The digital dilemma: balancing progress with worker protection

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Foreword

The world of work is undergoing a profound transformation. Digitalisation is no longer a distant prospect; it is here, reshaping industries, redefining roles and influencing every aspect of organisational life. For businesses, this presents extraordinary opportunities to innovate, improve efficiency and unlock new ways of working. Yet, as this white paper makes clear, these opportunities come with responsibilities that cannot be ignored.

Technology must serve people first – not the other way around. At IOSH, we believe that progress should never come at the expense of worker safety, health and wellbeing. This principle is at the heart of the IOSH vision and mission and underpins the recommendations you will read within this paper. While businesses are investing heavily in cyber security, artificial intelligence and digital skills, the concerning finding is that the human dimension of digital transformation is too often overlooked. This is not just a moral issue; it is a strategic one. Neglecting to consider workers and their health, safety and wellbeing risks undermining trust, resilience and long-term performance and sustainability.

The evidence presented here is compelling. Businesses are racing to adopt new technologies, yet many fail to consider the psychosocial risks, mental health impacts and ethical implications of these changes. Algorithmic management, digital surveillance and technology fatigue are emerging challenges that demand urgent attention. Without person-centred approaches, robust governance and inclusive practices, workplaces risk becoming technologically advanced but fundamentally unsafe and unhealthy for the people who power them.

This white paper calls for decisive action. Governments must lead by embedding safety-by-design principles into technological innovation pathways – through legislation and by setting clear standards for ethical technology use. Businesses must integrate occupational safety and health (OSH) considerations into every stage of technology development and adoption – from planning and design to implementation and evaluation. And OSH professionals must champion human-centred design, advocate for worker participation, human-in-the-loop/human-in-command and collaborate across disciplines to mitigate risks before they materialise.

Digitalisation offers immense potential to enhance not only productivity but also worker wellbeing – if implemented responsibly. Businesses that embrace this approach will not only safeguard their workers but also secure a competitive advantage in an era where trust, ethics and resilience define success. The future of work depends on striking a balance between technological progress and human protection.

As IOSH President, I urge every reader to take these findings seriously and act on the recommendations set out in this paper. Together, we can ensure that technology becomes a force for good – driving innovation while protecting the people who make it possible. The time to act is now. Let us put people back at the heart of digital transformation.

Richard Bate CFIOSH
President, IOSH

Introduction

Technology has always shaped the way we work and impacted the way businesses operate. Today, we use digital tools all the time – from apps to entire systems that run our work operations – which help us to work quicker and to be more connected. However, in addition to benefits, they bring new challenges and workplace hazards and risks.

Over the past decades, the advancements in digital technology have significantly broadened access to innovation tools and simplified their use. As a result, businesses have to track and adopt ever-evolving technology to boost efficiency and remain competitive.

Our research, involving more than 1,000 business leaders, shows that most businesses use technology to improve productivity, but some are beginning to explore its potential to support and help improve worker wellbeing.

However, the human and ethical impacts – both positive and negative – of technological transformation are often overlooked, as are considerations and action for improved digital literacy and wider data security across countries. Similarly, businesses seem to focus on more immediate challenges around implementation and use, overlooking more nuanced issues of how technology use affects workers' rights, how it might create psychosocial hazards and risks, how it impacts worker mental health and wellbeing and how it might affect job security. These human factors can get lost in the race to innovate.

Governance and regulation are essential for the responsible development and use of technology. The same goes for the application of health and safety in design principles, practices and standards, along with industry-relevant upskilling in the use of new technology, digitalisation and innovation.

Our paper argues that business priorities for technology use are more commercially motivated rather than people-focused. Organisations need to realign their priorities to the heart of their operations – their workers.

The majority of businesses are confident that their suppliers take good care of their workers' safety, health and wellbeing. This number is significantly higher in larger organisations.

The provision of flexible working arrangements is the most common intervention to support vulnerable workers (51 per cent), followed by workplace adjustments, occupational health services and employee assistance programmes.

Businesses are struggling to embed sustainability into their business strategies. The key challenges they cite are around ensuring equity, diversity and inclusion (EDI), delivering occupational health and wellbeing strategically, and providing sustainable and meaningful work to all workers.

The digital dilemma

Businesses are at a crossroads. The pace of technological change is no longer just fast; it's relentless. Organisations that fail to adapt risk falling behind in ways that could compromise their competitiveness. But, in the scramble to embrace tech, worker health, safety and wellbeing is also at stake.

Digitalisation is reshaping every aspect of work, yet many companies are racing ahead without fully considering the human impact. This white paper highlights the growing gap between technological ambition and worker-centred priorities. Worker wellbeing and ethical practices are not keeping pace. Without clear rules and thoughtful design, technology can create risks, from data misuse to increased pressure on workers.

Organisations are primarily adopting technology to improve productivity and efficiency, with priorities focused on cyber security, AI implementation and digital skills development. While there is recognition that technology can support worker wellbeing, this remains secondary to operational goals, and ethical considerations are often overlooked.

Rapid technological change has introduced uncertainty and complexity, with businesses struggling to integrate diverse and multiple tools to protect data security and manage new risks, including psychosocial ones. A lack of digital skills and industry-specific upskilling programmes compounds these challenges, particularly for smaller organisations. Remote work has highlighted issues such as productivity tracking and data protection, while mental health concerns are frequently neglected.

Although workers are widely involved in technology adoption and generally accept workplace digitalisation, businesses focus on the short-term requirements for implementation rather than long-term value creation that includes worker health, safety and wellbeing. Health and safety training and protocols accompany tangible technology used within the workplace – the use of wearables and drones for example – but risks such as technology fatigue, algorithmic management and digital surveillance remain under-addressed.

