# Asian ICT Council Newsletter

July 2023

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# Message from the Asian ICT Council Chairman

Dear Friends and Colleagues,

We previously quoted in the February issue of CACCI Profile a World Economic Forum article on "The 3 strategies for delivering digital transformation in the Asia-Pacific". Aside from strategies, we shall also put digital transformation in action by implementing the programs that I call "Asia-Pacific Connect in ICT Capacity Building and Opportunities Finding" which include Digital Skilling, TTT (Techs Trends Tracking), and B3M (Business Mapping, Matching, Making).

As far as Digital Skilling, we organized a webinar last April to share the digital skills and digital talents for working, exchanging and shifting between countries in the region. The mutual recognition of certificates for digital talents in Asia was also discussed. Moving forward, we shall keep exploring the need for digital skills in the region, and the development of StartUps, creativity, innovation in digital economy, as well as the cooperation for strengthening and building up ICT capacity.

In TTT (Techs Trends Tracking), it is important to track the ICT techs and trends and share these with each other. We would like to invite experts from CACCI member economies to share their insights and related programs, plans, focus, needs and development in their respective countries. The ICT cooperation and opportunities for B3M (Business Mapping, Matching, Making) therefore can be explored and found as well.

I wish to thank our CACCI Secretariat for their efforts in publishing this newsletter, which includes much information on techs & trends such as AI, Internet, Big Data, and Smart applications. We will certainly organize more related discussions on these topics for our members in the future.

The Asian ICT Council Newsletter needs your input and participation, and any comments or suggestions are highly appreciated. Thanks for your support!

***DENNIS HU***
President, Foundation for Commerce and Culture Interchange (FCCI)
Chairman, Asian ICT Council

# CACCI Holds Webinar on Cross-Border Digital Skilling


CACCI, in cooperation with the Foundation for Commerce and Culture Interchange (FCCI), Computer Skills Foundation (CSF) Taiwan, National Institute of Electronics & Information Technology (NIELIT) India, and Digital Skills Organisation (DSO) Australia, held a webinar on "Cross-Border Cooperation in Digital Skilling and Innovation" on April 18, 2023.

Cooperation across countries in training for digital skilling and innovation has become a global trend and is fast becoming a necessity. In the Asia-Pacific region, the standards for ICT skills are set per country, with certifications provided by national organizations. There are no regional or international standards currently in place.

The webinar discussed what the current standards are for digital skills across different countries, and what can be done to facilitate cross-border skilling by addressing the following questions:

- Who is offering the services and programs in this area?
- What are the current issues being encountered?
- What can enterprises do to improve the recruitment of a digitally skilled workforce?
- How can we bridge the digital divide in education and improve digital literacy?
- How can we enable digital skilling and innovation on a regional or international level?

Moderated by Dr. Dennis Hu, Chair of CACCI's Asian ICT Council and President of the Foundation for Culture and Commerce Interchange (FCCI), the webinar featured as speakers Dr. J.B. Xiao, Secretary-General of Taiwan's Computer Skills Foundation (CSF); Ms. Alison Wall, Chief of Staff of Australia's Digital Skills Organisation (DSO); Dato Palani, Chair of the ASEAN Future Workforce Council

based in Malaysia; and Sh. Subhanshu Tiwari, Executive Director of India's National Institute of Electronics & Information Technology (NIELIT). NIELIT Director General Dr. Madan Mohan Tripathi was originally slated to speak, but was ultimately unable to, and was instead represented by Sh. Tiwari.

The speakers each gave a 10-to-12 minute presentation introducing their respective organizations and detailing their capacities and services. This was followed by a panel discussion that featured panelists from the business or enterprise side, including Mr. George Abraham, Chair of CACCI's SME Development Council; Mr. Charly Gordon, Global Policy Lead for the International Chamber of Commerce (ICC), and Ms. Charmaine Leong, President of the Philippine Young Entrepreneurs Association (PYEA). The panel discussed the needs of digital skills for development in the Asia-Pacific region, programs for strengthening digital skills and innovation, and mutual recognition of digital skills for talents and HR in Asia, among other issues.

# Building an Internet for the future of Southeast Asia

*By Soon Ghee Chua, Carlos Oliver & Germaine Hoe of Kearney for Asia Tech x Singapore*

The Internet and its digital ecosystem have brought about a miraculous technological transformation in the 21st century, both globally and in Southeast Asia. Expanding access to all is crucial for the ongoing development and progress of modern society given the Internet's pervasive and influential presence in our daily lives.

