**TRANSFORMING
DAIRY WITH DATA:**
INSIDE
FRIESLANDCAMPINA'S
TECH-DRIVEN
REVOLUTION

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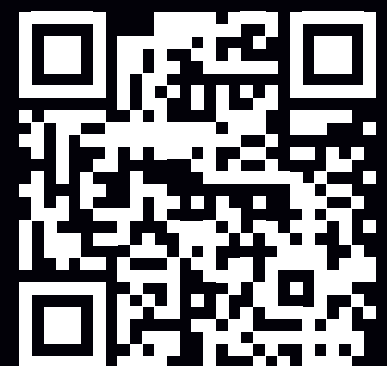- Wordlabs editorial team will ensure content quality and accuracy

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> **Change cannot be put on people. The best way to instil change is to do it with them. Create it with them."** — Lisa Bodell

IN Malaysia, as in many parts of the world, artificial intelligence is not merely revolutionising business landscapes; it is profoundly transforming them. AI is no longer just a productivity enhancer; it has evolved into a strategic partner, helping companies adapt and anticipate disruptions. Across sectors such as manufacturing, finance, and even agriculture, Malaysian businesses that leverage AI for decision-making are tapping into insights that drive innovation, agility, and transparency. This ensures that they remain competitive while upholding the ethical standards demanded in today's world.

However, AI's role extends beyond business strategy. At the heart of this transformation lies a crucial imperative: AI must serve humanity. As digitalisation continues to permeate every aspect of our lives, from education to finance, it is essential that empathy, ethics, and inclusivity guide these technological advancements. In Malaysia, initiatives like MyDigital and the National AI Framework emphasise the need to align technology with humanistic values, ensuring that AI empowers individuals and communities rather than leaving anyone behind.

AI is also emerging as a key player in sustainability efforts. As Malaysian businesses increasingly align with global ESG standards, AI is instrumental in helping companies monitor their environmental impact, reduce carbon footprints, and uphold ethical governance practices. These businesses are becoming more transparent with their stakeholders through AI-driven insights, driving sustainable growth and fostering trust — critical factors in Malaysia's journey towards a greener economy.

In this issue of Fourth Leap, we delve into the trends shaping industries and the opportunities they present for creating a more responsible and inclusive world. We aim to deliver a feast of wisdom and insight from thought leaders worldwide. So, immerse yourself in the thought-provoking contributions of ambitious leaders, bright scholars, and innovative independent thinkers! We hope our content will spark engaging conversations — do share your thoughts with us!

Dr Sritharan Vellasamy | sri@wordlabs.com.my

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Public Urged to Be Vigilant Against Deepfake Scams

THE public is advised to stay alert for scams involving fake videos and images, commonly known as deepfakes, created using AI technology.

Malaysia's Communications Minister Fahmi Fadzil highlighted that while AI offers significant development benefits, some individuals exploit this technology maliciously. "Datuk Seri Siti Nurhaliza recently shared on Instagram a WhatsApp video call that appeared as if she was speaking live, but it was a deepfake," stated Fahmi during the ministry's monthly assembly recently.

He added: "AI has the potential for both positive and negative use. Verifying the authenticity of any video received is crucial to ensure it is genuine and not AI-generated.

Fahmi also urged the national news agency Bernama and Radio Televisyen Malaysia (RTM) to raise awareness and educate the public about the dangers of AI deepfake scams.

On July 14, the nation's leading singer exposed the latest tactic employed by scammers, who are believed to be using AI technology to mimic her voice and appearance for financial gain.

New Chip Startup Challenges Nvidia's AI Dominance

JIM KELLER, a renowned chip designer with experience at Intel, AMD, and Tesla, is on a mission to reduce the cost of AI applications by developing more efficient chips than those offered by Nvidia. As the current CEO of Tenstorrent, a US startup focused on AI chip design, Keller aims to capture a share of the market dominated by the American giant.

Keller points out that many markets are underserved by Nvidia, particularly as AI's use expands into smartphones, electric vehicles (EVs), and cloud services. Small companies often cannot afford Nvidia's high-end GPUs, which cost up to US$20,000. Keller, famed for designing AMD's Zen series and contributing to Tesla's Autopilot, is determined to offer a cost-effective alternative.

Tenstorrent, established in 2016, is preparing to launch its second-generation AI chip, which claims superior energy and processing efficiency compared to Nvidia's GPUs. The new chip, designed without high-bandwidth memory (HBM), significantly reduces energy consumption and costs. Keller believes this innovative approach, coupled with the chip's flexible architecture, positions Tenstorrent to challenge Nvidia and cater to various AI market needs. Keller predicts a future where multiple new players will emerge to fill niches unaddressed by Nvidia, emphasising Tenstorrent's strategy to create adaptable technology for diverse AI applications.

Malaysia Strengthens Digital Workforce Through New MoU

THE Higher Education Ministry and Malaysia Digital Economy Corporation (MDEC) have signed a memorandum of understanding (MoU) to enhance talent development and employability in the digital technology sector. This strategic partnership aims to equip students, lecturers, and higher education institutions in Malaysia with cutting-edge digital skills and knowledge.

MDEC CEO Mahadhir Aziz emphasised that the MoU is a significant step towards advancing digital education in Malaysia. The agreement includes various initiatives such as "Reskilling and Upskilling" programmes, professional education certifications, knowledge sharing, exploration of new technology opportunities, and support for digital freelancing and global outsourcing talent initiatives.

As part of this collaboration, the Premier Digital Tech Institution (PDTI) Tech Club has been launched to provide students with practical experience and advanced technology skills. The club aims to benefit 5,000 students and offers learning opportunities from industry leaders like Amazon Web Services (AWS) and IBM SkillsBuild.

This partnership aligns with Malaysia's strategic goal of positioning itself as a leading digital hub in ASEAN. MDEC, a key player in the country's digital transformation since 2017, has also been instrumental in establishing Malaysia's first Faculty of Artificial Intelligence (AI) at Universiti Teknologi Malaysia (UTM).

The collaboration extends to serving as an industry adviser to polytechnics and community colleges, ensuring that Malaysia produces top-tier digital technology experts.

Mahadhir says the MoU is a significant step towards advancing digital education in Malaysia.

Robot Dentist Performs First Fully Automated Procedure

THE first fully automated dental procedure on a human has been completed in Barranquilla, Colombia. US-based company Perceptive used a robotic arm, artificial intelligence and 3D imaging to complete the work.

Its suite of technologies scanned the patient's mouth, analysed the data, and used a series of tools to complete the procedure. While the start-up expects regulatory approval in the US to take several years, it says it can replace crowns in around 15 minutes, compared with the two hours it takes most dentists.

Xiaomi's New Factory: Where Machines Rule

XIAOMI has unveiled its groundbreaking 100% automated Smart Factory, an advanced facility capable of producing smartphones without human intervention. This state-of-the-art factory in Changping district, northeast of Beijing, marks a significant leap in the company's manufacturing capabilities.

The factory covers 80,000 square meters and is dedicated to producing Xiaomi's latest foldable phones, the MIX Fold 4 and the MIX Flip. It can produce one smartphone every three seconds and operates 24/7.

The facility boasts a pristine manufacturing environment with micron-level dust removal, ensuring a high standard of cleanliness. A few humans, dressed in operating-theatre-style gowns, monitor the operations from a control room, often called the "war room".

Xiaomi's new factory leverages its self-developed "Xiaomi Pengpai Intelligent Manufacturing Platform", an AI-driven system that manages the entire production process. This platform identifies and resolves issues autonomously, optimises workflows and enhances production efficiency over time.

Introducing such advanced automation is expected to significantly reduce production costs and improve the quality of Xiaomi's products. CEO Lei Jun highlighted the factory's capability to evolve by itself, marking a new era in smart manufacturing.

ISO to Launch Global Standard for Net Zero

THE International Organization for Standardisation (ISO) has announced the development of a new international standard to achieve net zero emissions. This initiative builds on the ISO Net Zero Guidelines introduced at COP27 in 2022, which provided a framework for organisations to develop comprehensive net-zero strategies.

The new standard, expected to launch at COP30 in November 2025, will offer verifiable benchmarks to ensure the credibility and effectiveness of net zero commitments. UK's British Standards Institution (BSI) and Colombia's ICONTEC spearhead this project, with input from over 170 national standards bodies and extensive public consultation planned.

This initiative addresses the complexities of achieving net zero, providing clear guidelines to support organisations globally in their sustainability efforts.

Smart Tech Pumps Up Oil and Gas Efficiency

ACCORDING to GlobalData, artificial intelligence (AI) and robotics spearhead transformative changes in the oil and gas sector, enhancing operational efficiency, safety, and environmental sustainability. These advanced technologies are revolutionising how the industry approaches exploration, production, refining, and logistics, setting new standards for productivity and innovation.

AI and robotics are redefining the oil and gas landscape by addressing challenges such as cost reduction and safety improvements. Autonomous operations, drilling optimisation, and plant inspections are some areas where these technologies are making significant impacts. The GlobalData report, "Cognitive Energy: Transforming Oil & Gas with AI and Robotics", highlights over 50 innovations demonstrating potential sector-wide transformation.

SLB (formerly Schlumberger) has partnered with INEOS Energy to integrate AI capabilities via SLB's Delfi digital platform. This partnership enhances operational performance and promotes sustainable energy solutions like carbon capture and storage (CCS). It is particularly significant in the North Sea region.

Shell is implementing generative AI technology for offshore drilling, collaborating with Texas-based SparkCognition to enhance exploration and drilling capabilities. Similarly, Petrobras has teamed up with robotics startup ANYbotics to automate asset inspections at offshore sites using ANYmal X robotic units, improving efficiency and safety by delegating hazardous tasks to robots.

The oil and gas sector's future heavily relies on AI and robotics, from seismic analysis to predictive maintenance and autonomous refineries. Overcoming challenges like data integration and skilled labour shortages will be crucial for unlocking AI-driven efficiency and sustainability in the industry.

AI Smart Glasses Are the Latest Gadget Gold Rush for Chinese Tech Firms

ARTIFICIAL intelligence (AI) - powered eyewear has become the latest smart gadget trend for Chinese tech firms rushing to profit from consumer excitement around combining generative AI with wearables following Ray-Ban's release of the Meta smart glasses.

Xiaomi-backed start-up Superhexa launched its AI audio glasses Jiehuan. Compared with overseas offerings, the Jiehuan frames are competitively priced at 699 yuan (US$98).

Functionally, they are similar to competing products by offering quick access to large language models (LLMs) – the technology underpinning intelligent chatbots like OpenAI's ChatGPT – through built-in speakers and microphones.

"It took millions of years for humans to evolve and develop two hands; it's a waste to have one hand holding a smartphone," Founder and CEO of Superhexa, Xia Yongfeng.

TRANSFORMING DAIRY WITH DATA: INSIDE FRIESLANDCAMPINA'S TECH-DRIVEN REVOLUTION

IN AN EXCLUSIVE CONVERSATION, BURCE GÜLTEKIN, GLOBAL CHIEF INFORMATION OFFICER OF FRIESLANDCAMPINA, DISCUSSES HOW THE COMPANY HARNESSES TECHNOLOGY TO DELIVER ON ITS PROMISE OF SUSTAINABLE NUTRITION. LEARN HOW THE NEWLY LAUNCHED TECHNOLOGY INNOVATION CENTRE IN MALAYSIA IS AT THE HEART OF THIS TRANSFORMATION, DRIVING BOTH GLOBAL IMPACT AND LOCAL INNOVATION.

FOURTH LEAP

By Dr Sritharan Vellasamy

One for the Album … Gültekin with members of the Technology Excellence Centre (TEC) in Malaysia.

ROYAL FRIESLANDCAMPINA'S vision, "nourishing by nature" is brought to life through its commitment to making dairy right. This commitment is supported by the innovative use of technology across its global operations. At its helm in the realm of technology and sustainability is Burce

Gültekin, whose vision drives the company's mission to provide nutritious dairy products while maintaining sustainable practices worldwide. Born in Turkey and with a rich background in technology leadership, Gültekin's approach extends beyond mere management, reflecting the company's deep commitments to environmental stewardship and global food security.

"We're deeply committed to nourishing by nature," Gültekin begins, explaining the core philosophy that guides FrieslandCampina. "It's about ensuring food safety and security for millions globally, providing essential access to dairy products produced sustainably and ethically." This commitment also supports local dairy farms across Asia, Africa, and Eastern Europe, helping maintain robust farming operations that contribute to the local and global food supply chain.

Role of Global IT in Dairy Production

Gültekin highlights the critical role of global IT in enhancing operational freedom and enabling the company to meet its extensive goals. Under her leadership, FrieslandCampina harnesses cutting-edge technology to streamline processes, from milk collection to final product distribution, using data analytics and AI to optimise each step.

"As Global IT, we inspire FrieslandCampina and each other to navigate the future of the business with technology, data, and AI so that we achieve remarkable results. Our products help FrieslandCampina do business more intelligently and effectively, driving costs down while increasing our impact.

"

Global IT is a strategic partner in FrieslandCampina's mission. By leveraging cutting-edge technology and fostering a culture of growth, we are helping to make our vision of accessible, affordable nutrition a reality for people worldwide."
– Burce Gültekin, Global Chief Information Officer of FrieslandCampina

"For instance, we have deployed ServiceNow to manage IT services efficiently worldwide and use technologies like Salesforce to grow our business and enhance customer engagement. We also prepare FrieslandCampina for the future with analytics and AI products that leverage cloud platforms like Databricks, Microsoft Azure, and Power BI. These solutions are vital in making data-driven decisions supporting our affordable nutrition mission.

TEC: Innovating at the Core

The establishment of Technology Excellence Centre (TEC) on July 4 in Malaysia to complement the TEC in Netherlands is pivotal in fostering innovation at a local and global level. This shift from Shared Service Centre to TEC is now driven by its revised Global IT strategy and the operating model.

"Both the TEC centres are not just operational hubs; they are innovation incubators that help us align our global strategies with local expertise," says Gültekin. The decision to set up a TEC in Malaysia was strategic, driven by the strong local presence of the Dutch Lady brand and the vibrant technological landscape.

She adds: "At the TEC, we work on global initiatives that impact our seven business groups from Europe to Africa, the Middle East, and Asia. By fostering creativity and experimentation, the TEC ensures we stay ahead with cutting-edge technology, enabling us to deliver on our mission of providing affordable nutrition globally."

"We are transforming our IT organisation into 'One Global IT' organised around six clusters, no matter where you are located, namely Commerce, Supply Chain, Global Business Services, Enterprise Technology Services, Global Data Analytics & AI, and Corporate Information Security. Each cluster plays a critical role, and they collaboratively deliver on the strategic priorities of FrieslandCampina.

Previously, the focus of the Shared Service Centre in Malaysia was mostly on operations. Now, the company is investing in transformational roles leading the way. "Earlier, we had the Netherlands head office leading and transforming, and Malaysia was following and maintaining. Now, we have two strong centres; both hubs are working together and acting in the service of the collective to achieve more together. For ourselves, our farmers, and society."

This strategic move in Malaysia is a testament to the country's growing reputation as a hub for technological innovation. By situating the centre at the Dutch Lady office in Petaling Jaya, the company not only taps into the local pool of IT talent but also positions itself in a vibrant location that is both economically and strategically advantageous.

Kuala Lumpur's blend of skilled IT professionals, nurtured by years of technological advancement and supported by robust infrastructure, makes it an ideal place for such a venture. This initiative boosts FrieslandCampina's technological capabilities and contributes to the region's economic growth and tech sector development.

The TEC will host various IT and technology roles, including Data Analysts, Machine Learning Engineers, Cloud Engineers, Salesforce Engineers, IT Service Managers, Cyber Security Specialists, Application Specialists, and Platform Engineers.

"As mentioned earlier, our key focus areas are reflected in the six clusters: Commerce, Supply Chain, Global Business Services, Enterprise Technology Services, Global Data Analytics & AI, and Corporate Information Security. At TEC, you will find representatives from all these areas, from Analytics and AI roles that are transforming the way we make decisions and augment human intelligence with machines & AI to Enterprise Technology Services that are building and maintaining secure, scalable infrastructure and technology for our company. This comprehensive approach ensures that all the strategic priorities of FrieslandCampina can be delivered, embedded, and enhanced from TEC."

Positive Impacts of TEC
When asked about specific examples of how the new TEC influences FrieslandCampina's operations, Gültekin shares her enthusiasm: "I am particularly proud of our Commerce team at the TEC. We've empowered our distributors with technology and advanced analytics that drive excellence by addressing critical business questions, such as the factors driving growth or decline in General Trade sales value."

Gültekin shares a light moment with the TEC team, exemplifying her approachable leadership style and commitment to fostering a vibrant workplace culture.

This strategic application of technology enables the team to prioritise interventions and proactively stay ahead of market trends, optimising commercial performance across the board. "By providing these insights, our teams can act swiftly and effectively, ensuring we maintain a competitive edge in the market," Gültekin explains.

Further elaborating on the positive impacts of the TEC, she mentions the ongoing journey to re-platform the General Trade technology landscape. "This transformation is about equipping our business growth partners and sales force with innovative capabilities. For instance, AI-powered digital merchandising and product recommender systems are designed to enhance execution rigour and improve distribution strategies."

These tools bolster FrieslandCampina's market position and drive significant enhancements in operational efficiency and product reach. "We aim to continue winning in the market by harnessing cutting-edge technologies that streamline processes and enhance our strategic output," she adds.

