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WORLD ECONOMIC FORUM

Empowering Frontlines: Retaining, Training and Upskilling Industrial Workforce

WHITE PAPER

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Contents

Foreword

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The heart of production is found not in machinery or technology, but in the people who lead and operate in the production environment. As we navigate an era of rapid technological advancements and supply chain disruptions, our approach to talent must evolve in tandem. The insights presented in this paper underscore a fundamental truth: the future of manufacturing hinges on keeping people at the centre of strategy.

The manufacturing sector is grappling with a talent crisis of high attrition rates and widening skill gaps driven by the integration of AI, automation and other frontier technologies. The World Economic Forum's "Future of Jobs 2025" report projected that by 2030, nearly 40% of the core skills of advanced manufacturing and supply chain workforce will change. This challenge is compounded by the fact that over 40% of Gen Z employees in manufacturing expressed the intention of leaving their jobs within the next three to six months, driven by factors such as inadequate compensation, lack of career development and a disconnect with leadership.

Companies that succeed in making a fundamental shift in how they invest in their workforce will not only enhance their productivity and innovation but also secure long-term competitive advantage. This is the second white paper in the *Frontline Talent of the Future* series, building on the first publication, "Putting Talent at the Centre: An Evolving Imperative for Manufacturing". This paper explores innovative approaches to two critical components of the strategic talent planning process: retention and upskilling of the workforce. By highlighting organizations who have successfully deployed talent innovations that have overcome these challenges, we can enable leaders to inform their own talent strategies and roadmaps.

The paper showcases how digital upskilling, immersive onboarding and AI-enabled problem-solving are preparing the workforce for the demands of digital transformation. These tools are more than augmentations to workforce capabilities – they are essential for enhancing the overall employee experience. The success of these initiatives hinges on operationalizing talent investment through structured processes and cross-functional collaboration, ensuring that all employees – from new hires to seasoned workers – are empowered to contribute their best.

The changing world of production has ushered forth an evolving talent imperative. The organizations that truly invest in their people today will be the ones that lead the industrial future. This paper serves as a testament to the power of placing talent at the core of industry strategy.

1

Cultivating a resilient workforce

Building a culture of belonging and continuous career enhancement

This is an era defined by rapid adoption of frontier technologies, in which a tenured manufacturing workforce with stability and experience has become a more valuable asset than ever. Yet, the sector faces a significant talent retention challenge. A number of forces are making it difficult for companies to maintain the skilled frontline workforces they need.

But cultivating a resilient workforce is not merely about preventing departures in the short term; it's about setting the conditions that reduce attrition in the long run. This means developing an environment where employees feel valued, empowered and productive – and thus committed to their long-term growth within the organization. The key for companies is to go beyond transactional relationships – to building a culture of belonging and continuous career enhancement.

This shift is better for people, but it's also better for the bottom line, and the financial implications will be distinct for organizations able to tackle these challenges. From a global lens, upskilling in manufacturing alone will grow the global GDP by over $1 billion by 2030,[1] and each frontline employee departure could cost businesses about $52,000 annually in recruiting, training, and onboarding.[2]

1.1 Addressing the attrition challenge: Beyond the exit interview

McKinsey research indicates that more than 40% of Gen Z employees in manufacturing are considering leaving their roles within the next 3-6 months, and such a staggering figure highlights the importance of proactively exploring solutions. The causes are multifaceted, often extending beyond compensation to encompass factors such as a lack of career progression, limited recognition, uncaring and uninspiring leaders, inadequate or insufficient skill development opportunities, and insufficient support for personal well-being.[3]

To truly address attrition, companies must focus on being purpose-driven rather than simply output-driven. This starts by adopting a proactive, personalized stance towards employees, and seeking to understand the underlying drivers of disengagement before they manifest as lack of motivation and, eventually, resignation. This involves listening intently to employee feedback, analysing trends and acting decisively to create a workplace that genuinely nurtures its people.