Rapid technological growth has made the Internet one of the world's most valuable tools, especially in Southeast Asia, which leads the world in mobile Internet use. For example, people in Indonesia, Malaysia, the Philippines, and Thailand spend more than four hours a day using mobile Internet—exceeding the global average of three hours. In 2022, more than 460 million people in Southeast Asia used the Internet, with a penetration rate of 80 percent, according to ASEAN.org. Looking ahead, the Southeast Asia and Oceania region could see 29 percent more data traffic per smartphone per month (see figure 1). And over the past few years, Southeast Asia has become much more resilient, with the region's economy more robust and diversified than ever. Bridging the gap between China and the United States has

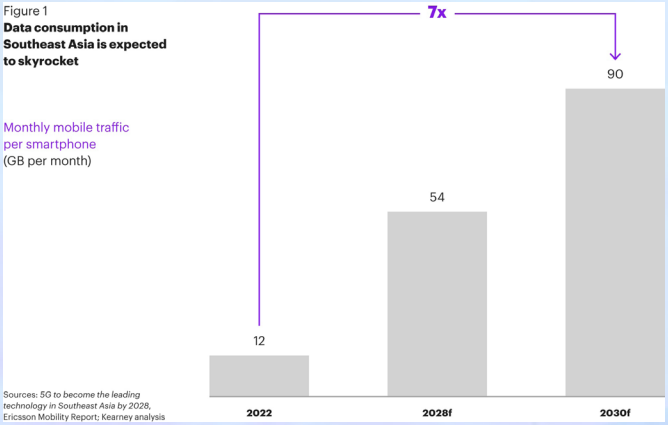



*Figure 1: Data consumption in Southeast Asia is expected to skyrocket*

also created new opportunities for trade and investment.

The importance of the Internet as a driving force behind Southeast Asia's economic growth and development cannot be overstated. The digital economy is growing rapidly at a rate of 17 percent, outpacing the United States (7 percent), Europe (10 percent), and China (13 percent). Indonesia, for example, has the highest digital economic value in Southeast Asia, with two decacorns (GoTo and J& T Express) and nine unicorns, including Traveloka and Ovo. And the e-payment industry is poised for rapid growth, with transaction values expected to reach somewhere between $600 billion and $1 trillion by 2030. These trends present major opportunities for businesses and governments to develop and enhance their digital infrastructure and payment systems to keep up with the region's growing demand for e-commerce and e-payments.

Furthermore, technology-leading Southeast Asian countries such as Singapore are seeing more use cases for advanced technologies, such as virtual reality, artificial intelligence, and autonomous vehicles, which are becoming crucial elements of the Internet and over-the-top services (OTT). In fact, the Internet of the future will serve a non-human market, with applications in areas such as the Internet of Things, smart cities, smart homes, connected vehicles, and wearables. Capturing sustainable business growth will require focusing on these markets.

***But the Internet revolution comes with challenges***

This transformation does bring challenges in terms of access and affordability as well as the penetration of fast Internet. Despite the progress made so far, about 20 percent of Southeast Asians still don't have access. Furthermore, accessibility to fixed broadband is uneven across the region. (Indonesia's fixed broadband penetration was as low as 18 percent in 2022, and Singapore's was more than 110 percent) The region is also generally behind other developed regions (Indonesia at 18 percent and the Philippines at 34 percent compared with the United States' 100 percent and South Korea's 115 percent). But on the positive side, Southeast Asia has a higher percentage of fibre for fixed broadband (Indonesia at 77 percent and the Philippines at 70 percent compared with only 21 percent for the United States and 88 percent in South Korea).

Likewise, Southeast Asia's 5G penetration rate is still below developed countries at about 4 or 5 percent, with only Singapore and Thailand having high rates at 23 and 21 percent respectively, compared with developed countries' 13 percent in 2022. One of the main reasons is that spectrum availability is a constraint in many Southeast Asia countries, with most having less mobile spectrum than developed nations such as Japan and the United States. In the overall low- and mid-band spectrum, Indonesia, Singapore, and Malaysia have 452 MHz, 825 MHz, and 840 MHz respectively, lagging Japan and the United States, which have more than 1,300 MHz. The lower amount of mid-band spectrum available in many Southeast Asia countries is attributed to the extensive use of the 3.5 GHz band for satellite connectivity in the region because of the favourable

propagation characteristics of the band.

Another challenge is the affordability gap for Internet services. Fixed broadband prices in Indonesia, the Philippines, Thailand, Vietnam, and Malaysia do not meet the affordability target of 2 percent of per capita income set by ITU/UNESCO in 2021 (see figure 2). In fact, according to ITU, the price of 1GB of data in Asia Pacific was higher in 2022 than it was in 2021. This disparity creates inequality and hinders the benefits of digital economies.

