational efficiencies and reducing cost as a result of COVID-19 will continue to encourage further uptake and adoption of AI and data. As firms continue to grapple with the effects of the crisis, AI and data technologies may provide pathways to achieve cost reductions, and drive improvements in productivity. While the short-run financial impact on the services sector looks to be profound, it therefore seems likely that the trends towards digitalization and AI adoption could be accelerated over the medium term as the sector recovers from the initial shock of the crisis.

Figure 12_Survey respondents' views on the impact of COVID-19 on adoption of AI and data technologies within the services sector

Do you agree with the following statements on the impact of COVID-19 on adoption of AI and data technologies within the services sector?

The crisis presents an opportunity to follow on the momentum of the digital transformation



The crisis accelerated or indeed unlocked culture change



We expect interesting and exciting new tech firms and AI providers to emerge in the wake of the crisis



Organisation in the sector are now ready to think about wider digital transformation and changing business models



Adoption of AI and data technologies has already accelerated



Innovation has become more difficult (e.g. due to reduction in available funding)



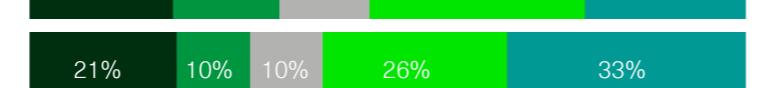
Buy-in for AI and data use from senior leadership has increased



The budget and/or objectives have shifted away from AI and data



The crisis only impacts low-level digitalisation such as remote working technologies, but no AI and data technologies



Within the insurance sector, the crisis has underlined the need for insurers to adopt AI in the fields of pricing, underwriting, claims handling, customer interaction and fraud management (Scattaglia Cartago et al., 2020). Following the pandemic, therefore, the ability of insurers to balance risks more accurately could be crucial. A range of tools including Machine Learning and Natural Language Processing could help to improve underwriting; meanwhile machine vision software can help insurers to establish new customer bases and revenue sources (Schroff, 2020). However, the huge customer databases of incumbent insurers remain largely untapped, with insurers only processing around 10-15% of the available data (Malhotra & Sharma, 2018). Smart investment in AI and data technologies now could help exploit this untapped potential to reap rewards in the future.

the closure of courts has already encouraged the use of technology, with Britain's supreme court, for the first time in its history, conducting cases entirely by video link (Hussain, 2020). Meanwhile, in the access to justice sector, a multifaceted debate is developing around the use of digital technologies, and the possibility of a bespoke digital communications mechanism (Etic Lab, 2020). AI systems and the use of data technologies could help improve access to justice and create a technology-friendly justice system.

Similarly, the restructuring taking place across the legal sector has been made more urgent by the COVID-19 crisis. As a leader in the global legal services market, the UK has a strong foundation on which to lead the legal services sector's digital transformation, and the COVID-19 crisis has shown the industry's ability to respond. The prospect of significant delays to trials and

In accountancy, technology has long become vital for many firms, with the Government's Making Tax Digital initiative initiating the trend towards digitalization (Moyer, 2020). The unprecedented uptake of digital technologies in the wake of the crisis will likely only further accelerate this trend.

What will the future look like?