Gültekin also highlights improvements in demand forecasting capabilities, which leverage AI to fine-tune production planning and cost management. "We're driving costs down by increasing the visibility of production expenses, which enhances our overall financial efficiency."

The journey with the TEC is expansive, with many ongoing projects that promise to revolutionise further how FrieslandCampina operates globally. "And there are many more examples to come," Gültekin says with a note of anticipation for the future.

Handling Challenges

Establishing the TEC was a significant milestone for the company, aligning with its strategic innovation and global integration goals. However, this venture had its challenges. She says: "We faced several challenges, including recruiting the right talent, setting up the necessary infrastructure, and aligning with our global operations.

We overcame these challenges by leveraging our existing presence in Malaysia and the strong brand of the Dutch Lady, collaborating with local authorities and educational institutions such as APU (Asia Pacific University). There are still challenges, which is normal. I do believe in progress over perfection; step by step, we are learning and getting there, creating this wonderful team."

Gültekin's personal connection to Malaysia has profoundly enriched her leadership style, allowing her to integrate diverse cultural perspectives into FrieslandCampina's global operations. "Every time I visit Malaysia, I'm energised by its culture and people, which significantly influenced our decision to establish the TEC here," she shares.

This deep connection has fostered a dynamic and inclusive work environment and made the TEC an attractive destination for global talent seeking to contribute to a meaningful mission.

A significant aspect of Gültekin's leadership is her commitment to workplace flexibility and diversity. By promoting flexible working conditions, she has created a workplace that resonates particularly well with tech talent who value working remotely or with adaptable hours. This approach has been instrumental in attracting and retaining a diverse workforce, which fuels creativity and innovation within the company. Her passion for female empowerment, especially in the tech industry, is another cornerstone of her leadership. As a woman in technology, Gültekin

BRINGING IN THE TALENT
Attracting top technology talent to TEC in Malaysia rooted in the values of FrieslandCampina:

We Act With Respect
Our work environment at FrieslandCampina is designed to be as vibrant and diverse as Malaysia, reflecting our culture. We value diversity and different views because they challenge our thinking and make us better. We celebrate the colourful cultures represented in our team by recognising and participating in a variety of multi-cultural festivals, which not only enhances our understanding of each other but also strengthens our team bond.

We Aim Higher
You join companies that offer meaningful missions, that support you to grow not only with training but also different opportunities to make a significant impact across the board.

We Succeed Together
We are always pushing ourselves to achieve greater things, and we do so Together. It is our mission to foster a culture of collaboration and growth because everyone brings in unique capabilities technically and personally. Together, we have bigger minds, bigger hearts, and bigger guts to achieve bigger results.

is committed to creating opportunities for other women, ensuring they have the support and resources needed to thrive in their careers. This dedication to gender equality is evident in her efforts to cultivate an inclusive environment that empowers women at every stage of their professional journey.

All Smiles on TEC Launch Day ... (from left) Praveen Devaraju – Director, Global IT Infrastructure & Operations, Hans Janssen – Group Chief Financial Officer and Robert Demeter – Director Shared Services Asia Pacific.
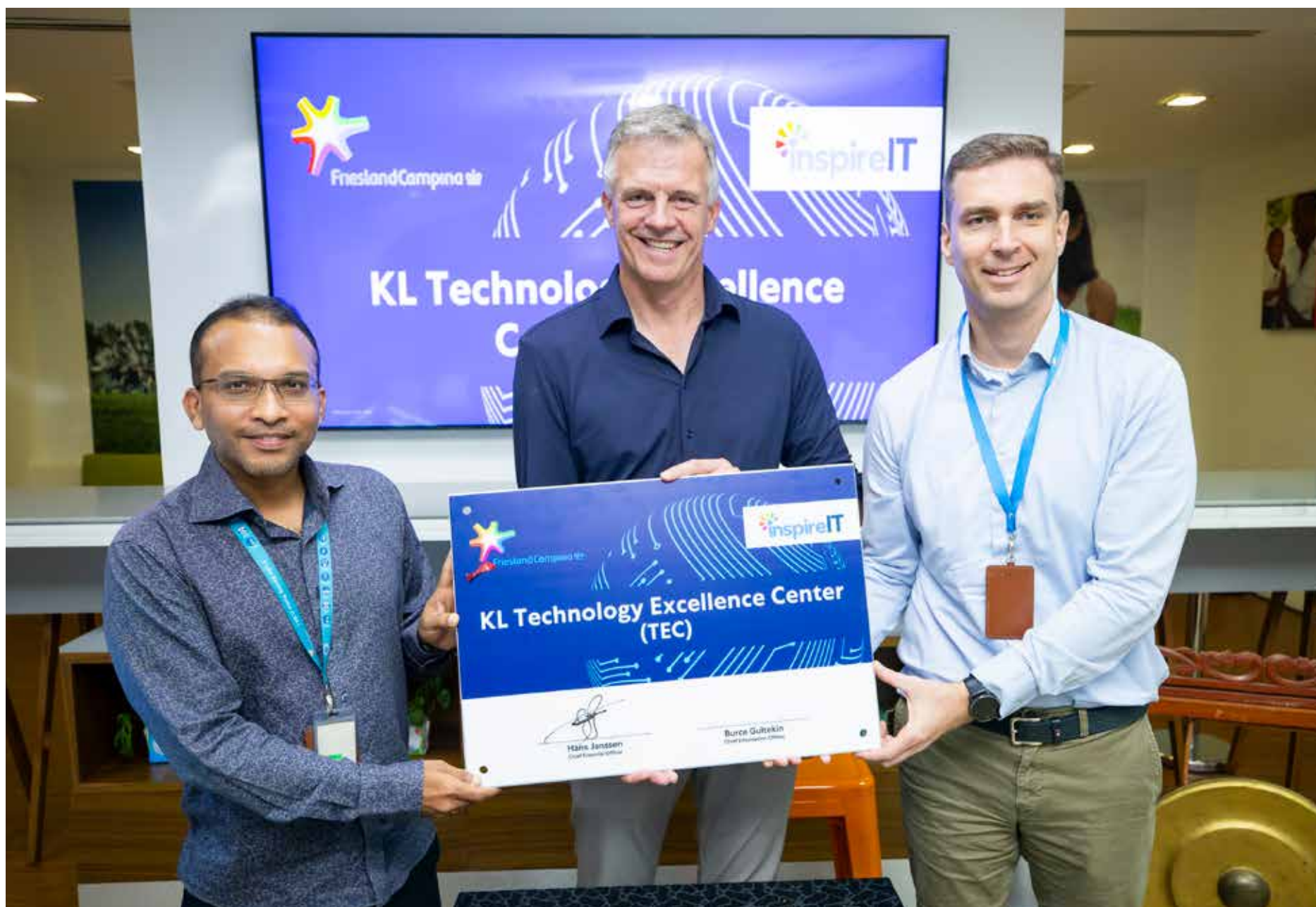
When discussing the challenges faced, Gültekin emphasises the importance of a balanced approach to technology integration. "Technology is a tool, not a solution in itself. We focus on integrating it with our human resources and processes to transform our operations truly," she explains.

Addressing the challenge of brand recognition, particularly in regions beyond its primary markets, Gültekin notes the ongoing efforts to elevate FrieslandCampina's global impact and legacy. She acknowledges that while many talents can easily relate to Dutch Lady Milk Industries, they may not necessarily recognise FrieslandCampina as the parent company or "mothership". This presents an additional challenge in attracting top talent, which the company is working diligently to overcome by enhancing the visibility and understanding of FrieslandCampina's broader role and impact globally.

Looking to the future, Gültekin is optimistic about FrieslandCampina's trajectory, especially with the continued integration of IoT and advanced robotics into their operations. "We are continuously exploring new technologies that can enhance our operational efficiency and sustainability," she concludes. Her vision for the company is clear: to lead the dairy industry toward a more sustainable and technologically advanced future, ensuring global food security and environmental stewardship. o

BEYOND THE BARN: TECH'S ROLE IN TRANSFORMING GLOBAL SUPPLY CHAINS

FROM ADVANCED ROBOTICS TO AI–DRIVEN ANALYTICS, LEARN HOW REVOLUTIONARY SUPPLY CHAIN MANAGEMENT MEETS THE CHALLENGES OF TODAY'S DYNAMIC MARKET.

FOURTH LEAP
By Silvano Lago

FOURTH LEAP
By Satish Mikkili

IN today's dynamic market environment, leveraging technological advancements is essential for optimising supply chain operations, particularly in the Dairy and Consumer Packaged Goods (CPG) sectors. Companies are pioneering innovative technologies to enhance operational efficiencies and respond proactively to market demands.

A core strategy involves the adoption of "touchless" demand planning. This advanced approach utilises state-of-the-art supply chain planning tools to reduce human bias, enhance performance, and rely on statistical models and AI-driven insights for exception-based planning. This system allows planners to intervene strategically, ensuring the process is efficient and highly effective.

Integrating comprehensive external data sources – including point-of-sale information, public holidays, and weather patterns – into the analytical framework allows for a nuanced understanding of market dynamics. This robust integration supports more accurate forecasting and demand planning, which is critical for effective inventory management and resource allocation.

Adopting touchless demand planning with AI-driven tools reduces human bias and enhances supply chain performance.

FrieslandCampina, this challenge is met with a robust organisational change management strategy that balances technology adoption with people and process management enhancements.

Enhancing Human Capabilities

The "Augmented Workforce" concept showcases how technology can supplement human efforts. By equipping teams with advanced tools and data analytics capabilities, employees can accomplish more in less time and with greater accuracy. This enhancement boosts productivity and empowers the workforce, enabling them to focus on more strategic tasks rather than routine data analysis.

At the same time, despite the apparent benefits, integrating new technologies into existing systems also presents significant challenges. A common issue is the overestimation of technology's role in digital transformation. At

Sustainable Production Innovations

The recent inauguration of two state-of-the-art manufacturing facilities in Asia is a testament to the company's commitment to technological innovation and sustainability. These facilities, designed to comply with Industry 4.0 standards, incorporate advanced robotics and automated systems that enhance operational efficiency and product quality.

Moreover, these new plants focus heavily on sustainable production practices. By implementing green technologies, the aim is to reduce CO_2 emissions by up to 90.5%. This supports the company's sustainability goals and sets new industry standards for eco-friendly production.
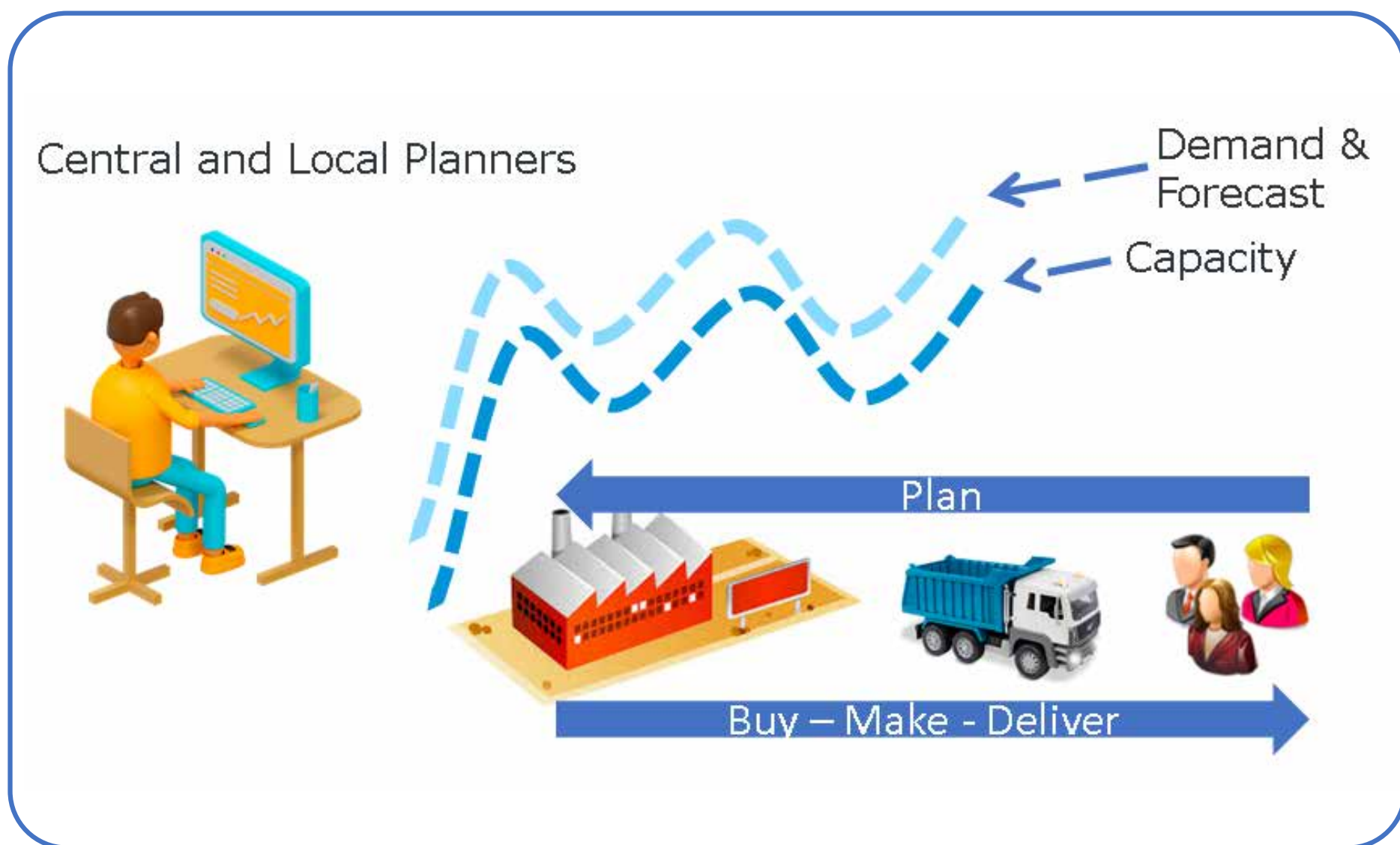
Tech Impact on Market Responsiveness

The integration of IoT and advanced robotics continues to revolutionise the industry by enhancing operational efficiencies and improving product quality. For example, the use of AI and machine learning refines operational processes; image recognition technology ensures optimal in-store execution, and predictive analytics help fine-tune inventory management.

Additionally, the strategic use of technology helps mitigate the well-known bullwhip effect, where small fluctuations in demand at the retail level can cause progressively larger fluctuations up the supply chain.

To succeed in the Dairy and CPG sectors, companies must sense, identify, and predict changes in customer behaviour as early as possible. Technology helps supply chain business leaders maintain short—and long-term synchronisation between demand and capacity, avoiding bias.

The journey of digital transformation in supply chain management is ongoing. By integrating cutting-edge technologies that meet current market needs and anticipate future demands, the company sets new standards for the dairy industry. It reinforces its commitment to sustainable and responsible business practices. ∎

Silvano Lago is the Global Director of IT Supply Chain and looks after all the IT Solutions at Royal FrieslandCampina that underpin the Global Supply Chain, from milk intake to delivering the finished goods to the last mile.

Meanwhile, Satish Mikkili oversees SAP implementations and serves as a Subject Matter Expert (SME).

STRATEGIC IT: BEYOND OPERATIONS TO MARKET MASTERY

ALIGNING IT WITH BUSINESS STRATEGIES, PARTICULARLY IN DIVERSE MARKETS SUCH AS ASIA, IS ESSENTIAL FOR CRAFTING COMMERCIAL PLANS THAT SEAMLESSLY INTEGRATE BRAND FUNDAMENTALS, DATA, AND TECHNOLOGY, PROPELLING MARKET SUCCESS.

FOURTH LEAP
By Ad de Goeij

FOURTH LEAP
By Nancy Tang
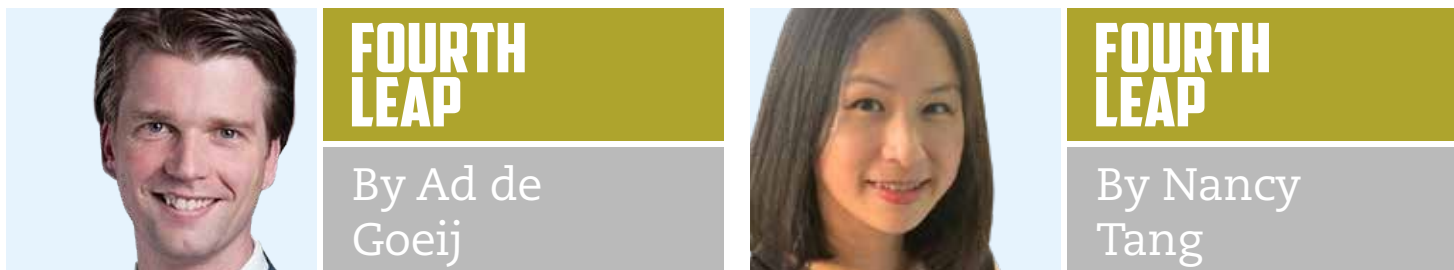
Technology plays a pivotal role in engaging with customers proactively and providing them with tailored solutions and content.

IN the evolving landscape of global commerce, integrating technology with core business strategies is not just an advantage but a necessity. At the forefront of this integration is the strategic use of data and technology to refine market strategies and enhance customer engagement. This practice has become a cornerstone for modern businesses aiming to thrive in competitive environments.