Mental health issues, especially among hybrid workers, underscore the need for risk assessments to include psychosocial risks and, therefore, for a more holistic approach to risk assessments.

Governance and regulation are essential for safe, healthy and ethical technology use, yet current practices prioritise compliance over ethics. Without clear guidelines, businesses risk undermining worker rights and wellbeing in pursuit of performance and efficiency. This paper calls for governments to establish standards for ethical technology use, embed health and safety-by-design principles and mandate digital literacy.

Businesses should integrate OSH considerations into all stages of technology adoption, conduct worker impact assessments for AI systems and involve workers in decision-making.

OSH professionals also have a key role to play, by advocating for human-centred design, undertaking continuous learning on tech-related risks and collaborating across disciplines to develop inclusive strategies.

Digitalisation offers immense potential, but its benefits must not come at the expense of worker health, safety and wellbeing. Organisations need to strike a balance between technological innovation/maturity and people-centred practices.

By embedding ethics and safety and health considerations into digital strategies, businesses can ensure that technology serves both productivity and the workforce.

Time for action

The following is a series of calls to action for governments and policy-makers, businesses and OSH professionals.

Governments and policy-makers

Introduce legislation to ensure new technologies uphold worker rights and protections. This should include mandatory employer-led worker impact assessments.

Review and/or update existing OSH legislative frameworks and implement amendments to address technology and digital hazards and risks.

Develop and publish national industry standards and guidelines for health and safety and technology, covering ethical, responsible and safe use of emerging technology.

Mandate safety-by-design principles in the planning, development and implementation of all workplace technology and digitalisation.

Require and support the delivery of digital literacy and upskilling for employers, workers and smaller organisations (e.g. micro, small and medium-sized enterprises).

Provide incentives for businesses to develop and adopt worker-centric technologies that enhance safety, health and wellbeing.

Businesses

Integrate technology adoption within the OSH management system. This includes considering worker technological and digital hazards and risks, including psychosocial risks, as part of risk assessments and changing management processes.

Develop and embed ethical values and responsible business practice within technology transformation strategies and improve digital literacy in all managers and workers.

Ensure health and safety risk assessments are completed and robust. They must identify all technological and digital hazards and risks, as well as all those at risk, including vulnerable groups, and consider algorithmic management, surveillance, technology fatigue, remote work, digital platforms and privacy, among others. Embed human-in-command approaches to ensure human decision-making.

Conduct and record worker impact assessments as part of the planning stage and before deploying AI or algorithmic systems, surveillance, remote work or platform work.

Establish and use worker consultation processes for all new technology and digital projects (during design and through roll-out and monitoring stages).

Be transparent about how algorithmic systems work, how personal data is stored and used, and how decisions are made.

OSH professionals

Advocate for and actively participate in embedding human-centred design principles in the planning, design, development and implementation of new technologies.

Ensure health, safety and wellbeing is embedded in the design, implementation and evaluation stages of new technologies.

Undertake CPD on new technology-related risks and advise employers on prevention and mitigation approaches. CPD should also incorporate professional development of digital literacy and data analysis capabilities.

Advocate for worker participation in decision-making processes for digital tools and systems.

Develop and advise on holistic, inclusive and risk-based practices and strategies for implementing new technologies that include all relevant stakeholders.

Promote and implement sound 'prevention through design' approaches that mitigate against any unintended consequences of new technologies.

Participate in interdisciplinary initiatives among technology and data specialists, human resources professionals and legal compliance professionals to develop solutions that support users in the safe use of new technologies.