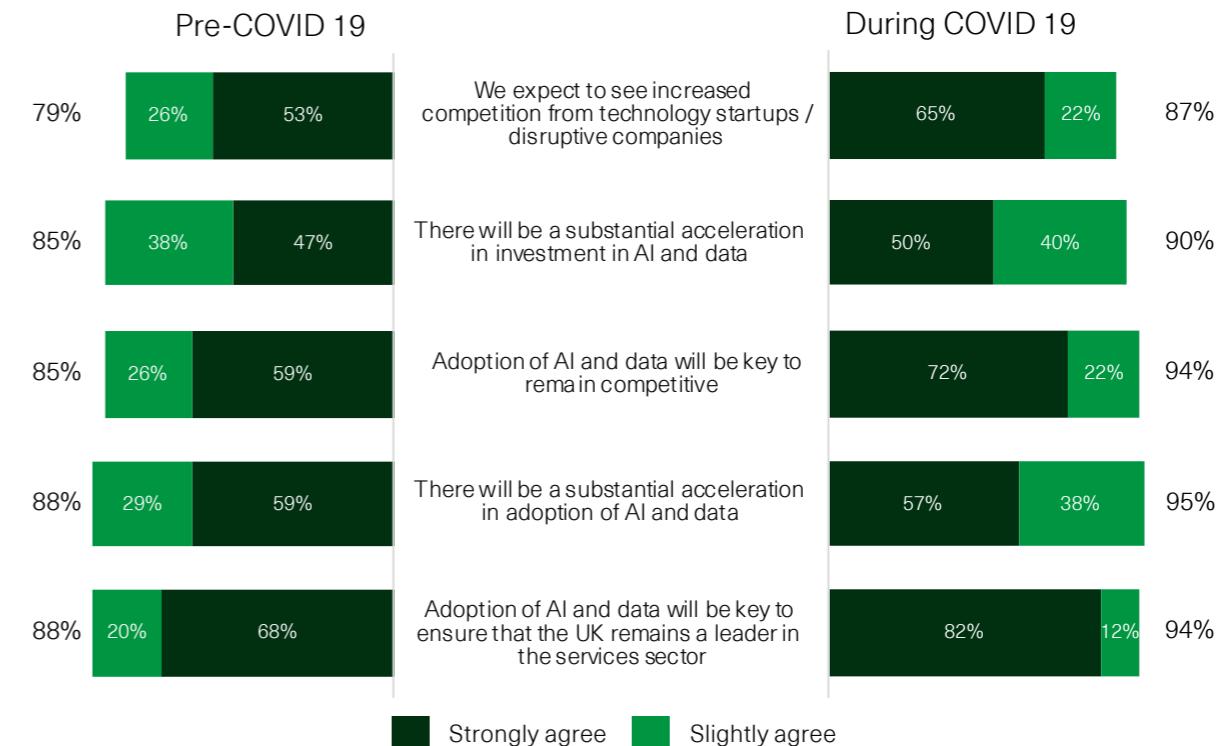
AI and data will play an important role within the accountancy, insurance and legal services sectors over the next three to four years and beyond.

Advances in data availability and openness of data, the lowering of technological barriers, increased competitive pressure, changing attitudes in the industry, and government funding provide further incentives for the uptake of AI and data technologies within the services sector.

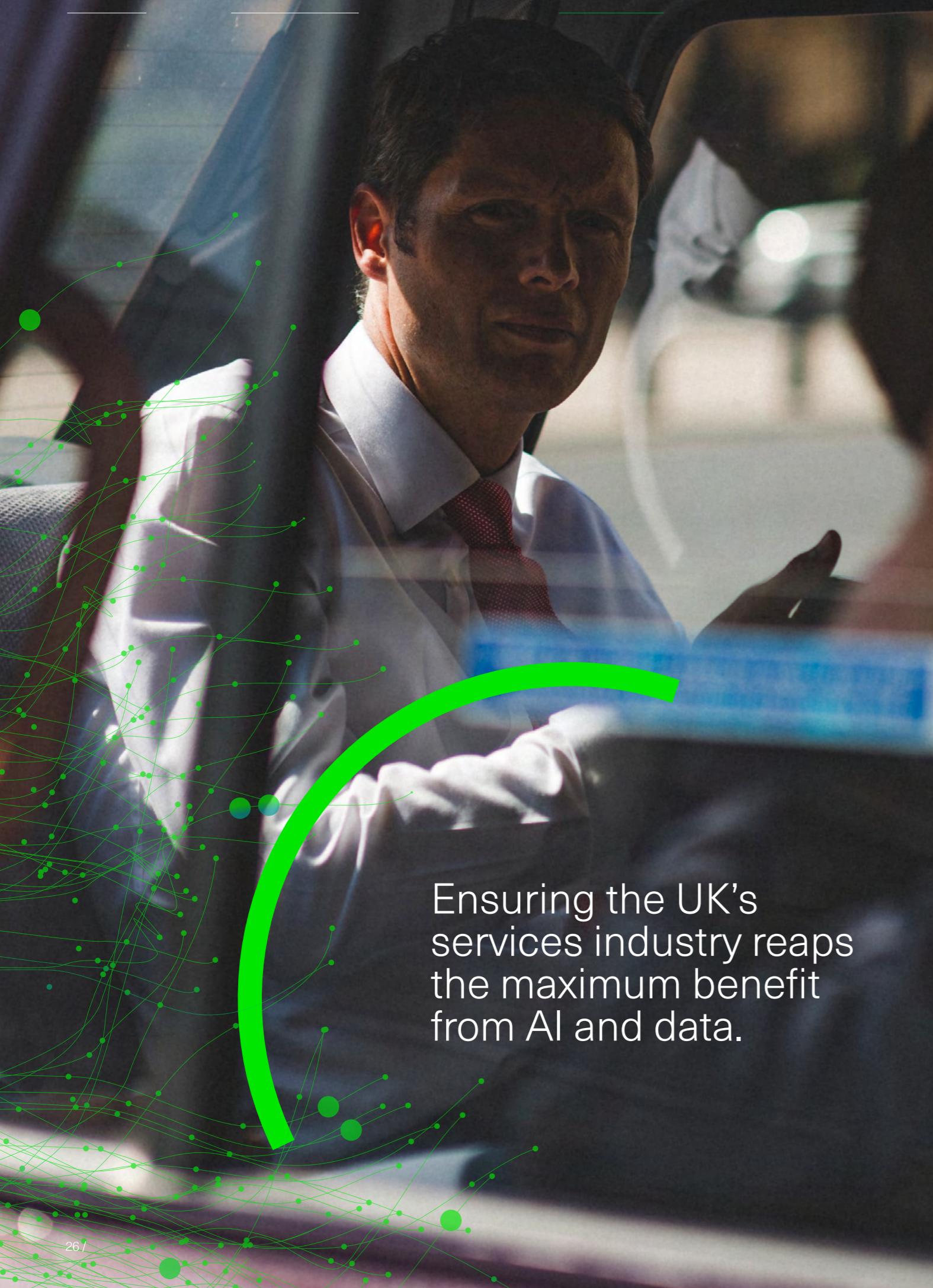
This is reflected in the views of stakeholders in the sector, with 88% of respondents to the initial survey undertaken for this study agreeing that AI and data will be key to ensuring that the UK remains a leader in the services sector over the next three to four years. Moreover, respondents expected to see a substantial acceleration in both investment in (85%) and adoption of (88%) AI and data over the next three to four years; while 78% of respondents agreed that we can expect to see increased competition from technology startups and disruptive companies; and 85% agreed that adoption of AI and data will be key to remaining competitive.