One fundamental aspect of successful technology integration is its alignment with business operations from the outset. For businesses operating in diverse markets such as Asia, this involves embedding IT as a core element within the commercial planning processes. Such integration ensures that business challenges are addressed holistically, combining brand fundamentals with robust data and technological insights.

Integrating AI and machine learning involves rethinking models and strategies to enhance market penetration and customer satisfaction.

Mining Global Data Lake

A prime example of this approach is using a global data lake that amalgamates information across various domains, including commerce, supply chain, and finance. This setup enables business analysts and data scientists to access and analyse data seamlessly, facilitating the synthesis of consumer and market insights that pinpoint opportunities and inform strategic decisions.

In the B2B sphere, these capabilities allow Artificial Intelligence (AI) to predict market potential, integrating these insights directly into customer relationship management systems. This process refines go-to-market strategies and enhances customer engagement by enabling more tailored and proactive interactions.

For instance, in sectors like the HoReCa (hotel/restaurant/catering industry that encompasses the whole food service segment) industry and early life nutrition, maintaining proximity – even when intermediaries like wholesalers are involved – is crucial. Technology plays a pivotal role here by enabling solutions such as natural language processing chatbots, which engage customers proactively and provide them with tailored solutions and content.

Beyond customer interaction, technology also enhances commercial operations. The notion that initiatives should be tech-driven is a misconception; instead, they should commence with a clear identification of business challenges followed by a holistic solution encompassing people, processes, tools, and culture.

Data analytics and AI are instrumental in refining marketing and sales strategies.

An example is the sales acceleration programme at FrieslandCampina, which involves a futureproof route-to-market platform impacting over 6,000 sales representatives across more than seven countries. This programme revolutionises commercial operations by providing real-time visibility and leveraging data to equip sales representatives effectively, thereby enhancing in-store sales performance.

Leveraging AI
Data analytics and AI are instrumental in refining marketing and sales strategies. Creating in-house algorithms to recommend optimal product placements in stores has led to noticeable sales uplifts. Further, image recognition technology ensures excellence in in-store execution, boosting the productivity of sales teams and accelerating marketing and sales processes.

Integrating AI and machine learning into go-to-market strategies extends beyond mere operational efficiency. It also involves rethinking models and strategies to enhance market penetration and customer satisfaction. For example, leveraging AI for

predictive market potential assessments or enhancing in-store execution through image recognition technologies are ways businesses can stay ahead in the rapidly evolving marketplace.

This strategic embrace of technology, underpinned by a commitment to innovation and sustainability, sets apart businesses poised for success in today's digital era. It is about adopting new technologies and transforming these tools into core business strategy and customer engagement components. ◘

Ad de Goeij is the Global Director of IT Commerce at Royal FrieslandCampina and has extensive experience leading and transforming teams and technology to generate business value across different business models in B2C and B2B.

Nancy Tang is the IT Director for Asia Commercial Services. Her portfolio includes commercial technology products in General Trade Sales, Customer Engagement, and Digital Commerce, serving consumers and customers across Asia, MEPA, and Europe.

FUTURE OF WORK: IMPLICATIONS WITH MAN-MACHINE INTERPLAY

AI DIFFERS FROM ALL OTHER TECHNOLOGICAL INVENTIONS WE HAVE BUILT OVER THE PAST CENTURY, AND THE ANSWER LIES IN UNDERSTANDING THE WORD "INTELLIGENCE" IN ITSELF.

FOURTH LEAP

By Bobby Varanasi

Human Labour and Its Replacement

In 1930, the prominent British economist John Maynard Keynes warned that we were "being afflicted with a new disease" called technological unemployment. Labour-saving advances, he wrote, were "outrunning the pace at which we can find new uses for labour." There were examples everywhere. New machinery was transforming factories and farms. Were the impressive technological achievements that made life easier for many also destroying jobs and wreaking havoc on the economy?

To make sense of it all, Karl T. Compton, the president of MIT from 1930 to 1948 and one of the leading scientists of the day, wrote in the December 1938 issue of this publication about the "Bogey of Technological Unemployment." He asked two pertinent questions:

a. Should we consider the debate over technological unemployment as the loss of work due to an industry's obsolescence or the use of machines to replace workers or increase their per capita production?

b. Are machines the genies that spring from Aladdin's Lamp of Science to supply every need and desire of man, or are they Frankenstein monsters that will destroy the man who created them[1]?

[1] Source: https://www.technologyreview.com/2024

Such questions have plagued the industrial world in various ways, with the common underlying theme that advanced technologies and machines were and continue to replace human labour. Some leading Silicon Valley techno-optimists even postulate that we're headed toward a jobless future where artificial intelligence (AI) can do everything. In such scenarios, it is crucial to appreciate Shoshana Zuboff's poignancy about "behavioural surplus" as another substantial manifestation of replacing human labour as a new means of enhancing productivity[2].

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With this reorientation from knowledge to power, it is no longer enough to automate information flows about us; the goal is to automate us."

We must understand AI's "socio-cultural" and "humanistic" implications on the workforce and society.

It is a foregone conclusion that all doomsday predictions of mass unemployment have almost always been unfounded. Growth continued to be derived through the optimal deployment of humans and machines, resulting in the discrete disappearance of specific jobs but not catastrophic unemployment altogether, where industries disappeared. Is it, therefore, pertinent to continue deliberating about job replacements and losses anymore, even with the advent of AI – which is being termed the most significant evolution of mankind after industrialisation – or is there a need to discern the underlying complexities and nuances that seem to be getting lost in translation within the narrow context of capital and labour?[3]

AI as a Capital Asset

Human intelligence has and continues to be complemented by the increasing complexity and sophistry of machines – industrial and consumer – in more pervasive ways than was ever envisaged at the turn of the last century. However, with all the grandeur associated, the
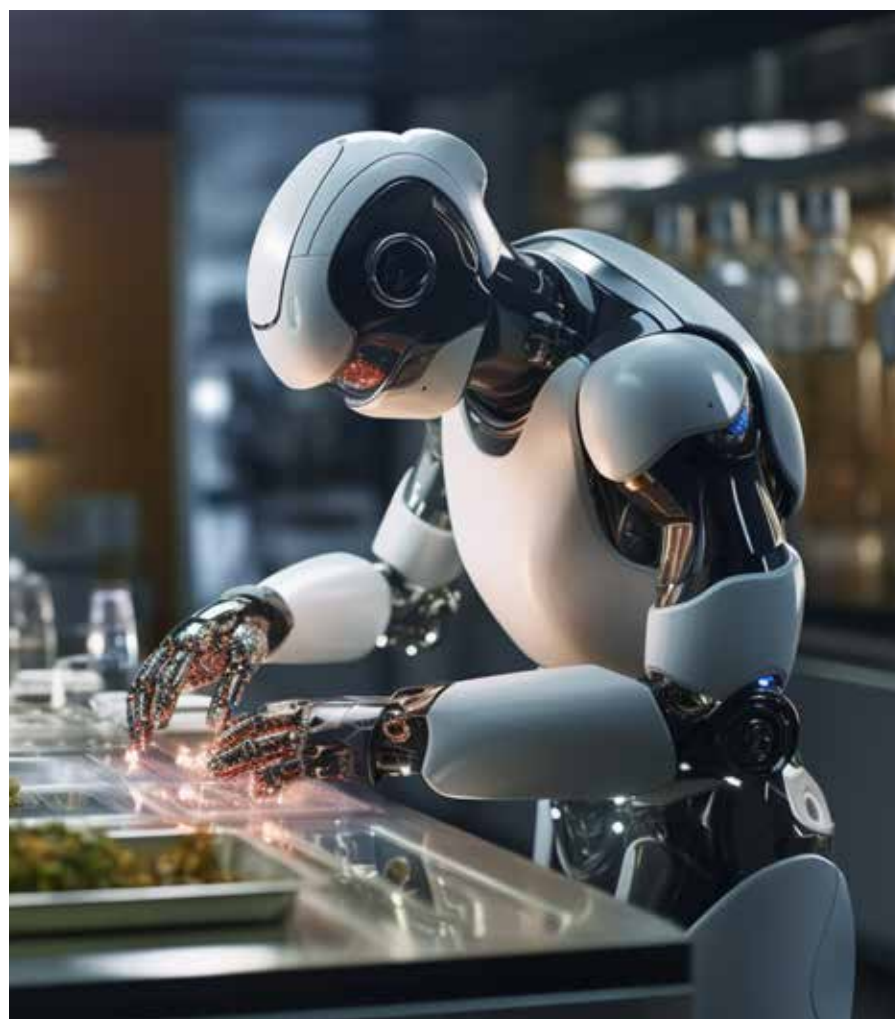
world has seen a net increase in productivity and yield from each ounce of human labour. While many believe that such gains can be had forever, there does come a point when the value derived becomes marginal and commoditised.

Continued increases to efficiencies have, at some point, plateaued out, necessitating either an upheaval or a fundamental shift in input sophistication to obtain greater productivity at lower price points. Faster, cheaper, and more accessible are the three mantras we continue to profess as justifications for all innovations/ improvements. Over time, however, most such endeavours lose their sheen and become utilities in themselves. In such scenarios, there is no longer "innovation".

Instead, they are just myriad new ways of accomplishing the same goals. This is a crucial factor to appreciate when assessing the "value" of a new technology/ machine in the context of human endeavour.

[2] Source: "The Age of Surveillance Capitalism – The Fight for a Human Future at the New Frontier of Power", Shoshana Zuboff; Hachette Book Group, 2020.
[3] I use "labour" throughout this paper to indicate "human endeavour" alone.

The general argument is that AI differs from all other technological inventions we have built over the past century. The answer lies in understanding the word "intelligence" in itself; for the unversed, let's delve into what is collectively known as "human intelligence"[4]. It is the sum of mental capacities such as abstract thinking, understanding, communication, reasoning, learning and memory formation, action planning, and problem-solving.

It involves gathering, storing, retrieving and analysing information, making decisions and taking action. Interestingly, underlying experiences driven by exposure to culture, education, location, social circumstances, past incidents, hopes and feelings contribute to such decisions and actions (collectively known as Human Biases)[5].

Meanwhile, "artificial intelligence" is the science of making machines that can think like humans. Manifestly, however, AI refers to computer systems capable of performing complex tasks that historically only humans could do, such as reasoning, making decisions, or solving problems.

It is pertinent to appreciate a fundamental difference we witness today as we evaluate assets—particularly labour and machines/technologies. For a long time, machines have complemented labour competencies

Simply put, AI is beginning to do what human intelligence cannot do (any longer).

relating to tasks, with speed, efficiency, and accuracy guiding decisions about leveraging a machine instead of a human.

This industrial logic has long been pervasive, leading to machines being treated as "capital assets" while labour was considered an expense. Interestingly, we have finally come around to revisiting this logic. It has now been fundamentally altered with discussions around the constituent element comprising both humans and machines—intelligence.

Now that machines are perceived as "intelligent if not better"[6] than human intelligence, the entire conversation around treating machines as just capital assets is no longer sufficient. In this context, labour has moved down the pecking order of importance, with current trends indicating a sanguinity toward calling it an asset because it never was treated thus. Consequently, however, for the first time in human history, labour as an input factor to production is being perceived as no longer necessary, and some even go to the extent that labour only complicates productive endeavours and, therefore, its complete replacement/elimination may be better for humanity[7].

Workplaces and AI

The concept of meaningful work has recently received increased attention in philosophy and other disciplines. Doing meaningful work leads to higher job satisfaction and increased worker well-being, and some argue for a right to access it. Recent research on the impact of robotisation on meaningful work was undertaken by identifying five critical aspects of meaningful work - pursuing a purpose, social relationships, exercising skills and self-development, self-esteem and recognition, and autonomy – and concluded that there are significant positive and negative impacts to robotisation, alongside ambiguity with ethical issues[8].

The summary arguments that meaningful work must be distinguished from robotic/transactional work are generally clustered around job satisfaction, worker well-being, a sense of justice, and the value of goods tied to social contribution and community. Since the burdens and benefits connected to work are regulated by our public institutions, a just society should protect people's access to meaningful work.

AI is the science of making machines that can think like humans.

On the other hand, a relentless and unyielding pursuit of garnering, deciphering, and understanding myriad complexities with information has resulted in the transformation of automated technologies from being enablers of transactional rigour (read efficiencies, speed, accuracy) to harbingers of new information, manifestly on display in many economic sectors like healthcare, astrophysics, geology, pharmaceuticals, medicine, et al. Simply put, AI is beginning to do what human intelligence cannot do (any longer).

How would the workplace of the future look? In just the past few years, we have gone from treating bots as input resources (and thereby needing to be treated as such on balance sheets—resulting in deliberations around taxing such deployments) to equality of rights alongside humans (and consequently included into the ambit of HR policies in enterprises, as unsuccessfully tried by HR consulting firm Lattice)[9].

Significant questions exist about integrating AI into the workforce and how one can successfully manage coexistence (if any) between humans and intelligent machines. The argument that algorithms would replace humans where transactional rigour is needed seems simplistic.

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8 *Greater details about this research and analysis are found at https://shorturl.at/Cvhc3*
9 *On July 9, 2024, the HR consulting firm LATTICE tried to treat AI bots like humans by giving these digital workers "official employee records" in the organisation. Such digital workers would be securely onboarded, trained, assigned goals, performance metrics, appropriate systems accesses, and even a manager, just as any person would be. This policy was withdrawn after significant backlash from employees a few days later.*

Instead, positing that workplace AI applications would have an indirect influence through the development of new, modified, or unmodified worker routines (rather than directly influencing worker productivity itself) seems logical and acceptable.

Further, while AI integration into organisational strategy brings "deep" changes to jobs and the workforce, we are yet to understand the magnitude of such changes. AI-powered technologies associated with losing human skills, such as driverless vehicles and flying drones, have yet to work independently of human supervision. Even if such projected perfection of workplace AI is finally achieved, it is still being determined whether a complete replacement of human workers with workplace AI is politically, socially, and economically feasible.

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AI solutions working independently of human oversight have yet to be pervasively deployed. Endeavours will unleash new issues that our current policy and economic constructs are not aligned to deal with.

On the other hand, human workers are doubtful about AI decisions, recommendations, and responses and might perceive AI augmenting their abilities as being observed by intelligent systems and spied on. Also, the empirical literature[10] around workers' trust in workplace AI relies on short-term, small sample, and experimental studies. Further, in the long run, when the extent of AI replacing workers in the workplace is known, the development of workers' trust in workplace AI is likely to change[11].

In Conclusion
The debate around job replacements, diminishing

value of human labour (with inabilities to handle complexities), and consequential woes with policy and corporate behaviour that limit maximisation of value through intelligent machines need to be tempered with detailed and specific thought processes and research, actions and policy constructs that include all stakeholders – corporations, civil societies, governments, and transnational contributors – in a meaningful manner where morals and ethical obligations must play as important a role as the benefits gained from economic and scientific endeavours.

Much of the current discussions around AI and its ability to completely circumvent human labour is mostly noise, taking our attention away from matters of more significance and complexity. We can no longer hide behind classical economic theories around the production-consumption spectrum with myopic changes to policies, corporate behaviour, or governmental policy constructs.

The interplay between man and machine has reached a point of no return – with the stakes too high to remain transactional with our endeavours – corporate or governmental. We must understand AI's "socio-cultural" and "humanistic" implications on the workforce and society. It is not an "economic" argument - anyone doing so is barking up the wrong tree. ◻

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[10] Empirical literature by Gilksons and Wooley; https://journals.aom.org/doi
[11] Detailed analyses and research are found at Worker and workplace Artificial Intelligence (AI) coexistence: Emerging themes and research agenda - ScienceDirect

NAVIGATING CONSUMER RIGHTS AMIDST TECHNOLOGICAL SHIFTS

IN AN INSIGHTFUL CONVERSATION WITH THE FOURTH LEAP TEAM, DATUK MARIMUTHU NADASON, PRESIDENT OF CONSUMERS INTERNATIONAL AND A STALWART IN GLOBAL ADVOCACY, DELVES INTO THE EVOLVING LANDSCAPE OF CONSUMER RIGHTS IN THE DIGITAL ERA. WITH DECADES OF EXPERIENCE, MARIMUTHU DISCUSSES THE CHALLENGES AND OPPORTUNITIES PRESENTED BY EMERGING TECHNOLOGIES AND THEIR IMPLICATIONS.

By Fourth Leap Team

As president of Consumers International, how do you see digital rights evolving in the context of the Fourth Industrial Revolution? What are the key challenges and opportunities?

Addressing the complexities of digital rights during the Fourth Industrial Revolution proves both challenging and invigorating in my capacity at Consumers International. Our primary challenge is safeguarding privacy in an era dominated by Artificial Intelligence (AI) and Internet of Things (IoT) technologies. Implementing robust data protection laws globally is imperative, as the risks of breaches escalate with more interconnected devices.

Another pressing issue is the digital divide. Whilst technology promises enhanced accessibility, it also risks widening the gap between those with and without access. Addressing this disparity is essential to ensure equitable benefits from digital advancements.

On the opportunities front, the digital age offers remarkable tools for consumer empowerment. Access to comprehensive product information and peer reviews can significantly bolster consumers' decision-making. Moreover, technologies like blockchain hold the potential to revolutionise consumer protection by providing transparency and security in transactions.

Datuk Marimuthu Nadason,
President of Consumers International

Furthermore, the global nature of the digital world permits unprecedented collaboration across borders. This presents an opportunity to harmonise consumer protection standards internationally, ensuring a more unified approach to safeguarding consumer rights.