Speaking to business

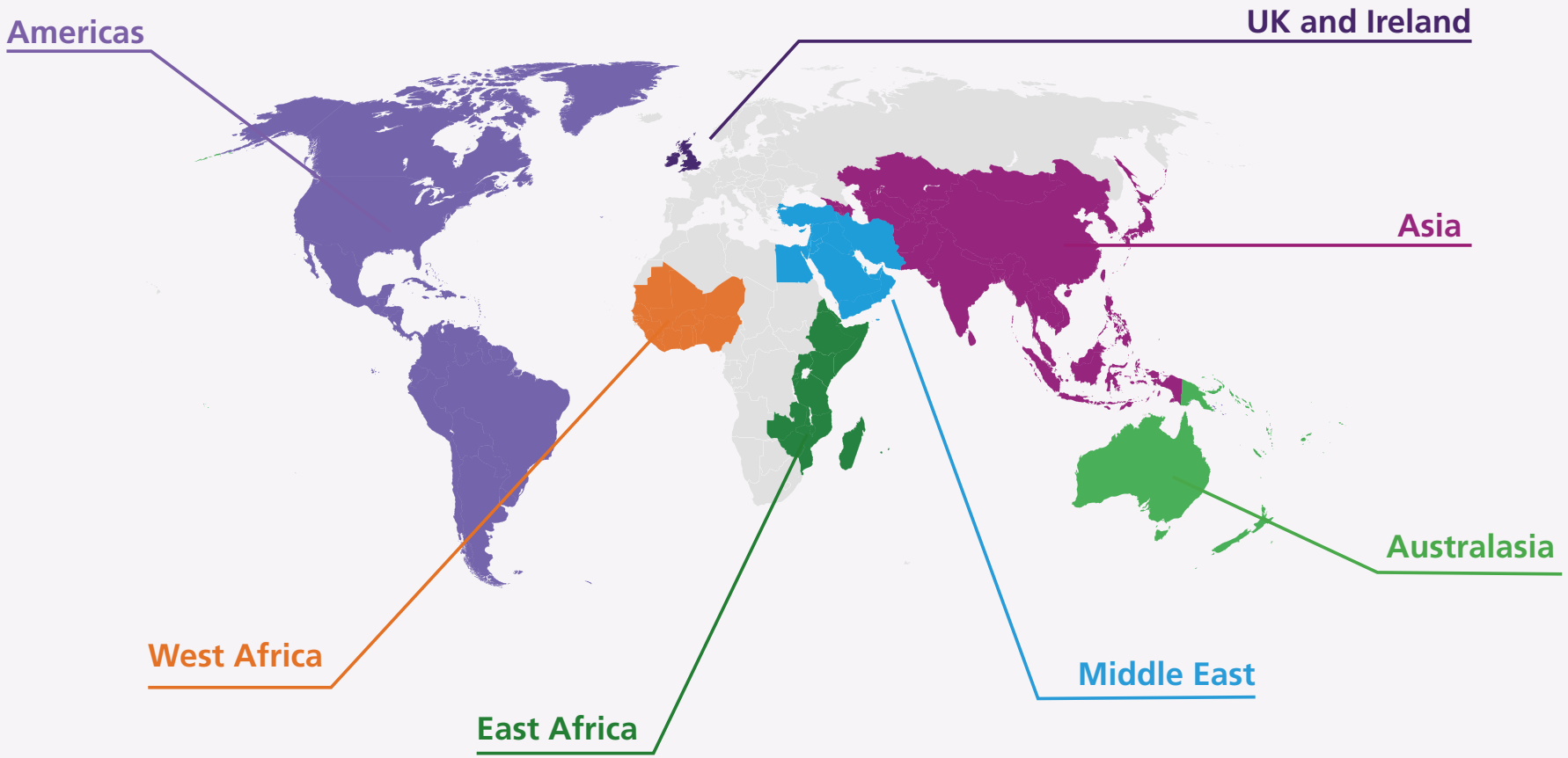
Recognising the important role that businesses have in driving and contributing to sustainable development, IOSH wanted to gain a better understanding of how businesses are managing issues relating to three areas of interest: **social sustainability**, **technology and digitalisation** and **health and wellbeing**. We see these three themes as key areas for OSH risks and opportunities in the current world of work. To explore the risks and opportunities within business, we partnered with Savanta, a global research and advisory company, to conduct in-depth qualitative and robust quantitative research.

The qualitative phase of the research included 45-minute in-depth interviews with seven senior business leaders who had decision-making responsibility for at least one of the three areas of interest.

The interviews focused on understanding current behaviour and developments across each of these themes, how they expected these to evolve and where they believed organisations could support and add value.

Insights from these interviews informed the quantitative phase, which was conducted through a 15-minute online survey with 1,059 senior business decision-makers. This survey gained responses from 22 countries across the seven regions during a two-week period. The findings from this are outlined in this paper, focusing on technology and digitalisation.

These decision-makers were based in the following regions:



Uncertainty is the name of the game

Technology and digitalisation create both opportunities and challenges for many businesses. While some technologies could reduce or better manage OSH risks, such as automation or robotics taking over dirty, dangerous and demeaning jobs, others could create new risks or exacerbate existing ones, not least because the very context of work is altered dramatically for many workers.

The pace of technological change brings not just confusion and ambiguity, but a challenge for organisational capacity to respond and adapt. Businesses are currently facing the challenge of rapidly evolving technologies (which are often at odds with one another) being used in different parts of the organisation with varying levels of success. The onus is on those businesses to explore technologies that deliver a measurable return on investment across their operations, workers and customers. But these technologies also need to be implemented safely, responsibly and sustainably. When asked, decision-makers in this space revealed the top challenges:

- **Ensuring cyber security and data protection** (33 per cent)
- **Implementing and using AI** (30 per cent)
- **Assessing and benchmarking the health, safety and wellbeing impact of new technologies and tools** (23 per cent)

High-income countries are much more concerned about ensuring cyber security (**36 per cent compared to 27 per cent in other countries**), perhaps due to stricter data laws and regulations.

Additional global concerns include implementing big data interventions and upskilling workers with diverse digital skills. Primarily, the identified challenges are amplified by complex data protection regulations and laws, coupled with the absence of clear industry guidelines. Without established guidelines and monitoring practices, the technology landscape is hard to navigate and leaves businesses struggling to implement, use and integrate big data interventions in their daily operations. Smaller businesses are also disproportionately affected as they lack the capacity to experiment with and evaluate the many options and solutions. But if they don't, they risk falling behind.

Technology professionals also identify insufficient digital skills and technical expertise as secondary challenges faced by organisations. Without structured upskilling programmes that have been informed by industry experts, businesses will find it difficult to deploy technologies across their supply chain safely, responsibly, ethically and effectively.

Addressing these gaps is essential to ensure that technology and digitalisation is also used to support and enhance health, safety and wellbeing across the business and its operations. New skills are required so that organisations are able to develop, use and monitor technology, including its deployment, to ensure it is safe, sustainable, responsible and ethical. Any foreseeable risks to the health, safety and wellbeing of workers and others who could be impacted by its use must be considered as part of a robust risk assessment process. Control measures identified as part of the risk assessment process will also identify information, instruction and training for workers. The control measures must be implemented, and workers informed as part of the risk assessment process, just as you would for the introduction of any new equipment or new processes.

*'I think just **awareness (on health and wellbeing)** among the management team – that workers need their time off from work, to recover and then be mentally well'*

Chief information officer, logistics industry, Kenya

*'The wellbeing impact of our systems. I think a lot of our problems come from the fact that **we have so many discrete point legacy systems** and it's frustrating and confusing for people. I think those are areas where **someone could explain why you have a lot of mental health issues**'*

Chief technology officer, energy and utilities industry, UK

When asked about their priorities for the coming year, respondents suggested their organisational focus is on ensuring **cyber security and data protection** (36 per cent), implementing and using AI (34 per cent), **exploring ways that technology can support worker safety, health and wellbeing** (26 per cent) and **developing worker digital skills diversification** (26 per cent).