1.2 Innovations for enhanced retention

Despite the scale of an organization, one size does not fit all when it comes to nurturing the workforce. Leading manufacturers are demonstrating that unique approaches catering to their talent pool – sometimes in contextually differentiated ways that vary by site and geography – can significantly move the needle on retention. These strategies often blend technological solutions with deeply human-centred principles, creating a more engaging and supportive employee experience.

Personalized skills-based career planning and pathways

Innovative companies are moving beyond generic performance reviews, utilizing seemingly traditional tools like employee résumés, personality tests and entry interviews to chart unique skills-based career paths for both new hires and tenured employees alike. This approach acknowledges individual aspirations and strengths while considering essential skills and the training needed to be successful in their current roles and future jobs.

Likewise, it provides clarity around potential advancement opportunities while demonstrating a tangible investment in every employee's future. It offers people a sense of purpose and a clear vision for growth, reducing the feeling of being "stuck" and increasing promotion rates (by up to 70% in the case studies).

CASE STUDY 1

Unilever

Unilever's site in Pouso Alegre initially developed the role of "technical operator" to fill a substantial gap in its maintenance organization, but this effort also became a launchpad for operators seeking a longer career path at the company. A comprehensive mechanics and mechatronics upskilling programme integrates technical training with essential human-centric skills like problem-solving and critical thinking. This holistic approach has enabled operators to serve as first responders on maintenance issues, significantly reducing maintenance reliance while cultivating ownership, agility and continuous improvement.

The Mean Time to Repair (MTTR) has decreased by 27%, from 3.1 hours to 2.3 hours; meanwhile, breakdown losses have dropped by half, underscoring the programme's effectiveness in minimizing operational disruptions. The promotion rate from operator to mechanical roles has also surged by 70%, and the minimum promotion cycle time from new hire to senior maintenance tech has been reduced from five to three years, highlighting the impact on career advancement.

CASE STUDY 2

Haier

Haier's site in Chongqing, China was working to address the challenges of inefficient career planning and shortage of qualified workers for key roles, developed the "Haier Talent Development Digital Platform."

The AI-powered programme evaluates 12 metrics including past performance, applicant skills and technical capabilities to offer personalized advice and learning resources tailored to career goals. This dynamic approach has optimized the company's multi-tiered promotion pipeline, effectively halving its key role shortage from 12% to 6%. Additionally, the promotion cycle duration has been shortened by 40%, decreasing from five to three years.

Community insight: Menzies Aviation[4]

Menzies Aviation is a leading service partner to the world's airports and airlines. As the company grew, it recognized the need to improve leadership skills so as to enhance employee experience, increase retention and build a strong pipeline of future leaders to support business growth.

Menzies introduced two global leadership programmes in response. "Ready to Lead" is a six-hour, three-module course for front-line leaders, focusing on key skills like giving feedback and handling difficult conversations. "Living Leadership" is a 12-hour, six-module programme for managers, covering more advanced topics such as motivation, culture and team performance. Participants in Living Leadership have shown a 21% improvement in retention rates compared to non-participants.

Both programmes are highly interactive and led by in-house facilitators familiar with what a leader needs to succeed at Menzies. With over 4,000 employees having completed the courses already, Menzies aims to train the majority of its 10,000 leaders by the end of 2026.

Mitigating high attrition risk

Proactivity is key for reducing employee turnover. Rather than waiting for a resignation, some organizations are implementing monthly employee surveys designed to understand risk factors driving attrition. This data-driven approach allows leadership to identify employees who might be disengaging or facing challenges.

The results from the employee survey enable leaders to provide proactive support in the form of mentorship, workload adjustments or skill-building opportunities. This has reduced employee turnover by more than 30% in some sites visited. The aim is to proactively identify and address underlying issues affecting employees to enable timely action.