We need to leverage these opportunities while tackling the challenges, advocating for policies that protect and empower consumers globally, and ensuring that the benefits of technological advancements are widely and fairly distributed.

Could you discuss specific examples of how emerging technologies have posed new risks or offered new tools for consumer protection?

Emerging technologies have a dual impact on consumer protection. They introduce new challenges and exciting tools that we need to address actively.

On the risk side, technologies like IoT devices are a prime example. These devices collect massive amounts of data, posing significant privacy risks. For instance, smart

Addressing digital rights is vital in the rise of the Fourth Industrial Revolution, further reducing the risk of escalating breaches with more interconnected devices.

home devices or even cars can monitor almost every aspect of one's daily life, raising serious questions about privacy and data security. We must advocate for robust privacy regulations in these cases.

Another risk involves the complexity of AI systems. These systems often operate in non-transparent ways, leading to biases in decisions that affect everything from credit approvals to hiring. We must advocate for standards that ensure these technologies operate transparently and fairly.

As for the opportunities, blockchain technology is a game changer for enhancing transparency. It offers a way to securely trace product journeys from manufacture to sale, which can be particularly valuable in industries like pharmaceuticals, where verifying authenticity is critical.

AI is also revolutionising consumer protection, especially fraud detection. Financial institutions use AI to analyse transaction patterns and identify real-time fraud, significantly enhancing consumer security.

Lastly, Regulatory Technology, or RegTech, helps companies meet compliance demands more efficiently. This not only aids businesses but also enhances the protective measures in place for consumers by ensuring regulations are followed more rigorously.

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The digital age offers remarkable tools for consumer empowerment. Access to comprehensive product information and peer reviews can significantly bolster consumers' decision-making. Moreover, technologies like blockchain hold the potential to revolutionise consumer protection by providing transparency and security in transactions.

With your extensive experience on the international stage, how do you approach harmonising consumer rights across different regulatory environments, especially with the varying impacts of digitalisation?

Harmonising consumer rights across diverse regulatory environments is a complex challenge, particularly in the digital age, where technological change varies widely between regions.

Firstly, collaboration is essential. We engage closely with consumer organisations, industry players, governments, and international bodies worldwide. This collaborative approach allows us to understand different regions' specific needs and challenges and advocate for policies that can be adapted and adopted globally.

Secondly, we strongly emphasise the importance of international standards. For example, in digital privacy and data protection, we advocate for standards that reflect the highest level of consumer protection, drawing inspiration from stringent frameworks like the EU's GDPR (General Data Protection Regulation). These standards serve as a guide that less regulated markets can aspire to and more regulated markets can endorse.

Thirdly, education and capacity building are crucial. We help our global membership of consumer organisations in various countries to understand international best practices and the importance of consumer rights in the digital world. By raising awareness and building capacity, we empower local advocates to push for incorporating the consumer voice viz-a-viz stronger regulations in their respective environments.

Finally, we focus on the impact of digitalisation itself. Given its transformative power, we advocate for digital access to be recognised as a fundamental consumer right. This is crucial for ensuring that the benefits of digitalisation, such as access to information and markets, are universally accessible, which in turn supports a more harmonised approach to consumer rights globally.

What have been the most significant changes in consumer advocacy under your leadership, particularly in response to the digital economy and global crises like the pandemic?

Our response to the digital economy has focused more on digital rights. We have advocated for improved data privacy and security protections, acknowledging the

Blockchain technology is a game changer for enhancing transparency.

growing concern over how corporations manage and utilise consumer data. We have also pushed for more transparent algorithms to ensure fairness in automated decisions that affect consumers, from credit scoring to job applications.

In addition, during the pandemic, our approach quickly adapted to address emerging consumer issues. As more people moved online for education, work, and health services, we emphasised the importance of access to reliable and affordable internet services. Consumer rights in e-commerce also took precedence as online shopping became more prevalent, raising issues around consumer fraud, consumer redress such as refunds, returns, and replacements, and the right to clear information.

Lastly, we have worked to strengthen global cooperation among multiple stakeholders. The pandemic highlighted the need for international collaboration to tackle cross-border consumer issues, such as scams and price gouging. We have built more robust networks with consumer organisations in various regions and worldwide to share information and strategies more effectively, ensuring that consumer protection remains strong even as global challenges evolve.

The global nature of the digital world permits unprecedented collaboration across borders, which allows us to engage closely with consumer organisations, industry players, governments, and international bodies worldwide.

What significant trends do you foresee in consumer rights, and how should organisations prepare to meet these changes?

There are several key trends that I foresee in consumer rights that will shape our approach and strategies:

01 **Increased Focus on Digital Rights:** As technology permeates every aspect of our lives, digital rights will become even more central to consumer advocacy. This includes enhanced protections around data privacy, security, and ownership, as well as issues related to the accessibility and affordability of digital infrastructure. Organisations must stay ahead of technological advancements to ensure that consumer protection is proactive, not just reactive.

02 **Sustainability and Ethical Consumption:** There is a growing consumer demand for sustainability and ethical practices in production and services. This trend towards environmental consciousness means that consumer rights advocacy will increasingly need to address the sustainability of products and services, ensuring that companies' claims are transparent and verifiable.

03 **Globalisation of Consumer Issues:** As markets become more interconnected, consumer issues that were once localised can quickly become global. This requires a coordinated international response, where consumer protection agencies and consumer organisations work across borders to address issues such as cross-border fraud and international product recalls.

04 **The Rise of Artificial Intelligence:** AI is set to redefine the marketplace, influencing everything from personalised marketing to pricing strategies. Consumer rights must adapt to these changes by ensuring that AI deployments are fair transparent, and do not discriminate against or exclude certain groups of consumers.

05 **Health and Safety in the Post-Pandemic World:** The COVID-19 pandemic has shifted consumer priorities towards health and safety standards. There will be heightened scrutiny of the health implications of products and services, necessitating stricter regulations and more diligent enforcement.

Countries should prepare for these changes by investing in research and technology to better understand and advocate for these evolving consumer needs. Strengthening global partnerships and fostering a culture of innovation within consumer advocacy will be crucial for effectively responding to these trends. ▣

SHAPING THE FUTURE: HOW AI IS TRANSFORMING CONSTRUCTION

FROM SMART SITE SELECTION TO AUTONOMOUS MACHINERY, ARTIFICIAL INTELLIGENCE IS REVOLUTIONISING HOW WE BUILD THE WORLD.

FOURTH LEAP

By Dato' Sr Mohd Zaid Zakaria

Traditional surveying methods are often labour-intensive and prone to human error.

ARTIFICIAL Intelligence (AI) has revolutionised many industries, and construction is no exception. Integrating AI into construction processes transforms traditional practices, promising a future where projects are completed faster, safer, and with greater precision. As technology advances rapidly, AI is pivotal in driving efficiency, enhancing safety, and fostering innovation in the construction sector.

Traditionally known for its labour-intensive and time-consuming methods, the construction industry is transforming significantly.

AI's ability to process vast amounts of data, automate tasks, and make data-driven decisions is leading to unprecedented advancements in how construction projects are planned, executed, and managed. From the early stages of pre-construction planning to the final phases of project completion, AI is becoming an indispensable tool for construction professionals.

Revolutionising Project Management

Effective project management is the cornerstone of any successful construction project. Traditional methods often involve manual data entry, complex spreadsheets, and extensive communication threads, which can be time-consuming and prone to errors. AI-powered tools, however, are revolutionising this landscape by offering streamlined, centralised platforms that facilitate seamless collaboration, real-time updates, and efficient communication among all stakeholders.

AI's predictive capabilities are particularly transformative. By analysing historical project data, AI algorithms can forecast potential delays, resource shortages, and other bottlenecks. These insights enable project managers to make informed decisions, adjust schedules proactively, and allocate resources more effectively. This predictive prowess helps keep projects on track, on time, and within budget, ultimately leading to smoother execution and higher efficiency.

Sustainable Construction Practices

In an era where environmental consciousness is paramount, AI is driving sustainable construction practices. AI-powered systems enhance energy efficiency by continuously monitoring and optimising energy consumption in smart buildings. These systems consider factors such as occupancy patterns and weather forecasts to regulate heating, cooling, and lighting, significantly reducing energy wastage.
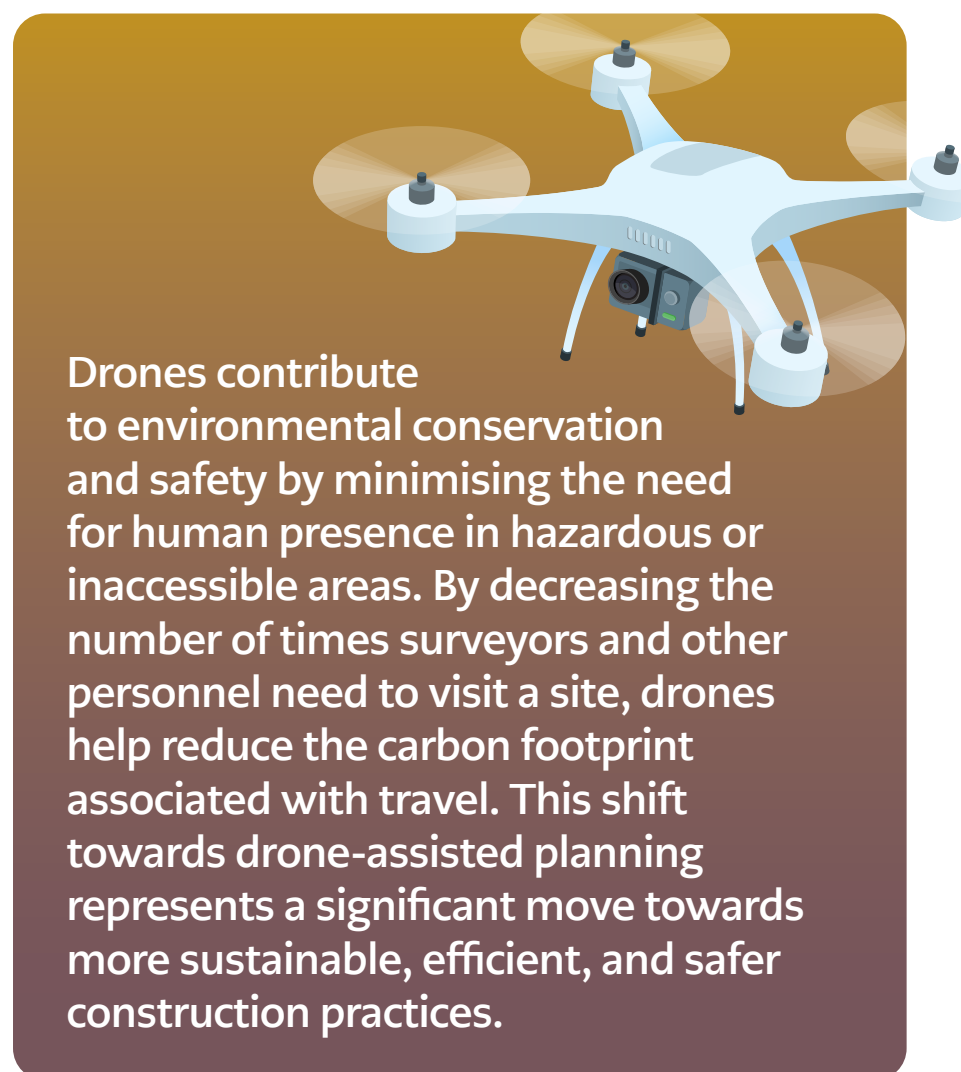
AI also plays a pivotal role in minimising construction waste and optimising resource management. Machine learning algorithms analyse historical project data to predict material requirements accurately, eliminating over-ordering and reducing waste. Additionally, smart robots and drones assist in waste sorting and recycling on construction sites, ensuring valuable resources are not squandered in landfills.

This AI integration promotes the adoption of green construction methods by offering insights and recommendations for eco-friendly materials and designs, aligning construction projects with sustainability goals.

Precision in Pre-Construction Planning

AI has redefined pre-construction planning by offering unparalleled precision and efficiency. Traditional surveying methods are often labour-intensive and prone to human error. In contrast, drones with AI capabilities can quickly cover large areas, capturing high-resolution images and generating detailed maps that facilitate better planning and decision-making.

This technology speeds up the surveying process and enhances the tendering process. Construction firms can craft more precise and compelling bids by integrating detailed maps and ongoing condition assessments into project proposals. This allows for rapid and informed decisions regarding land use and project feasibility, giving firms a competitive edge.

Drones contribute to environmental conservation and safety by minimising the need for human presence in hazardous or inaccessible areas. By decreasing the number of times surveyors and other personnel need to visit a site, drones help reduce the carbon footprint associated with travel. This shift towards drone-assisted planning represents a significant move towards more sustainable, efficient, and safer construction practices.

Enhancing Safety and Security

Safety is a critical concern in construction, and AI is making significant strides in enhancing site safety and security. Systems such as Safesite integrate data from sensors, wearables, and CCTV to monitor worker behaviour, equipment usage, and environmental conditions in real-time. These systems can identify potential safety hazards and trigger timely alerts, enabling immediate action to mitigate risks.

> **Beyond real-time risk management, AI-driven computer vision systems excel at detecting safety violations, such as incorrect use of personal protective equipment (PPE). This capability enhances on-site safety and fosters a culture of compliance and accountability among workers.**

AI empowers construction companies to leverage safety data to refine and bolster safety protocols backed by empirical evidence and a data-driven approach. The impact of AI extends to emergency response, with AI systems providing critical information and visuals to guide emergency services effectively.

Revolutionising Design and Visualisation

AI is transforming the realm of Building Information Modeling (BIM) and 3D modelling, crucial components of modern construction projects. AI algorithms can analyse vast amounts of data to generate detailed BIM models quickly and accurately. This expedites the design phase and minimises errors, ensuring projects start on a solid foundation.

AI-powered BIM systems enable real-time collaboration among architects, engineers, and other stakeholders. These systems can visualise projects in 3D, allowing teams to explore design alternatives and identify potential issues before construction begins. The technology also optimises designs by analysing data to identify opportunities for improvement, such as enhancing energy efficiency and maximising space utilisation.

Additionally, AI-driven 3D modelling tools can generate highly detailed and realistic models, making it easier for stakeholders to visualise the final product. These models can simulate various scenarios, such as daylighting, shadow analysis, and acoustic simulations, helping architects and designers fine-tune their creations for optimal performance.

Optimising Materials Management

AI is a transformative partner in optimising materials management and supply chain logistics. AI-driven systems bring precision to materials ordering by analysing historical data, project requirements, and market trends to determine the exact quantities needed. This approach eliminates overordering, reducing excess inventory and associated costs. Inventory management is a balancing act, and AI reimagines this process by continuously monitoring inventory levels, consumption rates, and project progress.

The system triggers reorder points when thresholds are crossed, ensuring materials are procured just in time. This prevents costly stockouts and excess inventory, optimising capital allocation. Supply chain logistics in construction can be complex, involving multiple suppliers, transporters, and delivery schedules. AI orchestrates this complexity by analysing supply chain data, including traffic conditions, lead times, and supplier performance. This information allows AI systems to optimise delivery routes, reduce transit times, and ensure that materials arrive at the construction site when needed, enhancing project efficiency.

Quality Control and Compliance

AI is revolutionising quality control and inspection processes in construction. Traditional methods, often prone to errors, are being replaced by systems that conduct inspections with unparalleled precision.

> **Supply chain logistics in construction can be complex, involving multiple suppliers, transporters, and delivery schedules."**

These systems continuously monitor quality, materials, and processes, promptly identifying discrepancies and deviations from quality standards. This proactive approach ensures swift corrective measures, preventing costly rework and delays and ultimately elevating project quality and client satisfaction.

Additionally, AI simplifies compliance checks and documentation. Such systems cross-reference project activities with regulatory standards, instantly flagging non-compliance issues. They also automate the generation of compliance reports, reducing administrative burdens and ensuring necessary documentation is readily available for audits and inspections.

Autonomous Machinery and Fleet Management

The advent of autonomous machinery marks a groundbreaking transformation in construction. AI and robotics are creating construction equipment capable of operating autonomously. These machines, equipped with sensors, cameras, and AI algorithms, can navigate construction sites, avoid obstacles, and perform tasks with unrivalled accuracy. Autonomous machinery enhances efficiency and significantly improves safety by reducing the need for human operators in dangerous environments.

AI extends its prowess to fleet management by integrating sensors and IoT devices to monitor machinery's health and performance continuously. Real-time data, from engine diagnostics to fuel consumption, is analysed to predict maintenance needs accurately. This predictive maintenance approach minimises downtime, enhances equipment lifespan, and reduces operational costs.