Interestingly, while cyber security is a top focus for organisations, ensuring ethical and responsible use of technology features lower on their list of priorities. Businesses in emerging economies are seemingly more likely to prioritise both exploring technological interventions for worker health, safety and wellbeing (33 per cent vs 23 per cent) and assessing the health, safety and wellbeing impact of new technology (28 per cent vs 20 per cent) when compared with high-income countries. At first glance, this may indicate a greater focus on worker safety, health and wellbeing in relation to technology within developing nations. However, businesses there aren't any more likely to encourage ethical use and cultural acceptance of new technology than those in high-income countries.

The finance and asset management sector is most likely to set out to encourage cultural acceptance of technology among workers (23 per cent).

Tech for profit, not for people?

It is notable that the biggest opportunities identified for technology and digitalisation are the introduction and implementation of artificial intelligence (AI) (43 per cent) and digital transformation to improve efficiency (31 per cent). Technology professionals also note that, when rolling out new technologies, businesses' focus is first and foremost on improving productivity output (40 per cent).

As we saw earlier, businesses are prioritising smooth and secure implementation of technologies, rather than assessing their impact on workers. **Additionally, regulatory compliance is considered much more important than ethical considerations and responsible use of new technology, suggesting that businesses are currently more receptive to expectations laid out in standards than they are to broader ethical questions.**

When asked about remote working challenges, technology professionals report the following:

- **Difficulty tracking the productivity of workers** (40 per cent)
- **Difficulty ensuring data protection and security** (37 per cent)
- **Higher cost of maintenance on technological equipment** (33 per cent)

Worker health, safety and wellbeing doesn't feature in the top three challenges, despite the most reported work-related health or safety issues faced by workers being mental health problems (55 per cent), with hybrid workers more likely to report the same (60 per cent).

Despite indications that hybrid working (and the way it is managed and implemented) can influence mental health, businesses tend not to prioritise safety, health and wellbeing. More emphasis is placed on productivity, security and cost control when it comes to technology adoption.

These findings identify an increasingly growing gap: businesses are often drawn towards technology innovation without fully considering the wider impacts on worker health, safety and wellbeing. Businesses' motivation to digitally upskill workers stems from the prospect of it delivering greater returns rather than supporting workers' safety, health and wellbeing. And where technology is able to deliver both, the benefits to workers are often incidental rather than intentional.

This is quite surprising, as workers are widely considered vital assets when it comes to delivering technological interventions within a business. Most organisations advise encouraging workers to suggest and adopt new technologies (92 per cent) and that workers are informed about, consulted with, prepared for and included in the implementation (88 per cent).

Wherever introducing new tangible technology (e.g. drones, wearable devices, hand-held devices), businesses report that they:

- **Provided safety training and education for workers** (41 per cent)
- **Implemented safety protocols and guidelines for technology use** (41 per cent)
- **Consulted with workers and collected feedback from them on safety concerns and improvements** (40 per cent)

While this data shows that workers are being included in the *implementation and use* of new technology, it doesn't inform us about the health, safety and wellbeing outcomes and impact. The relatively low roll-out of training and education programmes is also concerning (as the data means that 59 per cent of businesses haven't provided safety training and education for workers) and perhaps reflects a lack of availability of good-quality instructional resources. It also means that 59 per cent haven't implemented safety protocols or guidelines for technology use, and that 60 per cent are not consulting with workers. This data demonstrates that there is much more we can and should do within the workplace to support health and safety within technology adoption and implementation.

Data also demonstrates that workers are largely accepting of new workplace technology and broader transformations (89 per cent). This presents an opportunity for businesses to go beyond technology and digitalisation as vehicles for efficiency and productivity and to recognise its broader potential for worker creativity, innovation and wellbeing.

Different organisations face issues in safely and quickly adapting to new technology and tools and also extending their use throughout the supply chain. Regardless, it is vital to monitor and mitigate for impact on workers to ensure that overall goals of health and safety are met. Although our research points to difficulties around tracking worker productivity related to remote working (40 per cent), another concern with digitalisation is the potential health, safety and wellbeing impacts of digital surveillance, arbitrary algorithmic management and decisions on workers, as well as a loss of worker agency.

Striking the right balance between being people-centred and technological transformation is critical.

Businesses must remain highly sensitive to worker safety, health and wellbeing when rolling out new technology interventions in the quest for improved efficiency.

Conclusion

There is no doubt that the pace of digitalisation and tech innovation is transforming the world of work, but this transformation comes with profound responsibilities. Businesses cannot afford to view technology adoption solely through the lens of productivity and efficiency.

The evidence is clear: while organisations are investing heavily in cyber security and AI, they often overlook the human dimension – worker safety, health and wellbeing. This oversight is not just a moral or ethical failing; it is a strategic risk that threatens workforce resilience and the long-term sustainability of businesses.

The challenges are real and complex: from psychosocial risks and mental health concerns to algorithmic management and digital surveillance. Without proactive governance, standards and guidelines, ethical frameworks and inclusive practices, organisations risk creating workplaces that are technologically advanced but which are unsafe or unsustainable for the people who power them. The gap between ambition and responsibility must be closed.