CASE STUDY 3

Haier

At the same site in Chongqing, China, Haier faced high turnover and rising hiring costs driven by diverse employee needs – particularly among Gen Z staff, who comprise 81% of the frontline. In response, the company created an innovative, unified platform that integrates multiple data sources, including human resource (HR) systems, monthly satisfaction surveys and performance metrics to track 14 key features of staff needs such as pay, career goals and employee satisfaction.

Utilizing dynamic profiling, the platform employs gradient boosting decision tree (GBDT) algorithms to identify employees who present high attrition risk, and then auto-matches them with customized actions like performance talks and role rotation. This proactive approach addresses staff concerns promptly, mitigates passive working attitudes and significantly reduces attrition risk. While the initiative has only been deployed for a year, the impact has been notable: attrition has dropped by nearly half, overall satisfaction of Gen Z employees has surged by 43%, and the average full-time equivalent (FTE) tenure has increased by 28%.

Community insight: Mahindra & Mahindra

The automobile manufacturer was facing turnover among skilled staff, which caused project delays and high recruitment costs. Exit interviews revealed that limited growth and skill mismatches were the critical issue. To address this, the company developed the Predictive Engagement and Career Pathing Framework in 2023.

The framework utilizes data analytics to identify disengagement and attrition risks by analysing performance trends, training progress and employee satisfaction surveys. It builds a digital profile for each employee that integrates skills, aspirations and learning behaviours, enabling personalized career mapping based on role availability and skill adjacency.

Combined with mentoring, gamified learning and transparent growth pathways, the framework has enhanced employee engagement and reduced turnover by nearly 20%. Implemented over 24 months, it has aligned individual aspirations with organizational needs, creating a predictive, data-driven approach to retention.

Employee health and well-being strategies

A truly resilient workforce is made up of people who feel supported in a variety of ways, including some that may not be directly or obviously connected to their company function. Forward-thinking organizations are recognizing this by investing in comprehensive well-being initiatives. Examples include a high level of engagement from leadership, providing employee health apps, and offering unique skills training.

These programmes allow people to bring their best selves to work by nurturing physical and mental well-being, reducing stress and enhancing overall life satisfaction. All of these “soft” benefits naturally translate to higher engagement – among some leading sites, daily absenteeism has been reduced by more than 40%.

CASE STUDY 4

Unilever

A surge in absenteeism due to chronic illnesses during the pandemic prompted Unilever’s site in Pouso Alegre, Brazil, to pilot a personalized health programme and app, Healthier U, focusing on nutrition, physical activity and well-being. This innovative approach, which included strong engagement from all shifts (particularly the night shift), led to a full global rollout.

Absenteeism dropped eight percentages points from 10.8% to 3.0%, and the percentage of people declaring health impacts on their work decreased by 52%. Additionally, programme engagement among night-shift employees saw a significant increase of 27 percentage points. By encouraging healthy habits through group challenges, personalized coaching and ongoing guidance, Healthier U has demonstrated that investing in employees’ health and well-being can improve engagement while boosting shop floor productivity.

Community insight: Menzies Aviation

Menzies Aviation implemented multiple retention initiatives globally over the course of five years to reduce voluntary attrition from 35.6% to 25.7%. One notable approach is the annual We Are Menzies Awards, which celebrate employees who exemplify the company's six core values. In 2025, 6,000 nominations came in across nearly 20 languages.

Managed entirely in-house, the awards feature regional shortlists judged by senior leaders, ensuring local achievements are celebrated globally. Winners are spotlighted through internal and social channels, boosting morale and connection.

Community insight: Intenseye

Intenseye uses computer vision AI technology to address challenges in worker retention by turning existing closed-circuit television (CCTV) systems into real-time hazard detection tools. The system identifies risks like missing personal protective equipment (PPE) or unsafe equipment use and sends instant alerts based on real-time detection of high-risk scenarios, addressing immediate hazards and systemic risks.