AI algorithms optimise fleet operations by considering project schedules, traffic conditions, and driver behaviour to plan the most efficient routes. This leads to fuel savings, reduced emissions, and timely project deliveries.
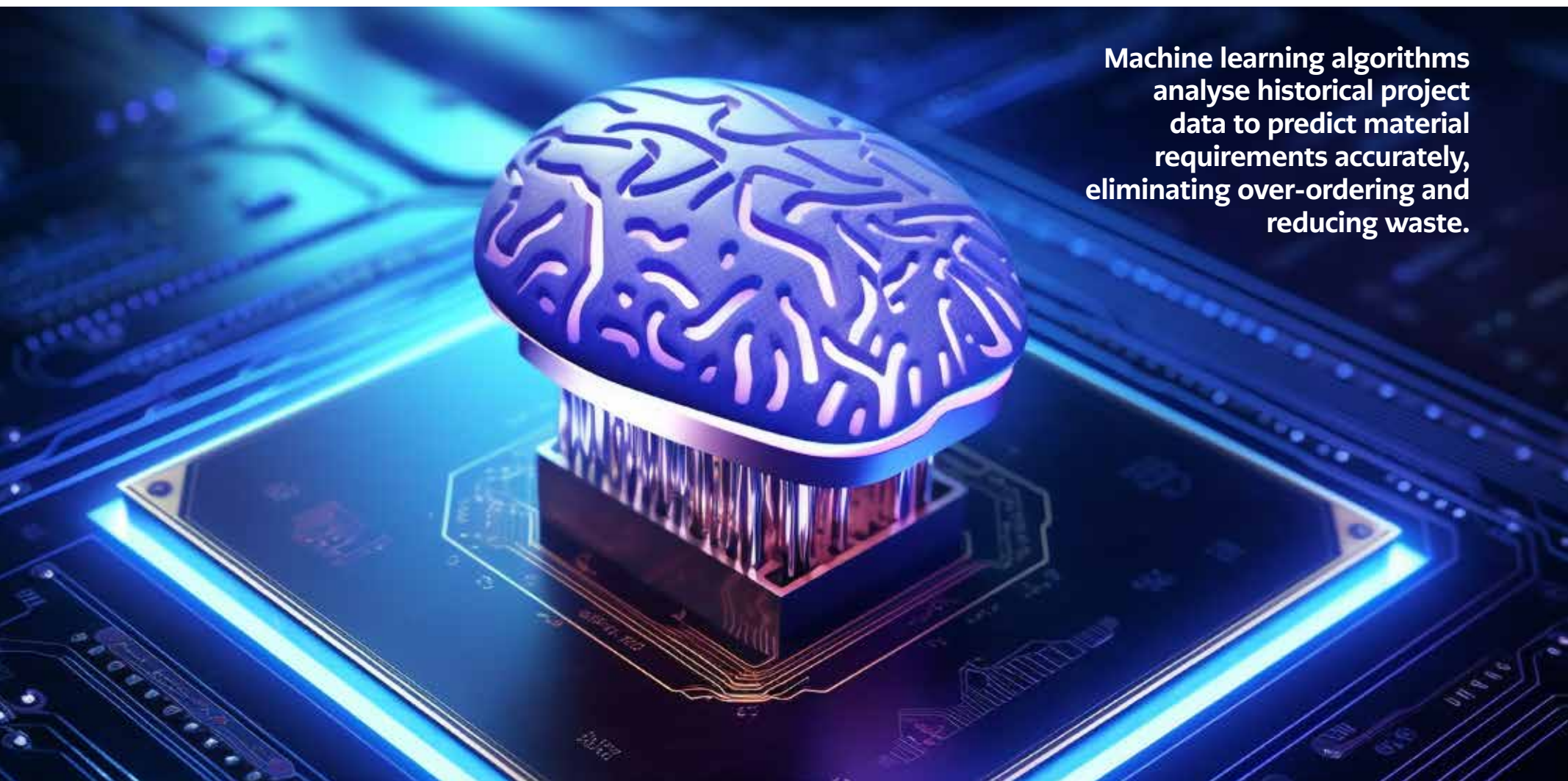
Machine learning algorithms analyse historical project data to predict material requirements accurately, eliminating over-ordering and reducing waste.

The integration of AI in construction brings new legal challenges alongside technological advancements. Key legal considerations include data privacy, airspace regulations, and liability. Construction firms must ensure compliance with data protection laws by implementing strict data handling and storage protocols.

They must also navigate airspace regulations, obtain necessary permits, and ensure drones are flown at appropriate times and heights to avoid conflicts with other airspace users.

Liability issues encompass damage caused by AI operations and accidents. Robust insurance policies that cover AI-related incidents are essential to mitigate financial risks. Additionally, clear guidelines and training for AI operators are crucial to prevent accidents and ensure responsible usage.

Maintaining clear operational records, such as flight logs and maintenance records, is vital for legal compliance and can serve as evidence in legal disputes or investigations.

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AI-powered BIM systems enable real-time collaboration among architects, engineers, and other stakeholders."

Future of AI in Construction
The future of AI in construction is bright and full of potential. Emerging trends such as AI-driven robotics, predictive maintenance, and sustainable construction practices are set to revolutionise the industry. AI-driven

robotics, including autonomous drones and bricklaying robots, are becoming more prevalent, enhancing productivity and safety.

Predictive maintenance will continue to grow, with AI systems anticipating equipment failures and preventing costly breakdowns. This proactive approach minimises downtime and extends the machinery's lifespan.

Sustainability is another key area where AI will play a significant role. Smart buildings with AI-driven energy management systems will reduce environmental footprints, while AI will optimise material use for sustainable construction practices. By embracing these trends, the construction industry can look for a smarter, more efficient, and more sustainable future.

Exciting Journey in the Offing
The construction industry is on the brink of a revolutionary transformation driven by AI. AI's impact is profound and far-reaching, from enhancing project management and safety to optimising materials management and fostering sustainable practices. As technology continues to evolve, the integration of AI into construction promises a future where projects are executed with greater precision, efficiency, and sustainability.

While challenges such as costs, data integration, and workforce skills exist, the potential benefits of AI in construction are undeniable. By embracing AI, construction professionals can look forward to a brighter, more efficient, and greener future in which innovative solutions drive the industry forward. **◐**

Dato' Sr Mohd Zaid Zakaria is the Chief Executive of the Construction Industry Development Board (CIDB) of Malaysia. He has a strong 22-year track record within CIDB and experience in technology development, contractor and levy management, and enforcement.

REVOLUTIONISING CONSTRUCTION: THE DRONE EFFECT

COMPANIES MUST INVEST IN CONTINUOUS TRAINING AND DEVELOPMENT FOR THEIR TEAMS TO FULLY CAPITALISE ON LATEST ADVANCEMENTS.

By Fourth Leap Team

IN the rapidly evolving construction landscape, drones have emerged as a game-changing technology, transforming every phase, from pre-construction planning to site safety and legal compliance. This special feature delves into drones' multifaceted impact, highlighting their pivotal role in modern construction practices.

Drones have redefined pre-construction planning by offering unparalleled precision and efficiency. These aerial devices streamline surveying processes, providing detailed and accurate data far faster than traditional methods. The comprehensive aerial imagery and topographic data captured by drones enable construction companies to conduct thorough land assessments and site analyses with remarkable speed and reduced costs.

Traditional surveying methods often involve significant time and resources, with surveyors having to traverse the site to gather data physically. This takes considerable time and increases the risk of human error. On the other hand, drones can cover large areas quickly and with great precision, capturing high-resolution images and generating detailed maps that facilitate better planning and decision-making.

Moreover, drones enhance the tendering process by integrating detailed maps and ongoing condition assessments into project proposals. This level of detail allows for more precise and compelling bids, facilitating rapid and informed decisions regarding land use and project feasibility. The ability to provide potential clients and stakeholders with a clear and accurate view of the project scope and potential challenges before the ground is broken gives construction firms a competitive edge.

Drones also contribute to environmental conservation and safety by minimising the need for human presence in hazardous or inaccessible areas, reducing the risk of accidents during the survey phase. By decreasing the number of times surveyors and other personnel need to visit a site, drones help reduce the carbon footprint associated with travel. This shift towards drone-assisted planning represents a significant move towards more sustainable, efficient, and safer construction practices.

Furthermore, drones facilitate improved resource management. They provide detailed views of difficult-to-access areas, essential for proactive issue resolution and safety management. This reduces the need for physical inspections in dangerous or hard-to-reach areas, lowering the risk of accidents and enhancing overall site safety.

The use of drones also extends to digital integration. The data collected by drones can be synced with digital mapping tools and construction management software. This integration allows for dynamic site management, optimising resource deployment and enhancing operational efficiencies. For example, by monitoring real-time images, project managers can better allocate manpower and machinery, ensuring resources are used most effectively without wastage.

Key legal considerations include data privacy, airspace regulations, and liability.

Additionally, the environmental impact of drone use in construction is significant. By reducing the need for frequent site visits, drones help minimise the carbon footprint associated with traditional monitoring methods, aligning with sustainable construction practices.

Enhancing Site Safety and Security

Safety and security are paramount in construction, and drones play a crucial role in enhancing these aspects. By regularly inspecting high-risk areas, drones minimise the need to expose workers to potential hazards. This capability is especially valuable in dangerous or difficult-to-access environments, such as high-rise constructions or large-scale infrastructure projects.

Equipped with advanced features like thermal imaging, drones can swiftly detect issues such as overheating equipment or electrical faults, allowing for immediate action and preventing accidents. This early detection capability is crucial in maintaining a safe working environment and ensuring the smooth operation of construction activities.

Beyond safety monitoring, drones are vital for site security, patrolling premises and providing live video feeds to deter theft or vandalism. This continuous surveillance capability is crucial for asset protection and documenting unauthorised access or safety breaches as they occur. Drones also aid in emergency response by providing critical information and visuals to guide emergency services effectively.

The strategic deployment of drones also leads to operational efficiencies. By reducing the frequency and need for physical inspections, drones save time and resources, allowing safety personnel to focus on strategic safety planning and risk management. The aerial data collected can be used for training purposes, offering realistic scenarios to enhance safety training sessions for site workers. The impact of drones extends to emergency response.

In an accident or emergency, drones can be the first on the scene, providing critical information and visuals to guide emergency services more effectively. This capability helps manage emergencies more efficiently and ensures appropriate measures are taken promptly to mitigate any adverse effects.

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Drones have redefined pre-construction planning by offering unparalleled precision and efficiency."

Navigating Legal Challenges

The integration of drones into construction brings new legal challenges alongside technological advancements. Key legal considerations include data privacy, airspace regulations, and liability. Construction firms must ensure compliance with data protection laws by implementing strict data handling and storage protocols.

Drones often capture extensive visual and data outputs, potentially including images of private properties or individuals without consent, which can infringe on privacy rights. To address these concerns, construction companies must conduct privacy impact assessments and obtain necessary permissions when required. Implementing robust data handling and storage protocols ensures that the information gathered by drones is used responsibly and complies with privacy regulations.

Airspace regulations also play a critical role. Drones operate within designated airspace and must adhere to national aviation rules to avoid penalties and ensure safety. Operators must obtain the necessary permits and ensure that drones are flown at appropriate times and heights to prevent conflicts with other airspace users.

The future of drones in construction is prosperous with innovative advancements.

Liability issues encompass damage caused by drone operations and accidents. To mitigate financial risks, construction firms must have robust insurance policies that cover drone-related incidents. Additionally, clear guidelines and training for drone operators are essential to prevent accidents and ensure that drones are used responsibly.

Maintaining clear operational records is another vital aspect of legal compliance. Documentation of flight logs, maintenance records, and compliance with flight regulations can serve as crucial evidence in legal disputes or investigations. Keeping abreast of evolving drone regulations and adapting practices is essential for ongoing compliance.

Future Trends and Innovations

The future of drones in construction is prosperous with innovative advancements. As AI technology continues to integrate with drones, they are set to offer more sophisticated capabilities in data collection, analysis, and operational efficiency. Drones will likely become integral components of construction logistics, transporting small equipment across sites and reducing the time and labour associated with ground transportation.

Advanced drones equipped with AI will perform complex data analysis autonomously, predicting potential project delays or material needs based on real-time data, thereby improving decision-making processes and project outcomes. The integration of AI could also enable drones to manage and resolve onsite issues independently, such as coordinating the delivery and storage of materials as needed without human intervention.

The potential for drones to interact with other technological systems within a construction site is another exciting prospect.

This could involve drones communicating directly with construction machinery to automate and streamline tasks such as laying bricks or cutting materials. Such interactions would increase efficiency and enhance worker safety by reducing the need for human involvement in potentially hazardous tasks.

Construction companies must invest in continuous training and development for their teams to fully capitalise on these advancements. Keeping abreast of regulatory changes and technological innovations will be essential for leveraging drone capabilities to their fullest potential. ◘

THE MANUFACTURING RENAISSANCE: A GUIDING LIGHT OF GROWTH FOR MALAYSIA

MALAYSIA STANDS AT A CROSSROADS, RECOGNISING THE GAP BETWEEN ITS DECLINING MANUFACTURING STATE AND FUTURE ASPIRATIONS.

FOURTH LEAP

By Naguib Mohd Nor

MALAYSIA'S new MADANI government promises an era of growth and prosperity to create a sustainable and inclusive economy that benefits all Malaysians. The government seeks to elevate the country's economic stature with plans to promote innovation, boost exports, and create jobs. However, the fundamental question remains: How can Malaysia achieve these ambitious goals? One compelling argument is that manufacturing can catalyse this growth, but not through merely improving existing practices. Instead, a renaissance in high-end, skills-based manufacturing is essential, moving away from reliance on natural resources and low-cost labour.

Manufacturing as a Catalyst for Growth
The idea of transforming manufacturing is not novel. Malaysia's Minister of Investment, Trade, and Industry (MITI), Tengku Zafrul Aziz, highlighted the need for Malaysia to shift towards higher complexity products. Of the top five exports in 2022, only electronics and electrical (E&E) and chemicals had higher complexity. In contrast, petroleum, LNG, and palm oil are resource-based exports. The question is how Malaysia can ensure future exports consist of more complex products.

The National Investment Aspiration (NIA) and the New Industrial Master Plan (NIMP) emphasise the need to focus on sectors such as aerospace, chemicals, petrochemicals, digital economy, and E&E, including medical devices and pharmaceuticals. However, Malaysia must embrace high-end manufacturing to realise this potential.

The Decline in Manufacturing Productivity

Headlines questioning Malaysia's manufacturing capabilities, like the recent "Made in Malaysia" incident with Air Alaska, highlight a broader issue: the country's perception of its manufacturing prowess. Despite producing doors for Boeing 737 MAX and having a history of aerospace manufacturing, Malaysia's readiness to consider itself a high-value manufacturing country remains in question. Malaysia's 737 MAX doors have since been cleared of any shortcomings.

A survey by the Machinery & Equipment Productivity Nexus (MEPN) reveals a worrying trend: the productivity of Malaysia's machinery and equipment (M&E) SMEs has been declining since 2017 due to a lack of innovation and automation knowledge. This does not bode well for the readiness of Malaysia's manufacturing sector.

The strategic importance of modernising Malaysia's manufacturing sector has been evident for decades. From 1990 to 2022, the percentage of manufactured goods in Malaysia's exports rose from 58.7% to 84.2%. This shift marked a transition from an agriculture-centric, resource-based economy to one prioritising industrialisation. The manufacturing sector now contributes over 30% to the country's GDP and represents an opportunity to increase economic complexity. However, the sector's growth has been uneven, with productivity gains lagging behind regional peers.

Premature Deindustrialisation

Since 2000, the share of manufacturing in Malaysia's GDP has declined, signalling premature deindustrialisation. This trend contrasts with countries like South Korea and Taiwan, where manufacturing value-added has increased.

Malaysia's continued reliance on input-based industries, which focus on raw materials and cheap labour, has hindered its progress. Malaysia must shift towards output-based industries that leverage technology, innovation, and efficient processes to catch up.

Moving up the complexity chain is challenging but essential. High-end manufacturing, such as aerospace, offers significantly higher value-add per worker than general M&E industries.
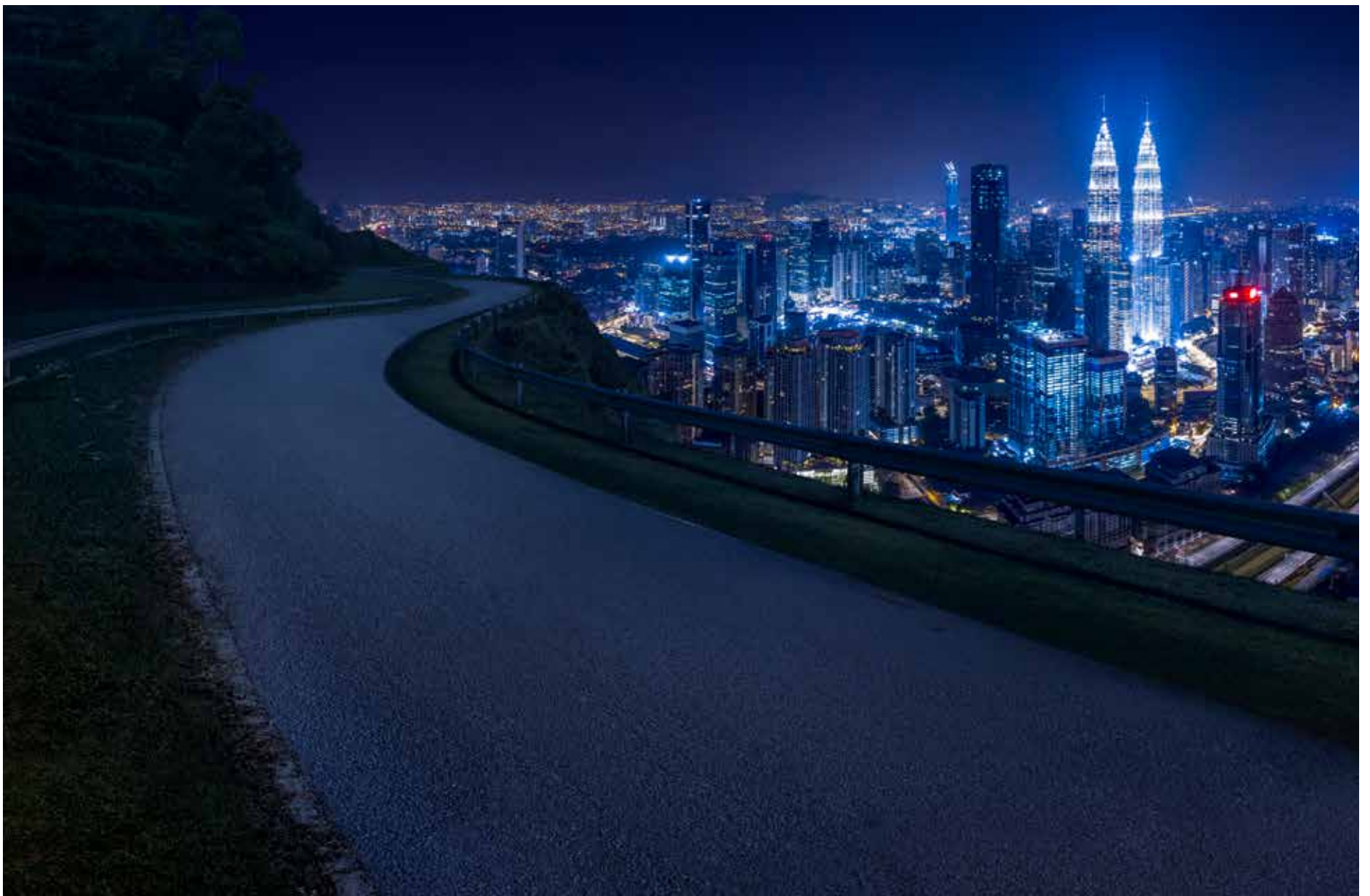
Increasing Manufacturing Complexity

To achieve greater complexity, Malaysia must focus on capabilities rather than just products or industries. Complexity in manufacturing involves producing a wide range of sophisticated products. For instance, a factory manufacturing metal sheets can increase complexity using advanced technologies and highly skilled workers to produce aeroplane components.