In addition, the challenge of sustainability has been exacerbated by the advent of 5G, which makes extensive use of power-intensive technologies such as massive MIMO. The ecological toll of Internet use is growing. In fact, the information and communication technology (ICT) sector accounts for 2 to 3 percent of global power consumption, and the amount of electronic waste reached 54 million metric tons in 2019—an increase of 44 million metric tons in only five years, of which around 7 percent comes from Southeast Asia.

Finally, geopolitical dynamics are creating a risk of bifurcation that could split the Internet in China and the West into separate, incompatible networks or infrastructure based on different standards, protocols, or governance models. If this happens, Southeast Asia—at the crossroads between China and the West—would be particularly impacted. As these issues persist, the likelihood of a divided Internet grows, which could create challenges for businesses and individuals who rely on a globally accessible Internet and could slow down innovation, making it difficult to achieve interoperability and interconnectivity between different parts of the Internet.

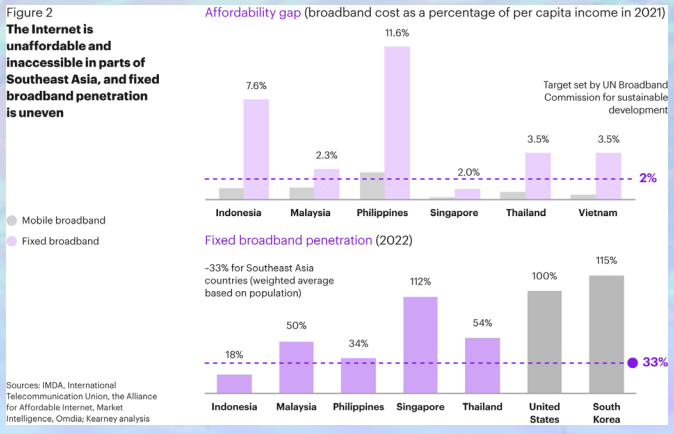



*Figure 2: The Internet is unaffordable and inaccessible in parts of Southeast Asia, and fixed broadband penetration is uneven*

***The Internet ecosystem is evolving from ISP-centric to multiple players with shared responsibilities***

Traditionally, local Internet service provider (ISPs) have been at the centre of the Internet, managing resources, providing access, and supporting a localized ecosystem. They have been responsible for managing scarce resources, including spectrum. Access is uneven, and local ISPs have been given a universal service mandate to maximize access. They have also been supporting national ICT and digital agendas and building in tech capabilities to counter the incumbency and scale advantages of large tech players from western countries. Most of this was fuelled by ISPs' profitability and margins.

However, this changed as ISPs saw their returns decline. From 2017 to 2022, Southeast Asia's telecommunication sector experienced declining growth of -2 percent compared with average GDP growth of 3.5 percent per year for the same period (see figure 3).

At the same time, costs rose faster than revenue, which chipped away at returns on investments. As a result, ISPs' ability to make investments has been constrained—threatening the Internet development in Southeast Asia and around the world. This means the Internet will no longer be an ISP-centric endeavour but a responsibility that must be shared by all actors in the Internet ecosystem: regulators, original equipment manufacturers (OEMs), ISPs, and hyperscale

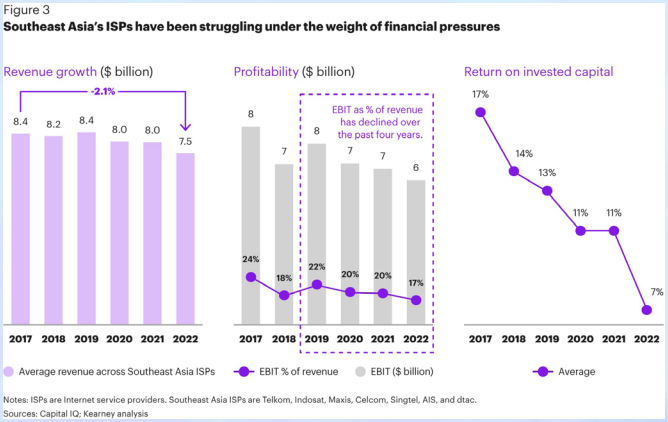



*Figure 3: Southeast Asia's ISPs have been struggling under the weight of financial pressures*

cloud and content service providers.

The thought leaders we spoke with also see resiliency and privacy as top priorities. The Internet should be reliable, safe, private, and secure, especially considering the escalating risks of cybersecurity breaches.

Fairness to all is seen as crucial to maintaining the Internet ecosystem. For the Internet to thrive in the long term, the benefits should be equitably distributed across all parties, and companies that make capital-intensive investments should see a return on their investments. And, of course, sustainability is a fundamental principle. The region must integrate environmental principles into the implementation and operation of the Internet, such as reducing electronic waste via a circular economy and promoting measures to achieve net-zero greenhouse gas emissions by reducing energy consumption and using renewable sources.