This workplace safety technology has shifted the approach towards safety from reactive to proactive, with 35 mitigation tasks for scenarios such as climbing hazards, vehicle and equipment zones, working at heights, and permit and procedure enforcement for crane or other high-risk operations. By improving safety and showing employees that they are valued, the technology has helped reduce total recordable injuries, boost morale and retain talent.

In a few cases, the sites have flagged more than 1,700 near-misses identified and more than 53,000 proactive fixes completed in the first year. Up to 93% of employees have reported feeling safer and voluntary turnover has dropped to 5%, compared to the 11.6% industry average.

1.3 A culture of commitment goes both ways

Companies who want their workers to commit must likewise commit to them in innovative ways. Compensation matters for everyone. Traditional incentives like rewards, recognition and career development opportunities remain important for frontline workers, supervisors and middle managers alike.

However, other factors, such as workplace flexibility, a sense of meaning behind the work and relationships among colleagues also play critical roles in shaping employee engagement and retention. For example, workplace flexibility has become increasingly important for Gen Z employees, highlighting the need for tailored retention strategies that address the diverse priorities of different generations within the workforce.

By addressing these core drivers holistically and implementing innovative, fit-for-purpose solutions, manufacturing companies can move beyond reactive measures to proactively build a community of people who are not only resilient but also deeply committed and engaged. This approach not only stabilizes a company but also lays the groundwork for equipping its people with the skills they need to adapt, develop and thrive as members of the production workforce.

2

Empowering today's workforce: Upskilling for the digital era

Investing in robust, scalable training and job progression is an operational necessity

Whether it's an employee's first month on the job or the 20th year, today's industrial imperative calls for a new and constantly evolving set of skills. The rapid pace of technological innovation – particularly the universal integration of artificial intelligence (AI) and advanced automation – has increased the complexity in skills needed by every employee, creating a larger gap between legacy skill sets and those required to meet the demands of modern manufacturing.

Further compounding the challenge, these evolving skill sets cannot be imposed on the production frameworks of yesteryear – they have emerged in parallel with a transformed culture of work. Younger generations often prefer a more flexible work environment, which for today's manufacturing, would likely mean a hybrid, and at times remote, offering – a complex (but not insurmountable) challenge for companies whose primary work is onsite production.

Despite these challenges, the imperative to upskill and train the workforce is no longer a distant strategic consideration – it's an immediate operational necessity. In a competitive talent market, companies must invest in robust, scalable training and job progression based on skills and competencies that help employees progress in their current roles and beyond.

2.1 Bridging the skill gap: Preparing for intelligent production and productivity

The World Economic Forum's "Future of Jobs Report 2025"[5] highlights the emerging demand for new skills and the decreasing demand for certain others. For the manufacturing sector, this translates into a pressing opportunity to bridge a widening skill gap. Almost 40% of the core skills for advanced manufacturing and supply chain workforce will change by 2030. This isn't just about technical proficiency; it encompasses critical thinking, problem-solving, digital fluency and the ability to collaborate effectively with intelligent systems.

Just as with retention, this challenge is multi-generational. New hires, particularly those from Gen Z, enter the workforce with a digital-native perspective but still require industry-specific knowledge and safety protocols as they lag in many of the foundational operations and technical skills. Simultaneously, seasoned employees often possess valuable institutional knowledge but need pathways to adapt their expertise to new ways of working that integrate with emerging technologies. The goal is to create a dynamic work environment that facilitates and encourages learning and growth across all levels of the organization – and by doing so, to transform perceived threats from automation into opportunities for human-machine collaboration.

2.2 Innovations for upskilling and reskilling

Leading manufacturers are embracing innovative learning programmes and methodologies that accelerate skill acquisition and promote adaptability. These approaches are increasingly using Gen AI as a foundation to create immersive, efficient and engaging training. The key principles of robust skills development initiatives include personalized delivery, hands-on experiential methods, and a strong focus on business outcomes.