This shift requires a high level of engineering consideration and manufacturing traceability, which are critical in sectors like aerospace.

High-End Manufacturing: A Path Forward

Moving up the complexity chain is challenging but essential. High-end manufacturing, such as aerospace, offers significantly higher value-add per worker than general M&E industries. This capability can also be applied to other high-end sectors like medical devices. Increasing complexity requires leveraging existing capabilities to explore new industries, thus broadening the economic base.

Malaysia needs a significant change in mindset, which must be brought about through a "learn by doing" approach to change management.

Industry 4.0, characterised by integrating cyber-physical systems, IoT, and cloud computing, presents a significant opportunity for Malaysia to enhance its manufacturing capabilities. However, when it comes to small and medium-sized enterprises (SMEs), the question of complexity again arises and acts as a barrier to adoption. At the Advanced Manufacturing and Robotics Accelerator Centre of Excellence (AMRACE), we have been supporting the transformation of SMEs and have taken a very hands-on approach. SMEs need support to understand how to compete in higher-value and more complex product spaces.

There is a distinct lack of design thinking amongst SMEs in Malaysia, mainly those engaged with build-to-print contracts. Design thinking is essential for being agile and responsive to market changes. Its emphasis on prototyping and iterative testing aligns with the need for agility, allowing companies to quickly develop and refine products and processes.

Addressing Challenges: Talent and Implementation

Tackling these challenges necessitates a concerted effort. Malaysia's past approach has been criticised for being too static, relying heavily on management consultants for strategic roadmaps without driving implementation. Other countries, like Vietnam and Indonesia, are catching up, underscoring the need for Malaysia to act swiftly.

Government subsidies and incentives are crucial in guiding industries towards high-end manufacturing. Countries like Korea and Taiwan have successfully used aggressive subsidies for industrial upgrading. For Malaysia, incentives for targeted sectors and close monitoring of firms are essential. Appointing industry champions with tacit knowledge, similar to Taiwan's approach with Morris Chang in the semiconductor industry, can drive implementation effectively.

Malaysia must aggressively embrace globalisation to compete globally. Competing internationally will drive local firms to improve technology and quality. Enhancing higher education is vital to upskilling the workforce and fostering home-grown innovation.

Balancing Regional Development and Sustainability

Balanced regional development is imperative for reducing economic imbalances and tapping regional talents. Decentralising industry, as seen in Bavaria, Germany, can effectively disperse industry, academia, and government

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Headlines questioning Malaysia's manufacturing capabilities, like the recent 'Made in Malaysia' incident with Air Alaska, highlight a broader issue: the country's perception of its manufacturing prowess."

functions. Sustainable development, including effective resource utilisation and renewable energy integration, is also crucial for high-end manufacturing ecosystems.

Ultimately, Malaysia needs a significant mindset change, which must be brought about through a "learn by doing" approach to change management. The current education system must cultivate attitudes towards risk-taking, innovation, and continuous improvement. Dismantling the status quo and promoting an innovative culture is essential for embracing complexity and achieving higher performance levels.

Malaysia stands at a crossroads, recognising the gap between its current state and future aspirations. Government guidance through subsidies and incentives is necessary but must be met with a motivated and capable audience. Embracing a manufacturing renaissance focused on high-end, complex industries and leveraging Industry 4.0 technologies can be the game-changer Malaysia needs. **o**

Naguib Mohd Nor is the CEO at AMRACE and STRAND, besides being an adjunct professor at Universiti Malaya.

THE ROLE OF ARTIFICIAL INTELLIGENCE IN SUSTAINABLE FINANCING

ORGANISATIONS ARE GRADUALLY SEEING HOW THE INTERSECTION OF AI AND SUSTAINABLE FINANCE CAN GENERATE VALUE BY MAINLY RESHAPING COMMUNICATIONS.

By Dr Angelica Lim

SUSTAINABILITY is no longer just a feel-good topic but one of broad and current interest. In the corporate world, s=ustainability has evolved from being primarily a public-relations topic for communicating with stakeholders and mitigating potential reputation risks. Instead, sustainability is a vital aspect of a company's strategy and operations. To ensure that this crucial area has the appropriate leadership attention and engagement, some organisations have included a position focused on sustainability in their most senior leadership team; for example — Maria Luiza de Oliveira Pinto e Paiva is Vale's Executive Vice-President, Sustainability; Pär Stenmark leads Ikea's sustainability agenda; and closer to home, Charlotte Wolff-Bye is PETRONAS' Vice President and Chief Sustainability Officer.

A critical aspect that companies need to consider is how sustainability affects their ability to access capital. Why should financial institutions use their limited capital to invest in your business or lend money to your company? More and more, financial institutions are incorporating sustainability to support their investments/lending decisions — a concept called sustainable finance.

Goldman Sachs has a Sustainable Finance Group and a Sustainable Banking Group to drive their sustainability agenda and work with clients on theirs. Bank of Singapore (BOS) is one of Asia's leading banks in sustainable finance. BOS was the first private bank signatory to the Singapore Stewardship Principles for Responsible Investors, an industry-led set of principles guiding investors on sustainable performance that delivers long-term risk-adjusted returns. It was the first private bank in Asia to incorporate environmental, social, and governance (ESG) factors to assess the loan quantum for clients' investment financing.

Here in Malaysia, CIMB Group has a Sustainable Finance Framework that includes, amongst other things, sustainability investment and lending guidelines for maximising positive impact and minimising harm. The framework also comprises CIMB Group's position statements on the industry sectors they deem high sustainability risks.

WHAT IS SUSTAINABLE FINANCE?

Sustainable finance is financing that supports economic growth and balances the growth responsibly with environmental, social, and governance aspects. There is no standard definition, but the European Commission terminology is often quoted:

"Sustainable finance refers to considering environmental, social, and governance (ESG) considerations when making investment decisions in the financial sector, leading to more long-term investments in sustainable economic activities and projects."

Numerous sustainability metrics and the absence of a universal framework complicate the act of measuring the sustainability performance of companies.

AI enhances climate change risk modelling, with CitiGroup estimating US$10 billion in loan losses if emissions reach net zero by 2050, US$3 billion more than without accelerated efforts.

However, just like no one standard definition for sustainable finance, there is also no globally accepted standard set of metrics for reporting on and measuring a company's sustainability performance. There are, however, a few reporting frameworks that organisations have adopted. One of the more widely used frameworks is the Global Reporting Initiative Standards (GRI Standards). The GRI Standards is a comprehensive set of three reporting frameworks: the GRI Universal Standards that apply to all organisations, the GRI Sector Standards that cover information relevant to 40 different sections, and finally, the GRI Topic Standards for reporting on specific topics (like occupational health & safety or waste). Another frequently used framework is the Sustainability Accounting Standards Board Standards (SASB Standards), which covers 77 industries. Lending weight to the SASB Standards is that it is under the purview of the International Sustainability Standards Board (ISSB) of the International Financial Reporting Standards (IFRS) Foundation.

Organisations align with one (or more) sustainability standards depending on stakeholder expectations, industry, and geographic locations. The lack of a universally adopted framework for measuring a company's sustainability performance and the plethora of different sustainability metrics add significant challenges to the complex decision-making required of sustainable finance. A financial institution would have a sustainable finance framework for assessing its potential clients. However, these potential clients' organisations will likely have measurements that differ from company to company. Financial institutions must gather and transform various data from heterogeneous companies and ensure equitable and consistent assessment before making financing decisions. With such challenges, AI is well-placed to provide multi-faceted support to financial institutions in their sustainable finance endeavours.

AI tools are faster and more accurate than humans for collecting, cleansing, collating, and categorising data. AI algorithms can also rapidly analyse data and make recommendations (using generative AI).

One potent use of AI in sustainable finance is harnessing its power to look beyond the information provided by companies seeking capital from financial institutions. For example, one growing use of AI is assessing greenwashing by comparing company disclosures with external data. As per the latest Global Sustainable Investment Review (GSIR) issue, greenwashing is a growing risk for sustainable financing.

Identifying greenwashing is an area of focus of the Natural Language Processing for Sustainable Finance Programme (NLP4SF), a collaboration between the Oxford Sustainable Finance Group and the University of Zurich's Department of Banking and Finance. The programme identifies discrepancies between a company's sustainability claims and results by harnessing the power of natural language processing (NLP) to compare company-provided information with actual activities.

Another critical area where AI is proving to be of value is in climate change risk modelling. In the previously mentioned GSIA report, climate change was the most vital ESG issue reported by money managers (across US$3.4 trillion in assets).

For example, in an analysis requested by the Federal Reserve, Reuters reported that CitiGroup modelled that the group faced potential loan losses of over US$10 billion over ten years if climate change efforts accelerated such that greenhouse gas emissions were reduced to zero on a net basis by 2050. This was US$3 billion more than the estimated US$7 billion losses if there was no acceleration in climate change efforts.

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Companies recognise this and are reshaping their communications accordingly — avoiding words commonly perceived negatively by AI algorithms and issuing communication utilising speech patterns and emotions that are positively analysed by these algorithms."

There are many more examples of how value can be generated through the intersection of AI and sustainable finance. Companies recognise this and are reshaping their communications accordingly — avoiding words commonly perceived negatively by AI algorithms and issuing communication utilising speech patterns and emotions that are positively analysed by these algorithms.

However, AI is not risk-free. The typical black-box nature of AI tools is one of the biggest criticisms. Data quality, bias in the algorithms, and ethical considerations are some of the other challenges. Notwithstanding the issues, using AI in sustainable finance is a transformation that will shape a very different financial landscape than today. ◙

Having retired early from corporate roles, Dr Angelica Lim indulges in her passions for writing and travelling. She is also an investor, a lecturer at the Monash University Malaysia School of Information Technology, and a member of the Technical Advisory Panel to the Sustainable Finance Institute Asia.

DIGITAL TECHNOLOGIES AND CLIMATE CHANGE

AS THE EFFECTS OF GLOBAL WARMING ARE FELT, ADAPTATION AND ADJUSTING FROM WITHIN THE INDUSTRIES ARE UNDERWAY, INCLUDING REDUCING THE NEGATIVE IMPACTS BY EXPLOITING THE HEIGHTENING OPPORTUNITIES THAT GROW WITH IT.

FOURTH LEAP

By Dr Thomas Tang

THE world is getting hotter, and the incidences of sea level rise, severe weather, storms and droughts have increased significantly and rapidly.

Climate change is responsible for this. The global cost of climate change damage is estimated to be between US$1.7 trillion and US$3.1 trillion per year by 2050, covering the cost of damage to infrastructure, property, agriculture, and human health. Greenhouse gases cause warming in the atmosphere, the principal factor behind climate change.

Although there are different types of greenhouse gases, carbon dioxide is the most recognised – it comes from burning fossil fuels. So, with the urgency to address climate change, can we deploy digital solutions as a panacea? Where do we begin?

Mitigating Climate Change
Mitigation — which involves reducing carbon emissions to slow or stop climate change — is achieved by using less energy or replacing fossil fuels (coal, gas, and oil) with zero-emission sources like renewable energy (solar, wind, geothermal, tidal).

Digital technology such as IoT and Smart Systems can improve energy efficiency in buildings – responsible for 37% of global carbon emissions - through innovative heating, air-conditioning, lighting, and automated systems, optimising energy distribution, automating building operations, and improving performance. Ultimately, a smart building is represented by an automated system linking all the various systems with a central processing unit, sensors and data monitoring to evaluate the building's performance.

Another means of mitigation is through harnessing clean energy by applying digital technologies to control the electricity supplied and distributed to users through smart grids; smart grids can facilitate the distribution of renewable energy by providing real-time information on the system's performance.

An excellent example of a smart grid is San Diego Gas & Electric. It was one of the first companies to partner with Google for their SmartMeter initiative, allowing power users to connect their smart meters to the Internet and track their power usage. About 1.4 million smart meters have been installed around the region.

Drone deployment to build 3D models of forest surfaces to capture information about tree health, height, biomass, and other factors provides an estimation of carbon storage quantities that can be used to determine long-term implications.

Data centres control the data to run numerous user operations, and their growth is anticipated to be exponential in the coming decade. Despite being invaluable to smart cities, data centres are notorious for having high cooling loads to maintain servers and other temperature-sensitive equipment. Hence, digital and AI-based solutions are crucial in controlling a data centre's cooling facilities and optimising energy consumption.

Regarding natural resources, drones have been deployed to build 3D models of forest surfaces to capture information about tree health, height, biomass, and other factors. This, in turn, provides estimates of carbon storage quantities that can be used to determine long-term implications.

A paper by the University of Tennessee shows how drone remote sensing can improve conservation management by compiling comprehensive ecological inventories in areas with high conservation potential to establish a baseline for long-term management.

Adapting to a Warming World

Adaptation is concerned with adjusting to the effects of climate change to reduce the negative impacts and exploit the opportunities. Digital technologies can play a significant role in this. For example, early warning and disaster management systems can be established by circulating weather information gathered through the use of mobile phone data to access real-time and current information. With this information, cities can deliver early warnings to communities at risk of climate-impact events.

Mobile apps can also enhance food security and support the agriculture sector by delivering weather and climate information, e.g., smart agricultural production and micro-level drought preparedness.

SOME LATEST EFFORTS:

In China, policymakers are turning to technology solutions to increase crop outputs in rural areas, decrease manpower needs, and optimise farming supply chains. Farmers are adapting 5G network capabilities, cameras, smart sensors, and drones into farming practices, which has unlocked new industry opportunities for big-tech companies such as Alibaba, Pinduoduo, and Netease.

In January 2020, in Davos, Refinitiv and the World Economic Forum spearheaded the formation of the Future of Sustainable Data Alliance (FoSDA), a multi-member alliance to address the climate crisis from a data perspective and foster collaboration in financial markets. FoSDA believes investors need reliable, decision-ready data to invest confidently in sustainable economic activities for climate adaptation.

Vital steps to harnessing digital technology (A report by the World Economic Forum)

◆ Open-source data and tools foster a more inclusive and transparent approach to addressing the challenges posed by climate change, encouraging innovation and creativity.

◆ Standardisation, interoperability, and transparency enable compatibility among diverse technologies and data sources, creating a coherent ecosystem for collaboration and data exchange between diverse stakeholders.

◆ Access to technology is key to empowering marginalised communities, especially in Global South geographies, so that the tools needed for informed decision-making and resilience in the face of climate challenges are available.

◆ Funding for climate technology, especially adaptation, is falling short of the levels needed to prepare for new climate risks. This financing gap must be bridged to support continued innovation in new technologies and resilience building.

◆ Collaboration between technology leaders and governments must be enhanced through stronger demand signals from government and industry adoption of longer time horizons for returns on investment.

◆ Climate intelligence must be translated into climate action. Policymakers need to leverage these insights to develop and implement policies that better protect their populations from climate risk.

The potential for applying digital technologies to address climate change is enormous.

Data is Key

Data-driven and digital technologies can equip leaders and communities with unique capabilities particularly suited to support climate mitigation and adaptation efforts.

Access to the potential of digital technologies in addressing climate change and the data and information offered can help governments shape policy and regulations and companies build climate-friendly business models. For the individual on the street, knowledge is king, and as awareness grows, we will likely see a change coming not just from the top but from the bottom as well. ◘

Dr Thomas Tang is the CEO of PJ-Sustainability Consulting. He is an entrepreneur, a passionate writer on sustainability and an advocate for a better world.

BUILDING A SUSTAINABLE FUTURE: HOW AI AND ESG ARE TRANSFORMING SMEs

WE AS A SOCIETY ARE BECOMING MORE ENVIRONMENTALLY AND SOCIALLY CONSCIOUS, THEREFORE, INTEGRATING AI AND ESG PRINCIPLES IS VITAL TO GAIN ADVANTAGES AND IMPROVE BRANDINGS.