As Figure 13 highlights, the current COVID-19 crisis has only reinforced the importance of AI and data technologies in the minds of organisations in the sector. Specifically, 94% of respondents to the follow-up survey undertaken in July 2020 agreed that AI and data will be key to ensuring that the UK remains a leader in the services sector. Moreover, 94% saw AI and data as key to remaining competitive, with 87% expecting increased competitive pressures from tech startups and disruptive entrants. Nearly all respondents to the follow-on survey also expect to see a substantial acceleration in adoption (95%) and investment (90%) in the next three to four years.

Figure 13_Survey respondents' views on the uptake of AI and data technologies in the services sector over the next three to four years



Note: Pre-COVID 19 survey undertaken in March 2020; Follow on survey undertaken in July 2020. No. of responses in first survey = 93; No. of responses in second survey = 40. Survey respondents were asked to indicate whether they "strongly agree", "agree", "disagree", "strongly disagree" or "don't know / not applicable" for each item in the context of the following overarching question: "What will use of AI and data technologies in the services sector look like over the next three to four years?" Source: London Economics



Recommendations

Given the background presented in this study, summarised below, this section provides concrete steps Government, support organisations, incumbent firms

and innovators in the sector can each take to ensure the UK's services industry reaps the maximum benefit from AI and data.

Strengths	Weaknesses	Opportunities	Threats
Excellent research base Thriving industry landscape A strong funding environment compared with other European markets Good wider ecosystem Recognition of importance of AI and data by Government, with strategy in place	Translating research into commercial products and scaling up of companies Limited understanding of AI among decision makers and lack of AI and data strategy Structural features such as the partnership model, high profit margins & culture barrier Legacy systems / data silos	Automation of routine tasks leading to reduced costs and improved efficiencies Complementing human decision making Creation of new work Better customer services and personalisation Wider and improved access to services System-wide efficiency	Access to funding significantly more challenging compared to the likes of the US and China (particularly for scale-ups) & few specialised funders Access to staff with the right skills Inappropriate regulation and lack of standards Standards being set in other jurisdictions Increasing customer concerns

Continue to tackle the funding and skills challenges

Incumbent firms should continue to focus on upskilling and reskilling
Policy makers and sector bodies should create policies that are targeted at meeting the skills requirements of the future
Government should address the scale-up challenge as a matter of priority

Make data fit for innovation

Regulators and tech providers should work on creating data standards and common interfaces
Incumbents should upgrade their data infrastructure

Foster an innovation culture

Incumbents should consider whether their current organisational structures are conducive to innovation
Firms should think carefully about the problems they face and avoid innovating for innovations' sake - sometimes much simpler solutions are more appropriate for the problems at hand than advanced AI techniques

Create meaningful partnerships

Incumbents should be transparent about the challenges they are facing and open to solutions from outside their organisation
Innovators need to recognise the difficulty in evaluating potential AI solutions for incumbents and be clear about the value their solution brings
Policy bodies and support organisations should continue to promote partnerships and knowledge transfer

Create regulation that is conducive to innovation

Government and regulators should work with industry to ensure that inadequate regulation, or indeed a lack of regulation, does not hinder innovation

To see the full report click on the link [here](#)

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