Immersive onboarding and skill development

In an evolution from traditional classroom sessions, innovative companies are deploying interactive onboarding programmes that allow new hires to learn critical skills in a risk-free, simulated environment, regardless of their experience or the language they speak. This includes practical training for skills like welding and forklift operation, along with essential safety protocols.

These immersive experiences not only accelerate proficiency – with over a 50% increase in speed to start the job – but also significantly boost confidence and reduce the risk of on-the-job errors, ensuring new employees are set up for success from day one.

Beyond the benefits associated with the employee experience, increasing the efficiency of onboarding can unlock massive cost savings – up to a 54% reduction in some cases observed at sites referenced in this paper. Many of the same solutions can also be applied to day-to-day trainings, with a robust portfolio of courses and documents readily available long after onboarding to develop and empower a more effective, multi-skilled workforce on an ongoing basis.

CASE STUDY 5

Midea

Faced with rapid growth and the need to onboard 2,400 new hires during peak seasons, Midea's Si Racha site introduced "Meike," a virtual reality (VR) and Gen AI-powered system that enables at-scale upskilling of employees from different cultural backgrounds. This in-house platform simplifies training by converting documents into online courses – over 28,000 so far – with just one click, while supporting four languages and offering voice-to-text functionality to engage a diverse workforce. By combining AI teaching, VR training and automated certification, Midea has cut core skill qualification time by 63% (from eight days to three), increased multi-skilled labour in the supply chain by 6%, and reduced employee turnover by 40% (from 16.5% to 9.9%). This approach not only accelerates onboarding but also enhances job satisfaction, retention and workforce agility to meet evolving business needs.

CASE STUDY 6

Hisensehitachi

While Hisensehitachi's Qingdao site has a highly automated shop floor, employees play essential roles, in complex welding operations, machine monitoring and maintenance of a safe production environment. Workers are able to perform these tasks starting on Day 1 thanks to the "Training Dojo" located on the shop floor.

The "dojo" is split into four core areas: Skills Dojo, Automation Dojo, Safety Dojo and Lean Dojo. Employees are trained on life-saving tasks such as using a fire extinguisher and performing cardiopulmonary resuscitation (CPR) in the Safety Dojo, using dummies and gamified simulations. Day-to-day skills like welding are honed in the Skills Dojo, which integrates VR with AI-enabled on-screen feedback and support. The Training Dojo has helped to increase job matching to 98% while reducing the standard training cycle by 32%.

Digital upskilling programmes

Recognizing the extensive need for digital literacy, organizations are developing dedicated programmes to train their frontline workforce in digital best practices. These initiatives cover a spectrum of crucial skills, from mastering automated guided vehicle (AGV) routing and understanding AI modelling principles to proficiently creating and interpreting control room dashboards. These programmes empower people to interact with and optimize digital systems, enabling them to level up from operators to data-informed decision-makers.

CASE STUDY 7

Western Digital

The Digital Leadership Essential Programme at Western Digital's Pranchinburi site in Thailand has been a game-changer for the company as it reskills frontline workers to engage with new product-related complexities while delivering to specifications. This initiative focuses on Fourth Industrial Revolution upskilling, deploying modern learning technologies and specialized tools co-designed with local universities.

The programme offers multidisciplinary courses that allow participants to earn credits towards a degree while learning about a variety of topics, from the basics of the Fourth Industrial Revolution to advanced machine learning. The impact has been substantial: the percentage of frontline FTEs receiving such skill training has surged by 49% and employee engagement scores have risen by 21%. This comprehensive digital upskilling programme alleviates automation-related anxieties while equipping the workforce with advanced skills.

CASE STUDY 8

Mettler Toledo

The Digital Learning Hub has been operating in the same room as one of the four major production lines at Mettler Toledo Changzhou since 2022. While not a core part of the operator training programme, over 50% of frontline employees take after-hours courses and engage in collaborative digital projects, gaining skills like coding, digital simulation and mechanical design in computer-aided design (CAD).