This white paper calls for decisive action. Governments, businesses, health and safety professionals, developers and engineers, therefore, all have a role to play. Governments and policy-makers must take the lead by establishing clear standards and embedding safety-by-design principles into legislation. Businesses must integrate OSH considerations into technology adoption, ensuring that ethical values underpin transformation strategies, and they must also involve workers and engage in consultation and two-way feedback, from the planning stage and through every subsequent stage of implementation and adoption. OSH professionals must champion human-centred design, keeping people firmly in the loop. They must collaborate across disciplines to identify and eliminate hazards and prevent harm. Where that cannot be done, they must assess the risks and take action to mitigate them.

Technology developers and engineers must ensure that technological systems are designed in an inclusive manner to prevent discrimination and physical and mental health issues. It is also important that they engage with front-line workers and end users in the design of digitalised systems and applications through in-depth risk assessments.

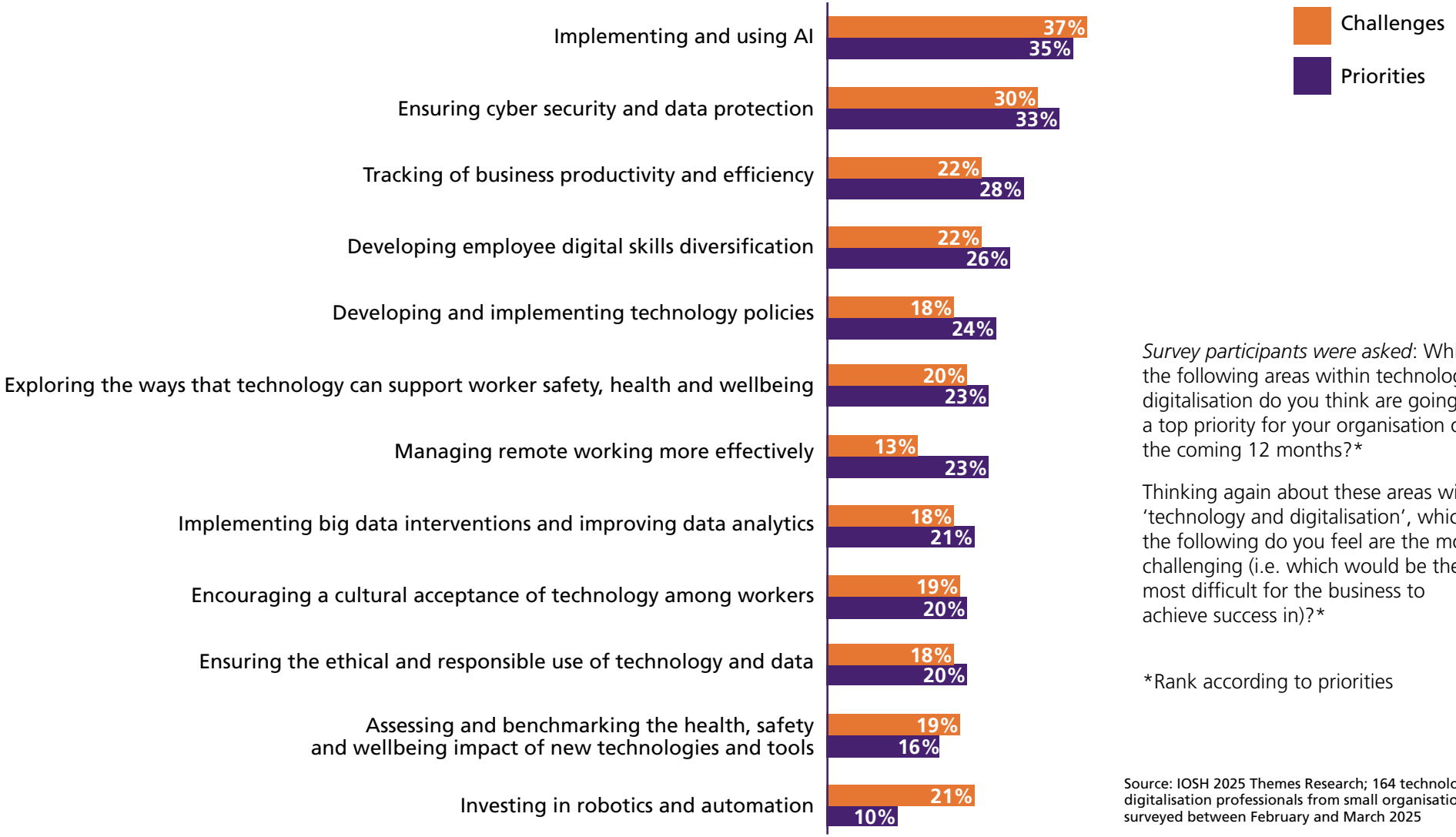
Digitalisation offers extraordinary potential to enhance efficiency, innovation and even worker health, safety and wellbeing simultaneously – but only if implemented responsibly. The sustainability of work in the technological age depends on striking a balance between innovation, progress and human protection. Businesses that embrace this approach will not only safeguard their workers but also secure a competitive advantage in an era where trust, ethics and resilience are likely to define success. The time to act is now: technology must serve people, not the other way around.

Appendix

Of the 1,059 respondents:

- **33 per cent** had board/executive level seniority, **52 per cent** had senior level and **15 per cent** had mid-junior level seniority in their organisations.
- **35 per cent** worked in organisations with **500+ workers**, **42 per cent** in those with **101-499 workers** and **23 per cent** in those with **10-100 workers**.
- **15 per cent** belonged to the IT and telecoms sector, **14 per cent** to technology and **13 per cent** to manufacturing.
- **56 per cent** belonged to fully remote/hybrid organisations and **44 per cent** were on-site/office-based.
- **73 per cent** had strategic responsibility for technology and digitalisation, **40 per cent** for social sustainability and **42 per cent** for health, safety and wellbeing within their organisations.