FOURTH LEAP

By Elain Lockman

Adopting sustainable practices and digital technologies, specifically AI, is increasingly essential for SMEs to remain locally and globally competitive.

SMALL and Medium Enterprises (SMEs) and entrepreneurs play a crucial role in driving Environmental, Social, and Governance (ESG) and digital transitions due to their significant impact on the economy, fostering innovation, and their combined ESG footprint. Adopting sustainable practices and digital technologies, specifically Artificial Intelligence (AI), is increasingly essential for SMEs to remain locally and globally competitive. By prioritising ESG practices, businesses can build a competitive advantage and enhance their brand image.

However, many face difficulties transforming their business models and investing in these transitions. Imagine running a small or medium-sized business. You have big dreams but face tough competition, limited resources, and the constant pressure to stay ahead. What if there was a way to make your business more sustainable, responsible, and successful? Enter the world of AI and ESG principles.

The Power of AI: A Helping Hand for SMEs

AI is becoming an integral part of our everyday lives, bringing about rapid changes. While it presents thrilling opportunities, it can also be somewhat daunting. According to a report by Accenture, AI has the potential to increase productivity by up to 30% in some sectors, leading to cost savings of up to US$ 140 billion by 2025. An MIT Sloan Management Review study found that companies that adopt AI are more likely to outperform their peers regarding profitability and revenue growth.

Meet Sarah, the Shop Owner. Sarah runs a small clothing boutique. She loves fashion, but managing inventory, keeping customers happy, and staying profitable is a daily challenge. Then, she hears about AI.

◆ **AI as the Ultimate Assistant.** Sarah discovers AI-powered tools that simplify data analysis and can predict which clothes her customers will want next season. These tools analyse past sales data, market trends, and weather forecasts. With this insight, Sarah can make an informed decision regarding design preferences and trends and order just the right amount of stock, reducing waste, saving money, and improving planning.

◆ **Enhancing Customer Service, Satisfaction and Loyalty.** AI chatbots on websites handle most of Sarah's customer queries and learn from interactions to improve over time. This boosts efficiency and enhances customer satisfaction, making AI a valuable tool for SMEs. AI also helps Sarah understand her customers better. By analysing purchase history and preferences, AI suggests personalised offers for each customer. This makes her customers feel special and keeps them coming back.

◆ **Automating the Mundane.** Sarah used to spend hours answering customer inquiries and managing invoices. Now, AI chatbots handle customer questions, and AI-driven software handles invoicing and financial management. This frees up Sarah's time to focus on what she loves – designing new collections.

◆ **Making Quality Content Creation Easier.** Creating content, from copywriting to design, takes work. It requires special skills and can be time-consuming. With AI tools like ChatGPT, DALL-E 2, and Canva, Sarah can speedily produce quality marketing and promotion content for her blogs and marketing campaigns with less effort than before.

Currently, the most talked-about advancement in AI is generative AI. Generative AI is AI that can create - from words and images to videos, music, computer applications, and even entire virtual worlds. Generative AI tools enable SMEs to produce detailed data analyses of their operations quickly, create personalised business strategies, develop new product concepts, and design custom promotional materials in seconds. These are just a few examples; the possibilities are almost endless.

Embracing ESG: Doing Good While Doing Business

The Alliance Bank Malaysia Berhad's 2023 ESG survey report, ESG Insights from Malaysian SMEs: Building A Better Future Together, revealed that three out of five SMEs believe embedding ESG practices in their business will create long-term value, build a strong workforce and increase business opportunities

The Magic of Combining AI and ESG

For SMEs, achieving profitability and sustainability can feel like a juggling act. However, the magic of combining AI and ESG principles offers a powerful solution.

Due to resource constraints, implementing sustainable practices has traditionally been a hurdle for SMEs. Here's where AI steps in as the great equaliser. Its data-crunching prowess can analyse operations, pinpoint areas for waste reduction, and optimise resource use. This translates into immediate benefits for SMEs - cost savings through efficient processes, a smaller environmental footprint, and a more robust ESG profile.

This profile is increasingly important as consumers and investors become more environmentally and socially conscious. The magic does not stop there. AI can automate tedious tasks related to ESG reporting,

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> **SMEs often struggle with ESG adoption due to a lack of understanding, knowledge, expertise, internal support and financial resources. However, fear not! Today, these can be addressed with affordable and accessible AI tools.**

freeing up valuable time and resources for SMEs. This allows them to focus on core business activities while demonstrating their commitment to sustainability. By leveraging AI to streamline ESG efforts, SMEs can compete effectively with larger companies and attract investors seeking businesses with strong ESG credentials.

In essence, AI and ESG have become potent concoctions for SMEs. By embracing this combination, SMEs can transform from sustainability laggards to nimble leaders. They can positively impact the environment and society while achieving long-term growth and success. This paves the way for a future where small businesses are profitable and responsible stewards of our planet and society.

AI can identify patterns and make precise predictions in order to use resources more efficiently and minimise environmental impact.

Meet John, the Eco-Friendly Entrepreneur. John owns a restaurant. He cares about the planet and wants his business to be responsible. He learned about ESG principles and integrated them into his company's operations.

◆ **Being Environmentally Responsible.** John uses IOT and AI to monitor his restaurant's energy consumption. AI-powered systems identify areas where energy is wasted and suggest improvements. By optimising energy use, John reduces his company's carbon footprint and saves money on utility bills.

◆ **Demonstrate Social Responsibility Practices.** John believes in treating his employees well. He uses AI tools to ensure fair labour practices, monitor working conditions, and provide continuous learning opportunities. Happy employees are more productive and loyal, which is excellent for business.

◆ **Reducing Food Waste whilst Supporting the Underprivileged.** John uses AI to predict which products will sell and when. This helps him order the right fresh produce, reducing food waste. Any surplus is donated to local charities, aligning with his ESG goals – killing two birds with one stone.

◆ **Supporting Local Businesses.** John sources products from local farmers to support the community and promote sustainability.

◆ **Practising Good Governance.** John understands that transparency builds trust. He implements strong governance practices, such as clear policies and transparent reporting. This not only attracts investors but also makes his customers trust his brand.

The magic of combining AI and ESG principles offers a powerful solution.

In this ever-changing world, SMEs like Sarah's Boutique and John's Restaurant can thrive by embracing AI and ESG principles. These tools and practices make businesses more efficient and responsible, ensuring long-term sustainability and success. So, if you're running an SME, consider taking a page from Sarah and John's book. Embrace AI to streamline your operations and use ESG principles to build a responsible and sustainable business. Your future self – and the world – will thank you. O

The Road Ahead

While AI and ESG offer incredible benefits, they come with challenges. SMEs must ensure data privacy and security, invest in employee training, and manage the costs of implementing new technologies. However, the long-term rewards make these efforts worthwhile.

Elain Lockman, CEO of Ata Plus, has extensive experience in government-linked organisations and start-up businesses, specifically in the areas of management & operations (business strategy, business development, stakeholders relationship management [government, corporates & influencers], branding, marketing and corporate communications).

CYBERSECURITY IS NOT SOLELY ABOUT TECHNICAL EXPERTISE

THE DEMAND FOR PRACTITIONERS IS EXCEPTIONALLY HIGH TODAY, AND THEIR ROLES ARE CRITICAL IN MANY INDUSTRIES.

FOURTH LEAP

By Elsie Low

I recently read an article that a leading consulting firm launched an internal training academy to develop their consultants' skills so that they can think both business and technology.

It is a good move, as many organisations recognise the challenges in today's dynamic work environment, especially when they need to integrate newer and younger employees. These challenges often stem from a lack of mutual understanding of the leader's needs, expectations, culture, processes, and norms. Vice versa, the employees need clarity on their roles, responsibilities, and performance expectations, especially from the business and management aspects. Most new employees may have insufficient exposure to the organisation's operations, understanding of the industry needs, and market dynamics that hinder their ability to grasp the organisation's bigger picture.

What does the above have to do with cybersecurity?

A lack of understanding of the organisation's business and operational system can lead to risking the business in terms of cybersecurity. We all know that cyberattacks are rampant today. They can lead to operational risk and business disruption without a mitigation plan.

Cyberattack impacts on business:

◆ **Financial loss** – which mainly contributed from data breaches, theft, or fraud.

◆ **Operational disruption** – may result from a lack of robust security measures, leading to business downtime and lost productivity.

◆ **Loss of intellectual property rights** – This may be due to a lack of controls to safeguard business valuable trade secrets, patents, and proprietary information.

◆ **Non-compliance penalties** – due to failure to comply with industry regulations, thus creating unnecessary penalties and business disruption.

◆ **Reputation damages** – security breaches can tarnish an organisation's reputation and erode the trust of investors, customers, suppliers, and partners, destabilising the entire business ecosystem.

While most organisations have cybersecurity policies, effective cybersecurity is more than just about technical proficiency. It requires a deep understanding of how security breaches can disrupt the entire business ecosystem.

How can organisations mitigate this situation?

To help the cybersecurity practitioner assimilate into the business ecosystem, it is essential first to understand the fundamentals of how each organisation operates. Without this understanding, practitioners might run heedlessly, thus overlooking many critical aspects of cybersecurity and its threat.

To grasp an organisation's structural operation, consider three standard organisation management models, as Julian Birkinshaw and Jonas Riddertrale described in their book Fast/Forward — Make Your Company Fit for the Future.

◆ **Bureaucratic Model** – Practised since the industrial age, this Model is characterised by hierarchical structures, procedural, and compliance driven. They appreciate structure, compliance, and clear communication. Commonly practised by Government, Healthcare, Financial Services industries and others.

◆ **Meritocratic Model** – Emerged during the information age; this Model emphasises performance, innovation, and being result-driven. Therefore, they practice enhancing skills, performance, and results. Most often practiced by technology companies, consulting and academia.

◆ **Adhocracy Model** – This model is gaining traction nowadays, as it is a flexible and adaptive model that encourages innovation and collaboration across teams. Therefore, these organisations are flexible, dynamic and creative. Usually practised by startups, creative research and development industries.

In this era, employees must be equipped with a deep understanding of how security breaches can disrupt the entire business ecosystem.

How does the Management Model impact an organisation's cybersecurity?

It takes an experienced individual to assess the organisational structure and determine the management model. Younger and new employees may struggle to grasp this without sufficient experience. Understanding the organisation management model helps one to comprehend how decisions are made, the processes adhered to, the leadership charters, and how organisational culture shapes employees' motivation.

For instance, smaller and larger organisations operate differently. Smaller organisations may have a more generalised team with individual employees handling multiple tasks and roles, whilst larger organisations often have specialised roles, allowing employees to focus on specific tasks. Therefore, cybersecurity practitioners and professionals must tailor their strategies to the organisation's size, management practices, and culture to effectively plan, implement, and manage their cybersecurity governance and controls.

The demand for cybersecurity practitioners is exceptionally high in today's landscape, and their roles are critical in many industries. This is due to the increasing prevalence of cyber threats, ongoing digital transformation, stringent regulatory requirements, and the need for business continuity.

The emphasis of cybersecurity tracks should not be solely on technical specialisation in specific domains alone, but understanding the business ecosystems is fundamentally essential. This will enable practitioners to communicate with leaders effectively and stakeholders, make informed decisions, integrate security into business processes without disrupting the operations, and, most importantly, protect the organisational assets. ◯

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# THE TRANSFORMATIVE POWER OF ARTIFICIAL INTELLIGENCE ACROSS INDUSTRIES

INTEGRATION OF AI IN DIVERSE APPLICATIONS ACROSS VARIOUS SECTORS SHOWCASES ITS TRANSFORMATIVE POTENTIAL TO REVOLUTIONISE EXISTING BUSINESS PROCESSES.

FOURTH LEAP

By Sam Kon

SINCE Alan Turing introduced computer machine learning in the 1950s, the journey of artificial intelligence (AI) adoption has been marked by a gradual evolution until the groundbreaking launch of ChatGPT back in 2022. It sent shockwaves worldwide and accelerated the embrace of AI technologies. This seismic shift highlighted the role of AI in reshaping the contemporary business landscape.

A recent 2024 report jointly published by Microsoft and LinkedIn shed light on the surging adoption of AI among Malaysian employees. Interestingly, hiring trends have also pivoted, with a remarkable 65% of Malaysian business leaders expressing a preference for candidates equipped with AI skills over the appeal of experienced candidates without AI skills.

The groundbreaking launch of ChatGPT in 2022 brought its foundation into light: Artificial Intelligence (AI).
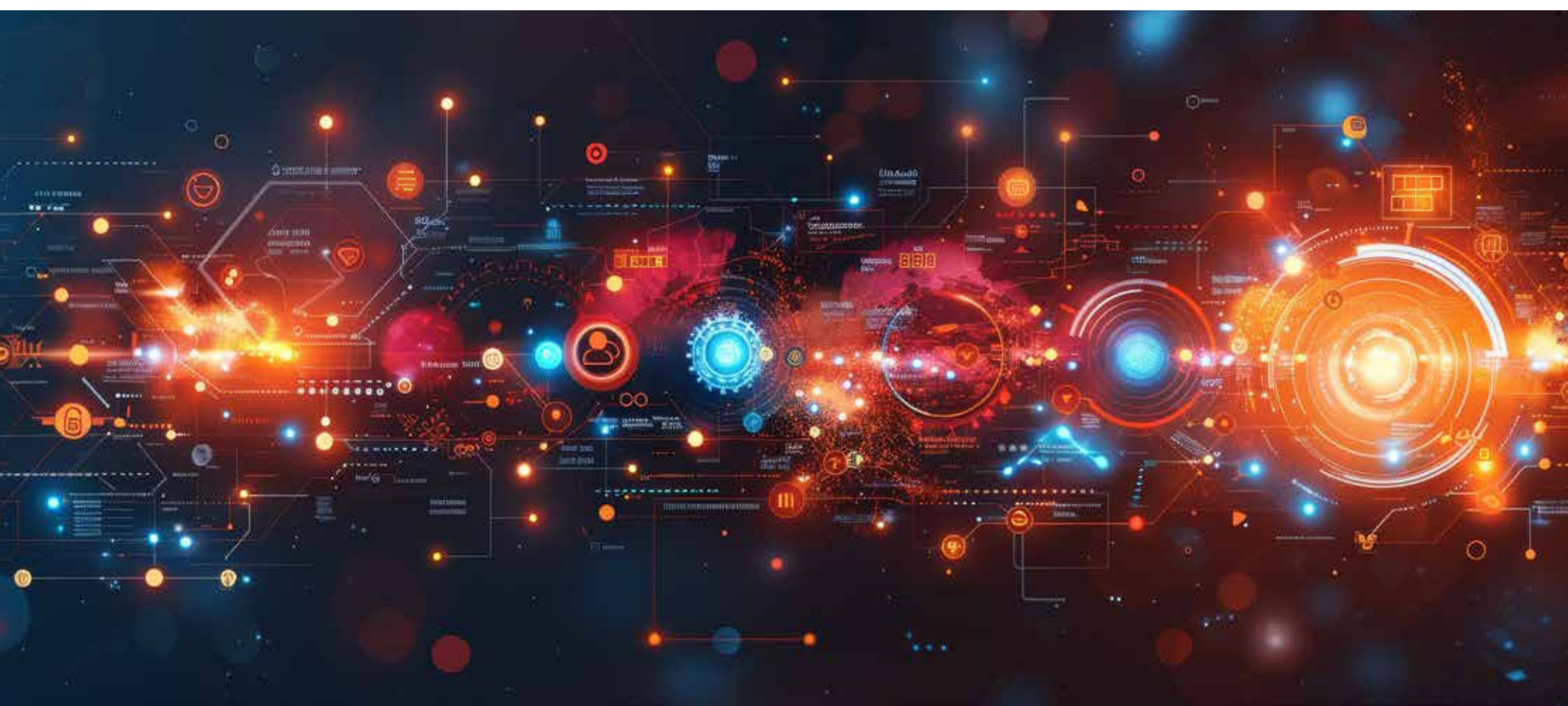
This article ventures into the diverse applications of AI that have been integrated across various sectors, showcasing its transformative potential to revolutionise existing business processes, enhance safety, and propel business growth.

Personalised Customer Experience

At the core of Netflix's technological prowess lies its sophisticated recommendation system, which AI fuels. Netflix's AI role extends to content optimisation, facilitating seamless categorisation and tagging of shows and movies for enhanced discoverability. More fascinating is the AI's function to personalise recommendations. Consumer Research suggests that a typical Netflix member loses interest after 60 to 90 seconds of choosing.

The AI gathers a plethora of viewers' data such as watch history, ratings and preferences; it can analyse a plethora of data, which allows it to suggest content that has higher relevancy to each individual.

AI and Netflix
By weaving AI algorithms into its operations, Netflix continuously fine-tunes its content strategy, identifies emerging trends, and anticipates viewer preferences, ensuring a dynamic and bespoke viewing journey for its diverse global streaming audience. This strategic utilisation of AI amplifies its viewer engagement and retention and solidifies customer loyalty. Personalised entertainment experiences have become not just an AI feature of Netflix but a hallmark of its unparalleled streaming service.

Safeguard Financial Transactions

In the financial sector, security is a paramount concern, and Visa has embarked on a journey to bolster its defences through the strategic deployment of AI, too. Leveraging AI, Visa enhances its fraud detection capabilities by conducting real-time analysis of transaction data, enabling swift identification of suspicious patterns and proactive detection of potentially fraudulent activities.