By participating in the Digital Learning Hub, operators feel a greater sense of ownership, resulting in an 80% reduction in voluntary turnover and accelerated paths to promotion. The hub itself is also run by previous operators who, through upskilling, were promoted to digital coordinators. It reinforces digital culture and provides a safe, stimulating environment for frontline employees to learn, collaborate and continuously upgrade their skills.

Community insight: Mahindra & Mahindra

The integration of Industry 4.0 technologies revealed a critical skill gap among shop floor employees, leading to errors, downtime and disengagement for Mahindra & Mahindra's tractor production site in Punjab, India. The company launched the Smart Operator Training and Upskilling Module to address this challenge, equipping workers with advanced skills for robotics, internet-of-things (IoT) systems and smart manufacturing.

Using augmented reality (AR)/VR simulations, IoT-based diagnostics and predictive maintenance modules, employees engaged in hands-on, adaptive learning tailored to their skill gaps. The programme emphasized experiential learning, real-time feedback and data-driven decision-making. Implemented over 24 months, it reduced machine downtime by 25%, boosted productivity by 10% and enabled internal mobility.

Leveraging AI to augment workforce capabilities

The integration of AI is quickly revolutionizing frontline operations. Innovative companies are enabling new hires to use AI tools to solve complicated maintenance issues in a fraction of the time it used to take. This empowers even relatively inexperienced workers to diagnose problems with greater accuracy and efficiency, accelerates learning curves and frees up more experienced technicians to focus on more strategic tasks. It exemplifies technology's role in augmenting human capabilities rather than replacing them.

CASE STUDY 9

Western Digital

AI-based root-cause problem-solving has transformed frontline maintenance operations for Western Digital's testing facility in Prachinburi, Thailand. Previously, maintenance teams spent countless hours navigating standard operating procedures (SOPs) and communication channels to troubleshoot tester slot issues, often leading to ineffective repairs.

With the introduction of Smart Tester Maintenance**,** an automated, intelligent tester slot shutdown and recovery system, over 50% of issues are now resolved without human intervention. This innovation has led to a 79% reduction in mean time to repair (from 5.7 hours to 1.2 hours), allowing technicians to focus on upskilling and tackling more complex maintenance issues, such as managing the tester fleet from command centres and complex AI-aided troubleshooting. Additionally, hardware repair accuracy has improved by 19%, and maintenance work man-hours per quarter have decreased by 6%.

This AI-driven approach enhances operational efficiency while empowering workers to achieve greater productivity and precision in their roles.

CASE STUDY 10

Lenovo

Lenovo Monterrey deployed the Gen AI-enabled Manufacturing Control Tower to support operations across the shop floor, but the most meaningful results have come in the form of an AI co-pilot coach that assists users in root-cause problem solving.

This advanced system integrates 3.7 gigabytes (GB) of real-time production data per hour from manufacturing execution system (MES)and IoT devices, along with over 30,000 historical issues from a comprehensive knowledge base. The control tower performs real-time key performance indicator (KPI) analysis, conducts voice-enabled interactive root-cause analysis in 99 languages and instantly recommends corrective actions through an AI engine.

The programme facilitates continuous on-the-job training, as workers are able to interact with the tower in real time and solve problems on the shop floor. It helps workers understand what to do next, rather than ask a manager or wait to learn in a classroom. The results have been transformative: average units per hour (UPH) have surged by 42%, and the mean time-to-repair has dramatically decreased by 95%. This innovative approach empowers new and experienced employees alike, boosting overall operational performance without the need to regularly retrain employees on one-off issues.

2.3 Driving a culture of inspired learning

The examples above underscore a fundamental truth: AI and digital transformation are not just changing *what* skills are needed, but *how* those skills are acquired. VR for simulations, AI-powered personalized learning platforms and real-time data analytics to identify skill gaps are becoming indispensable parts of the modern learning toolkit. Sites also highlighted the importance of onsite learning conducted in collaboration with universities to teach robotics and automation, imparting hands-on skills in a safe environment. This enables workers to gain an immersive preview of potential career paths – whether as technicians, maintenance workers or in remote monitoring jobs. These approaches allow for scalable, customized training that can be delivered on demand, meeting the diverse learning styles and schedules of a dynamic workforce. It's about building a culture where learning is an ongoing journey – one where people are inspired, enabled and encouraged to contribute their best from hiring to retirement.