Investment in robotics and automation is a challenge for smaller organisations



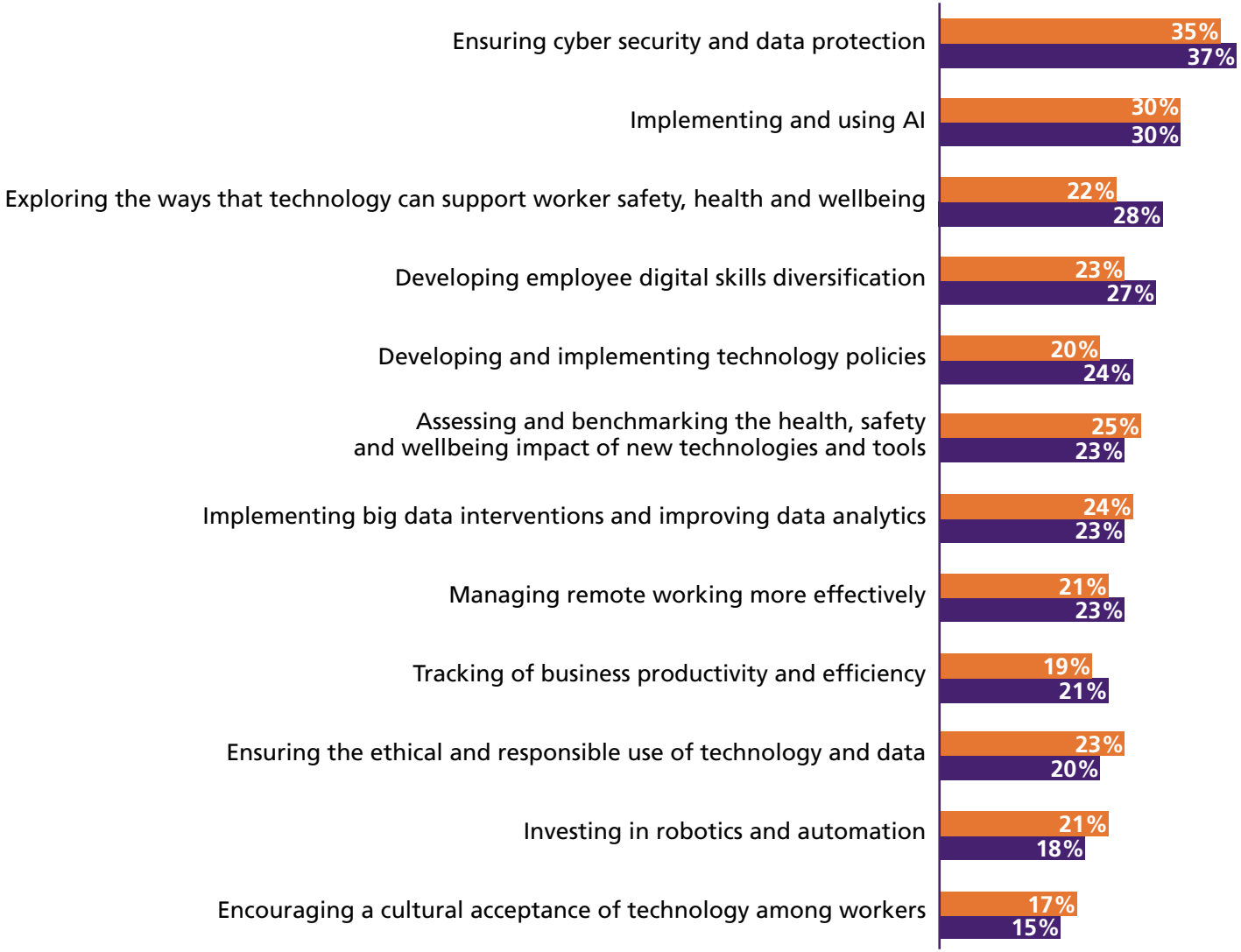
Survey participants were asked: Which of the following areas within technology and digitalisation do you think are going to be a top priority for your organisation over the coming 12 months?*

Thinking again about these areas within 'technology and digitalisation', which of the following do you feel are the most challenging (i.e. which would be the most difficult for the business to achieve success in)?*

*Rank according to priorities

Source: IOSH 2025 Themes Research; 164 technology and digitalisation professionals from small organisations were surveyed between February and March 2025

Assessing and benchmarking the wellbeing impact of their technologies is a key challenge for medium organisations