At the heart of Visa's innovation in fraud prevention lies the Visa Advanced Authorisation (VAA) system. Through cloud-based fraud risk models, VAA assesses transaction risks with lightning speed, facilitating the rapid approval of legitimate transactions while flagging potentially fraudulent ones for further investigation. A consumer may trigger a fraud alert during a high-value international transaction with their Visa card in a real-world scenario.

Despite the transaction's authenticity, the AI-powered VAA system swiftly initiates a verification process that analyses over 500 unique attributes within milliseconds. Upon confirming the cardholder's identity, the transaction sails through, showcasing the system's agility and precision in thwarting unwanted fraudulent activities.

Reshape User Experiences

In the travel industry, ratings and reviews are essential in deciding whether to visit tourist attractions, which restaurants to dine at, or even where to stay for the next holiday.

Agoda, the online travel agency, has embarked on a transformative quest to enhance user experiences by harnessing the capabilities of AI within its review drafting process. Every time customers have booked an accommodation with Agoda, they are prompted to leave a review of their experience. Most online review processes can be daunting as it requires the user to think and write.
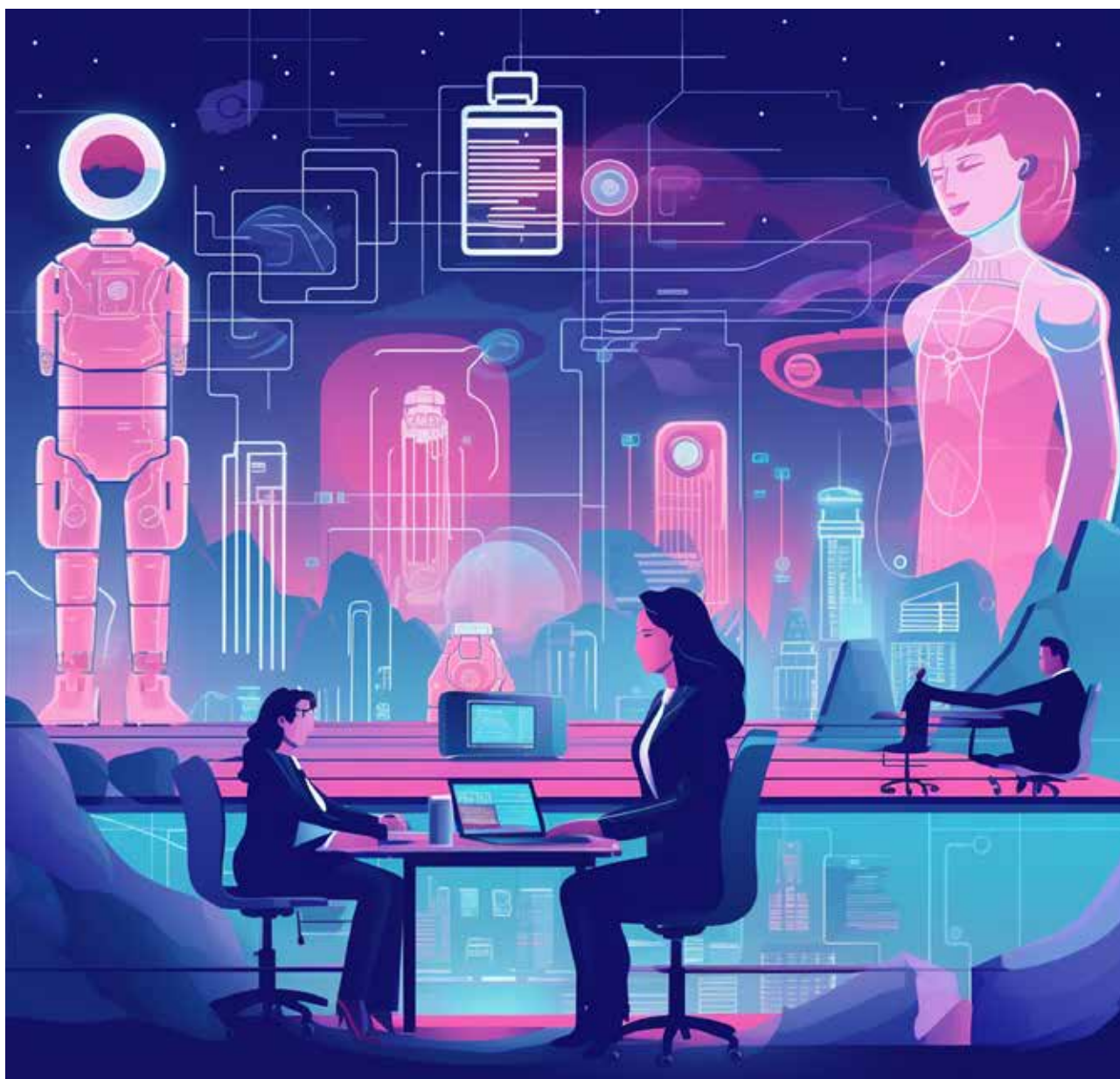
As AI exposure heightens and widens, we see many new hiring trends, preferring candidates with parallel knowledge of technologies.

However, Agoda has streamlined this entire process. With just a few simple criteria checks coupled with generative AI to draft reviews, customers can leave reviews "almost effortlessly".

Furthermore, Agoda's AI functionalities, such as automated sentiment analysis, content summarisation, language translation services, a review recommendation engine, and quality assurance checks, have not only streamlined Agoda's platform efficiency but also increased the relevance and readability of reviews, fostering a more immersive and informative user interface. This has driven Agoda to new heights of excellence within the online travel industry.

The case studies above unravel the intricate tapestry of AI's impact, illuminating how these advanced technologies, used correctly, are not merely tools but catalysts for innovation, driving businesses towards heightened competitiveness and sustained growth in an ever-evolving business world. AI is inevitable, like the industrial revolution. The key to harnessing AI's capability to stimulate growth should not be limited to only traffic conversion to sales and revenue. We at BIC work with clients' end-to-end business processes, identifying and enabling AI integration, which catapults their customers' experience from good to great.

The deployment of AI has yet to be at its pinnacle point. What determines AI's full functionality depends very much on the data it is fed. Streamlining business processes should remain pivotal in business growth or survival. ⊙

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FINANCIAL GIANTS GEAR UP TO COMBAT CLIMATE RISKS

A STUDY REVEALS REGULATORY COMPLIANCE AS THE TOP CHALLENGE FOR ESG INTEGRATION, WITH SIGNIFICANT INVESTMENTS PLANNED FOR EMISSIONS DATA AND CLIMATE RISK SOLUTIONS.

AS the climate crisis intensifies, financial institutions worldwide are ramping up their investments in Environmental, Social, and Governance (ESG) technologies. According to a recent BCT Digital and Chartis Research survey, over 72% of global financial institutions are set to invest up to US$500,000 or more in ESG technology to enhance climate risk solutions. These investments focus on emissions data, transitional climate risk modelling, and regulatory reporting tools.

The "Chartis Market View: ESG and Climate Risk Survey" gathered insights from 77 ESG and climate risk practitioners across financial institutions with assets under management ranging from US$1 billion to US$500 billion. Participants represented APAC, North America, Europe, and the MENA region.

Strategic Shifts
Most firms review their ESG strategies quarterly, with North American and European institutions more likely to exceed the US$500,000 mark in annual ESG spending. Next year's investments are projected to hone in on data management frameworks that span the entire value chain, a crucial step in addressing the complex compliance landscape.

Investment Priorities: Financial institutions plan to allocate significant resources towards ESG data and scoring products, governance, risk management and compliance (GRC) solutions, and tools for regulatory compliance and reporting.

Regulatory Compliance: Over half of the respondents identified regulatory compliance as the most significant ESG-related challenge. This challenge is compounded by the lack of uniformity in ESG and climate risk reporting standards across different countries and regions, making consistent reporting a daunting task for multinational corporations.

Climate Risk Challenges: The main climate risk challenges highlighted include meeting regulatory stress testing expectations (67%), accurate greenhouse gas (GHG) accounting (56%), and integrating climate risk into operational product lines (50%).

Jaya Vaidhyanathan, CEO of BCT Digital, emphasised the need for integrated data management frameworks to navigate the compliance landscape effectively. "The disparity in ESG and climate risk reporting standards across regions poses a significant challenge. This survey provides valuable insights for financial institutions aiming to enhance their ESG and climate risk management frameworks," she stated.

Sid Dash, Chief Researcher at Chartis, added, "Having a fully integrated framework for data management across the entire value chain is crucial for compliance. Financial institutions must invest in robust ESG technologies to meet the growing regulatory demands and address climate risks efficiently. As the financial sector gears up for these substantial investments, the emphasis on ESG and climate risk technologies underscores the industry's commitment to mitigating climate-related risks and adhering to evolving regulatory standards. This strategic shift aims to protect financial assets and contributes to broader environmental sustainability goals.

This comprehensive approach to integrating ESG factors into risk management and investment decision-making processes marks a significant step towards a more resilient and sustainable financial ecosystem.

97% OF ORGANISATIONS GRAPPLE WITH IOT SECURITY CHALLENGES

INDEPENDENT SURVEY HIGHLIGHTS SIGNIFICANT FINANCIAL IMPACTS AND INCREASING CYBER THREATS.

A recent survey by Keyfactor and Vanson Bourne has shed light on the pressing security challenges organisations face using the Internet of Things (IoT) and connected devices. The report "Digital Trust in a Connected World: Navigating the State of IoT Security" reveals that a staggering 97% of organisations are grappling with securing their IoT and connected products to some extent. The findings also highlight that 98% of organisations experienced certificate outages over the past year, costing an average of over US$2.25 million each.

The financial burden of inadequate IoT security is not limited to certificate outages. The survey found that 89% of respondents' organisations operating IoT and connected products have been targeted by cyberattacks, incurring an average cost of US$250,000 per incident. Alarmingly, 69% of organisations reported increased cyber attacks on their IoT devices over the past three years. A notable example of this trend is the March attack on Amazon's Ring, which led to the exfiltration of sensitive customer data, including recorded footage and credit card information.

The findings of this survey, conducted by Vanson Bourne on behalf of Keyfactor and including responses from 1,200 IoT and connected product professionals across North America, EMEA, and APAC, highlight the urgent need for comprehensive IoT security solutions. Respondents with some responsibility or knowledge of IoT or connected products within their organisation included original equipment manufacturers (OEMs) and those using and operating connected devices.

Growth of IoT Devices: The proliferation of IoT devices within organisations continues unabated, with respondents reporting a 20% average increase in the number of IoT and connected products used over the past three years. This rapid expansion underscores the growing importance of robust IoT security measures.

Confidence in IoT Security: Despite the widespread adoption of IoT devices, confidence in their security remains low. The survey reveals that 88% of organisations agree that improvements are needed to secure their IoT and connected products. Within this group, 37% believe significant improvement is necessary, while 60% indicate that some improvement is required. Specifically, 40% of organisations strongly agree that they would benefit from using a Public Key Infrastructure (PKI) to issue digital identities on IoT and Industrial IoT (IIoT) devices.

IoT Security Budgets: Budgets allocated for IoT security are increasing year-over-year, with an anticipated rise of 45% over the next five years. However, a substantial portion of these funds – 52% – is at risk of being diverted to cover the costs associated with successful cyber breaches on IoT and connected products. This diversion of resources highlights the reactive nature of current IoT security spending, often aimed at damage control rather than proactive security measures.

Responsibility for IoT Security: The survey also reveals a split opinion regarding IoT security responsibility. Among respondents, 48% believe that manufacturers of IoT and connected devices should be at least primarily responsible for cyber breaches on their products. This division of responsibility underscores the need for clear accountability and collaboration between manufacturers and users to enhance IoT security practices.

Love in the Time of AI: Japan's Digital Cupid

IN the land where tradition meets cutting-edge technology, Japan has taken a futuristic approach to tackling loneliness with the innovative dating app, Loverse. This unique platform exclusively features generative AI, allowing users to form relationships with digital companions. Launched a year ago, Loverse has garnered over 5,000 users, mainly men in their 40s and 50s, who find solace in AI interactions without the emotional complexities of human relationships.

Chiharu Shimoda, a 52-year-old factory worker, found his match in Miku, a 24-year-old AI bot. After a string of unsuccessful real-life dates, Shimoda found the simplicity of AI companionship appealing. His routine with Miku mirrors that of any conventional relationship: morning greetings, workday luck wishes, and nightly chats about dinner plans and TV shows.

This app is not just a quirky anomaly but a response to Japan's significant social issues. The nation is grappling with a declining birth rate and increasing social isolation, particularly among the younger generation. Government data shows that two-thirds of men in their 20s are single, with 40% never having been on a date. In a bid to reverse these trends, the Japanese government is even investing in AI-powered matchmaking services to encourage real-life connections and boost the birth rate.

Loverse's creators, Samansa Co., aim to provide a safe space for emotional interaction, potentially easing users back into real-world relationships. As AI continues to blend into daily life, Japan's digital solution to loneliness might just be the unexpected Cupid of the modern age.

Shanghai's New Guidelines for Humanoid Robots

SHANGHAI has stepped into the future with the publication of China's first governance guidelines for humanoid robots. Announced at the World Artificial Intelligence Conference (WAIC) in July, these regulations aim to ensure that robots "safeguard human dignity" and "do not threaten human security." The guidelines also call for risk control measures, emergency response systems, and user training on ethical and lawful usage.

The guidelines were crafted by five Shanghai-based industry organisations, including the Shanghai Law Society and the National and Local Humanoid Robot Innovation Centre. They advocate for international cooperation, recommending the creation of a global governance framework and an international think tank dedicated to humanoid robots. Tesla grabbed attention at WAIC by showcasing the second generation of its Optimus robot, developed with its own neural network and computer vision technology. Although still not in full-scale production, Optimus drew significant interest despite being displayed behind glass and remaining inactive. Most of the 18 robots showcased were from Chinese companies, reflecting the country's rapid advancements in AI and robotics.

Among these was the Kuavo robot from Shenzhen-based Leju Robot, which operates on an open-source version of Huawei's HarmonyOS. China aims for mass production of humanoid robots by 2025, with ambitions for global leadership in the sector by 2027. The Ministry of Industry and Information Technology (MIIT) plans for these robots to drive economic growth in industries such as healthcare, home services, agriculture, and logistics.
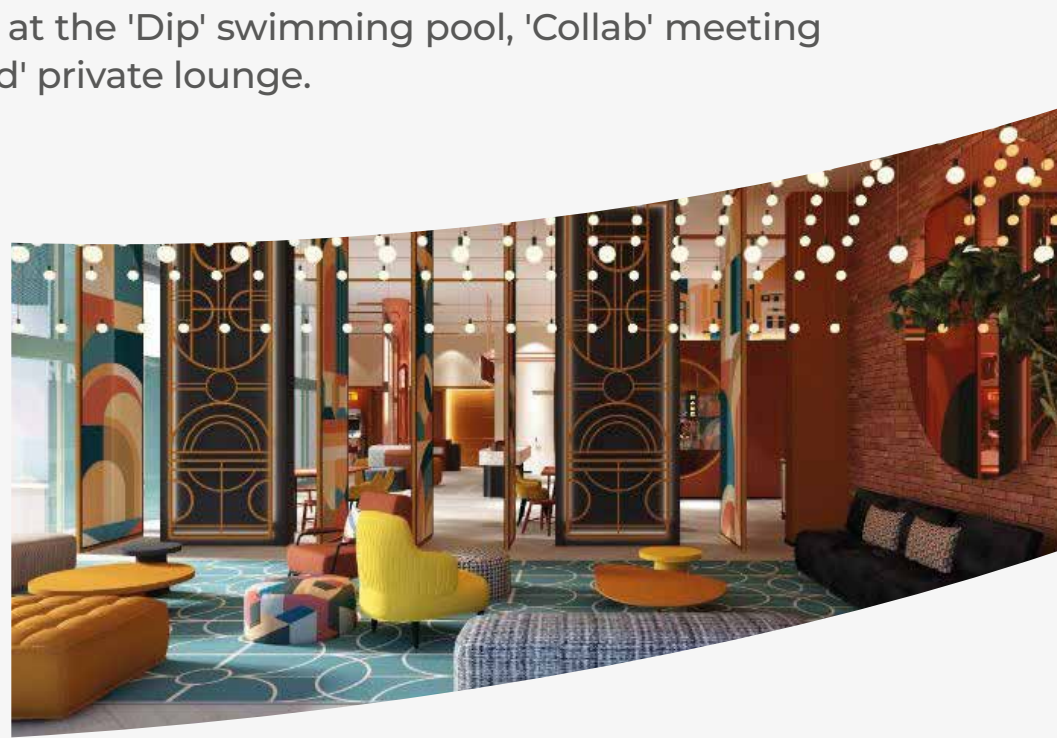
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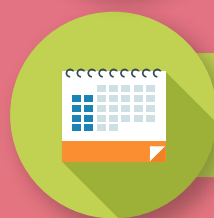Courses for almost any topic in any industry!

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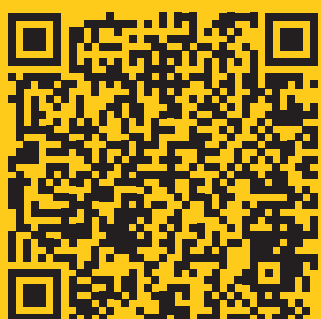# WHERE CONTENT MEETS CONTEXT

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