Conclusion and next steps

Redefining the system to unlock a new era of productivity and human potential

The manufacturing sector stands at a pivotal crossroads, where the future of work demands not just adaptation but bold reimagination. Digital innovation and evolving human dynamics are reshaping nearly every aspect of work, but the true opportunity lies in challenging the very foundations of how, why and what work is done. To unlock the full potential of technology, organizations must move beyond simply augmenting existing systems and instead redefine the ways of working to keep people at the centre of technological change.

This is not just about retention or continuous learning – it's about breaking through the limitations of traditional productivity models. By integrating technology as a transformative partner, manufacturers can push the boundaries of human potential and create a system where people and technology amplify each other. This requires a daring shift: rethinking work itself to raise the ceiling on what's possible, reconsidering organizational structure, rather than optimizing within the confines of the status quo. Industry could take more ownership for shaping a pipeline of future talent and for education and industry to work together to close the skills gap.

The path forward is illuminated by the successes of trailblazing companies that have embraced this philosophy. By investing in personalized career development, prioritizing employee well-being and fostering digital training, organizations are doing more than preparing their workforce for the future – they are actively shaping it. Retention, in this context, becomes not just a metric of stability but a strategic imperative. Retaining talent is critical to building the trust, institutional knowledge and long-term commitment necessary to fully realize the transformative potential of the people-technology partnership.

The future of manufacturing will be defined by those who dare to challenge convention. By redefining the system in which people and technology operate, leaders can unlock a new era of productivity and human potential – one where the partnership between people and technology goes beyond augmenting work to transforming it. And by anchoring this transformation in a commitment to retention, upskilling and reskilling, organizations can ensure that their most valuable assets, their people, remain at the centre of this bold new future.

Contributors

This paper is published by the World Economic Forum's Centre for Advanced Manufacturing and Supply Chains in collaboration with McKinsey and Company.

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Methodology

The insights featured in this paper have been collected through two distinct processes.

First, through visits to **Global Lighthouse Network** sites. Sites apply to the World Economic Forum's flagship initiative, the Global Lighthouse Network, with the goal of earning a "Lighthouse" with distinction in one of five categories: productivity, customer centricity, supply chain resilience, sustainability or talent. After a rigorous pre-screening process, in-person site visits are conducted to validate use cases and impact. A report on each site visit is presented to an independent expert panel that votes on the Lighthouse awards. Sites include lighthouse awardees as well as other high-performing sites from the World Economic Forum's Centre for Advanced Manufacturing and Supply Chains network. The insights extracted from this method are referred to as **case studies** in this white paper.

The second source of insights is the **Frontline Talent of the Future Community**. The community includes senior executives, C-suite leadership and academics with notable expertise in the manufacturing and supply chain sectors. Community members submitted the talent innovations that they have implemented successfully, along with data illustrating the associated outcomes and impact; these are referred as **community insights** throughout the paper. The authors of this paper extend their thanks to the companies and sites that have shared perspectives on the positive impact of talent-focused initiatives – including valuable lessons emerging from their processes.

Insights contributions

Haier – Chongqing, China

Hisensehitachi – Qingdao, China

Intenseye

Lenovo – Monterrey, Mexico

Mahindra & Mahindra

Menzies Aviation

Mettler Toledo – Changzhou, China

Midea – Si Racha, Thailand

Unilever – Pouso Alegre, Brazil

Western Digital – Prachinburi, Thailand

Endnotes

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WORLD ECONOMIC FORUM

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The World Economic Forum, committed to improving the state of the world, is the International Organization for Public-Private Cooperation.

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