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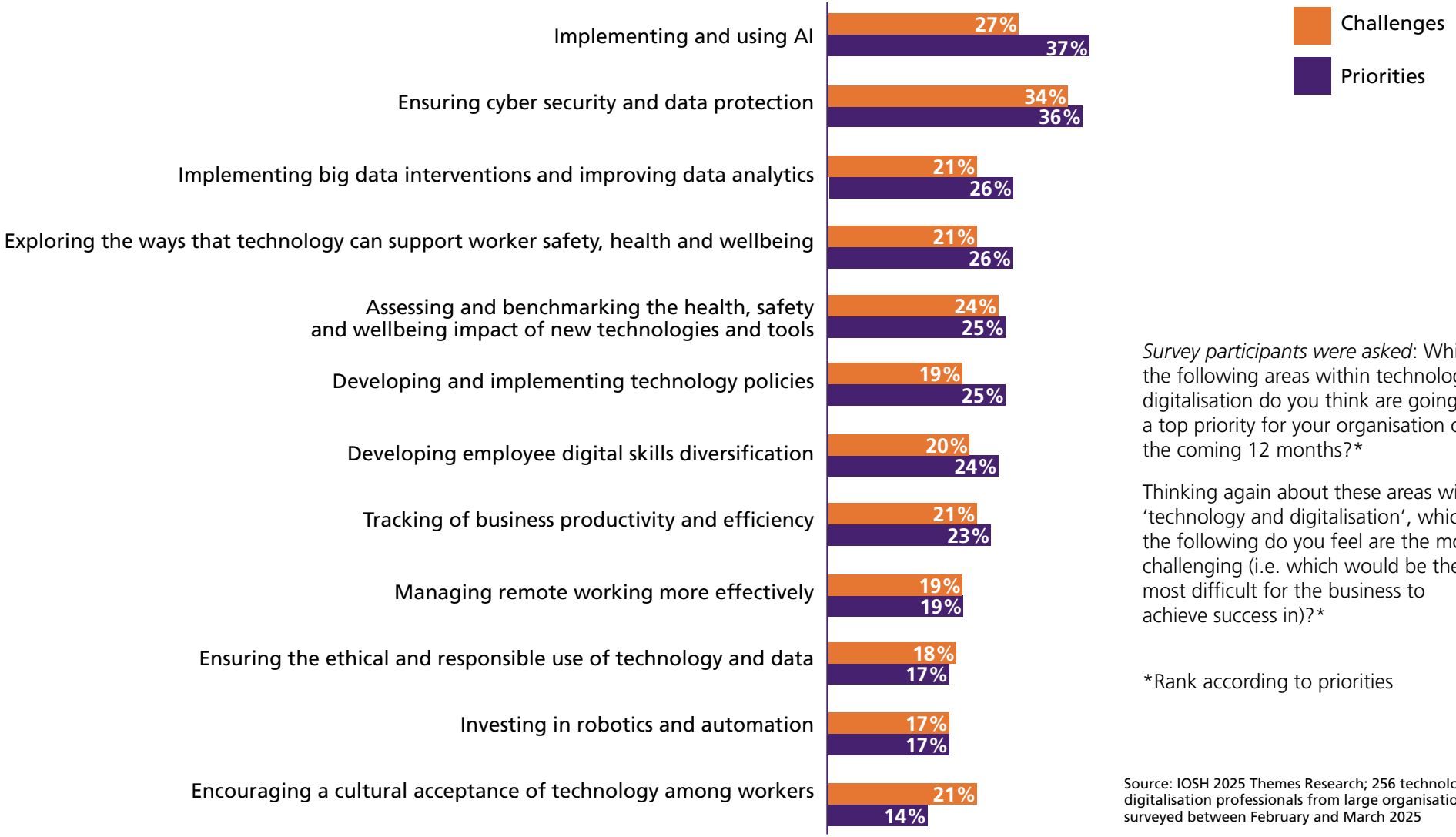
*Rank according to priorities

Source: IOSH 2025 Themes Research; 286 technology and digitalisation professionals from medium organisations were surveyed between February and March 2025

Large organisations find encouraging a culture of technology acceptance among workers a challenge



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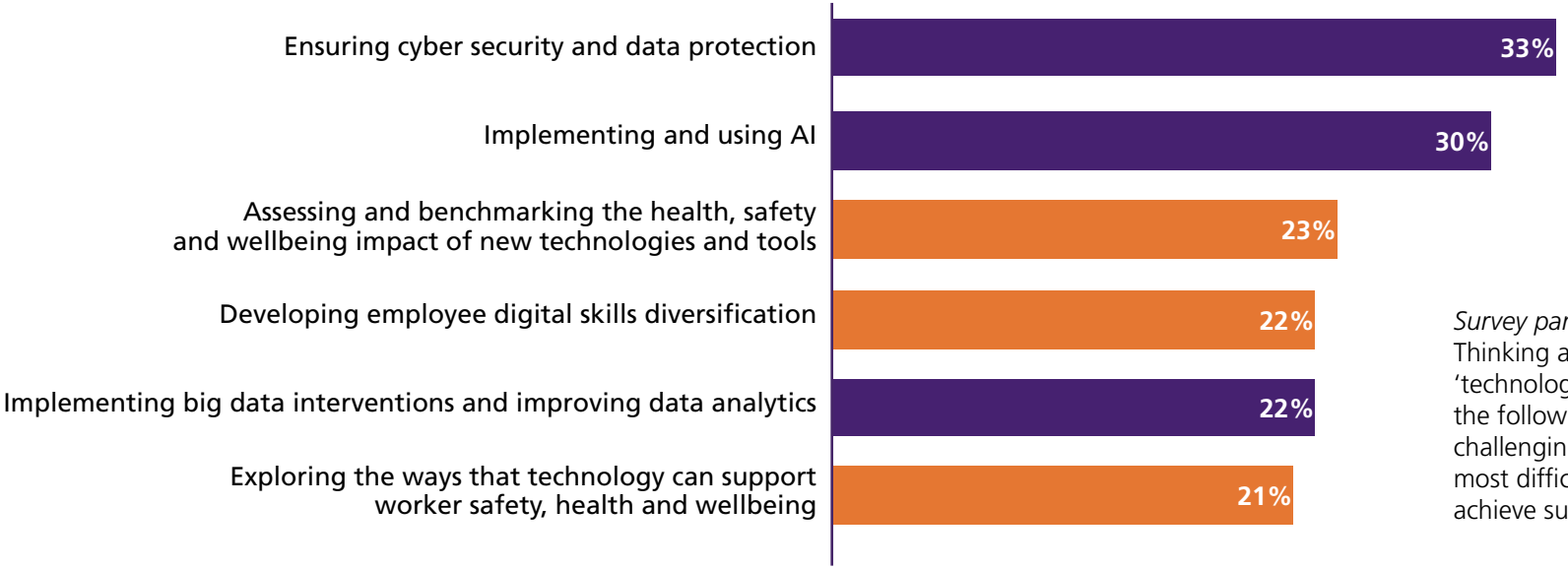
*Rank according to priorities

Source: IOSH 2025 Themes Research; 256 technology and digitalisation professionals from large organisations were surveyed between February and March 2025

The top challenges in technology and digitalisation are mainly driven by AI and the uncertainty it brings

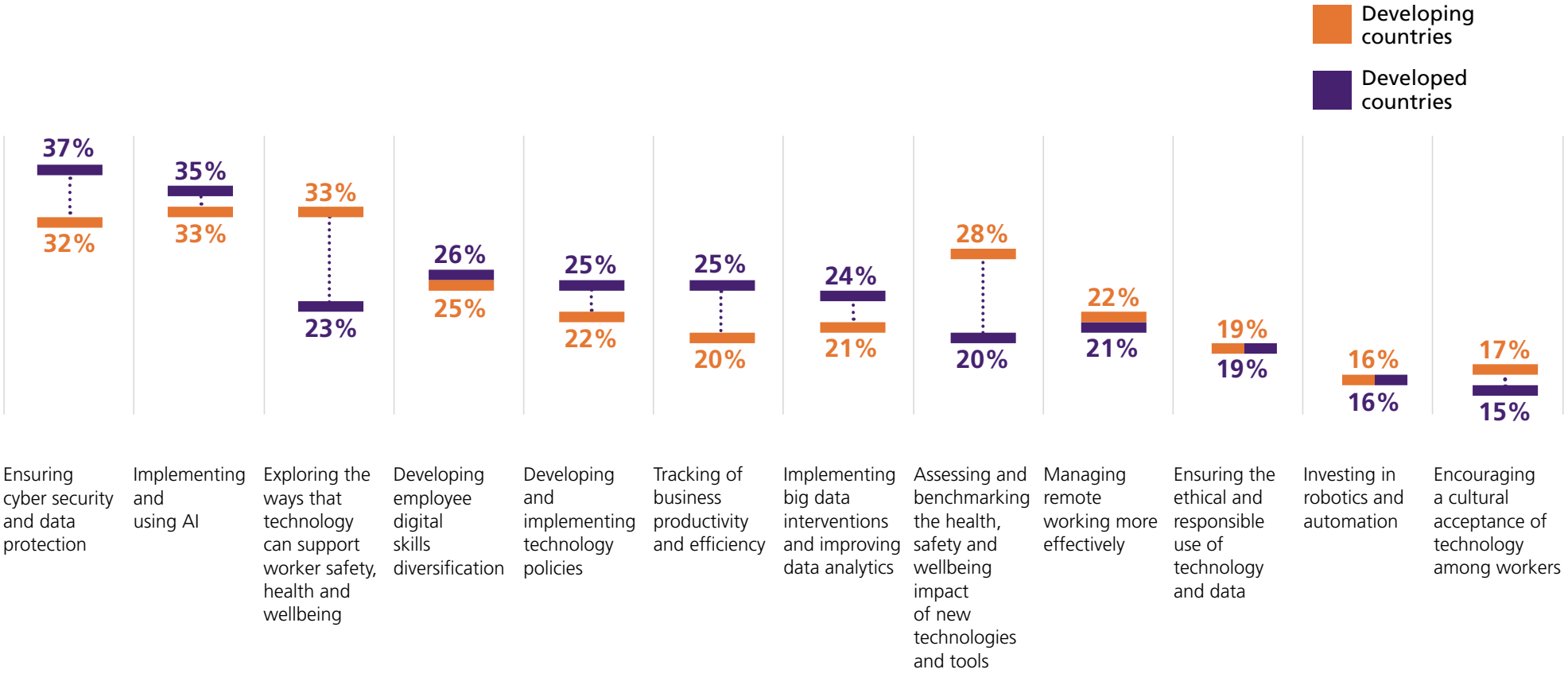


Survey participants were asked: Thinking again about these areas within 'technology and digitalisation', which of the following do you feel are the most challenging (i.e. which would be the most difficult for the business to achieve success in)?

AI-related challenges are obvious and top of the list, **but business decision-makers also find skills development and related safety, health and wellbeing programmes difficult**.

Source: IOSH 2025 Themes Research; 706 technology and digitalisation professionals were surveyed between February and March 2025

Disparity between developed and developing countries in priority for respective tech interventions



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Source: IOSH 2025 Themes Research; 706 technology and digitalisation professionals were surveyed between February and March 2025

A growing gap of organisations prioritising the efficiency of technology intervention over employees' wellbeing

Survey participants were asked: What are the most common reported work-related health or safety issues faced by the employees at your organisation?

Based on the last 12 months, which of the following challenges, if any, are you aware that your organisation has faced due to remote working?

60%

of workers who work in hybrid mode reported mental health issues such as stress, anxiety and depression

but...

Source: IOSH 2025 Themes Research; 419 technology and digitalisation professionals were surveyed between February and March 2025

About IOSH

The Institution of Occupational Safety and Health (IOSH) is the world's largest professional body for safety and health and the only one with Chartered status.

We've been around since 1945 and today we're a registered charity with international NGO status. That means we're in a unique position to lead the way: shaping policy, championing positive change and standing up for everyone's right to a safe and healthy workplace.

With a global community of 50,000 members, spread across 130 countries, together, we share one vision: a world where work is safe and healthy for all.

Through the work of our members and our qualifications and training, we provide the skills, knowledge and expertise needed to keep people and workplaces safe – and businesses and economies thriving.

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