Making this vision a reality will require first getting the basics right. Most of the thought leaders we spoke with see the cost of infrastructure (5G sites, fibre, and data centres) as the most fundamental challenge. Ultimately, deploying this infrastructure will hinge on having a compelling business case, and cost is an important factor.

Leaders also say it's important to ensure that regulations don't constrain operational and business models or create higher rollout costs. Limited public resources such as spectrum should be made available to ISPs, and telcos will need to collaborate in a new environment with open standards.

Another obstacle that many leaders cite is legacy infrastructure and the difficulty of moving out because of write-offs and, more importantly, inertia from customers who are reluctant to switch over their services. Legacy infrastructure not only increases costs and makes the environment more complex; it also keeps obsolete energy-intensive infrastructure that serves only a small number of people. Other relevant factors that leaders pointed to include a lack of available talent and a lack of confidence on the business cases for new technologies.

### *Seven technology trends will shape the Internet in Southeast Asia*

New technology trends are shaping the Internet for the future globally. These trends

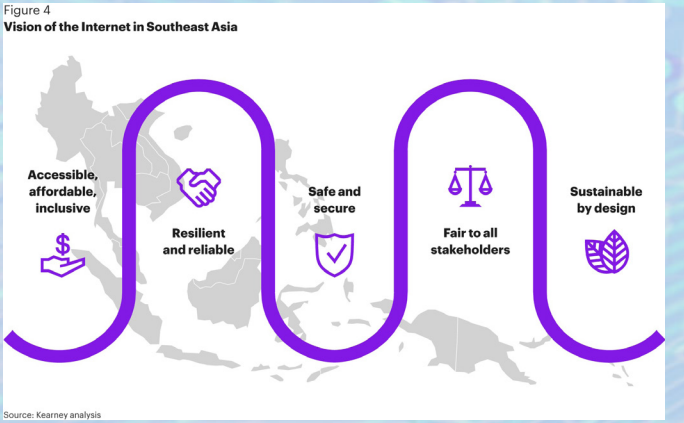



*Figure 4: Vision of the Internet in Southeast Asia*

will change the types of services that are delivered to end users, making them more real-time, immersive, and interactive. Our study reveals that seven technology trends are fundamental if the region hopes to make its Internet vision a reality in the next five years.

### *Cloud evolution and edge*

The most relevant trend, according to the thought leaders we spoke with, is

cloud computing's evolution to the edge and multi-cloud. Cloud computing is seeing an emergence of use cases in areas such as autonomous vehicles, telehealth, artificial intelligence, and virtual reality, and as a result, cloud is shifting to the edge, pulled by data gravity and the need for lower latency as well as a growing need for data localization and residency. This will require expanding the capacity of local data centres in non-hub countries such as Malaysia, Indonesia, and the Philippines, along with creating more small data centres in regional cities and ultimately rolling out multi-access edge computing (MEC). And as the cloud becomes more pervasive, more companies will want to use multiple cloud computing services from different providers.

***Network softwarization***

The cloud is even extending into the heart of the Internet—the telecommunications network infrastructure—as networks become software running on a hybrid cloud. This trend, which has gained traction around the world over the past five years, will soon become more widespread in Southeast Asia. In fact, it has already started in centralized functions at the core of the network (5G network cores are cloud-native today), and it is expanding through the edge with new technology paradigms such as Open RAN. This transition from hardware to cloud-native software helps ISPs become less capex-intensive to alleviate their investment constraints and introduce agile ways of working that reduce the time to market and offer more innovative services. Another advantage of the "softwarization" of the Internet is that it enables automation and the injection of AI. In the future, AI will become a more prevalent part of the Internet, not only for operations and marketing insights, but also for routing and switching data as the next step to software-defined networks. In the future, the networks that underpin the Internet will evolve from cloud-native to AI-native.

***Sustainability***

Sustainability has moved to the top of the C-suite agenda for OEMs, ISPs, and hyperscalers in Southeast Asia and around the world. For example, OEMs are manufacturing mobile infrastructure equipment with energy-saving features that offset the increase in consumption resulting from 5G. Green energy will become available to operators thanks to the vision of a pan-ASEAN power grid, for which the Lao PDRThailand–Malaysia–Singapore Power Integration Project (LTMS–PIP) is the first step. Other countries also have long-term plans for renewable energy, such as Indonesia's solar initiatives and Vietnam's efforts in wind and solar energy. Meanwhile, AI can help reduce energy consumption in data centres and telecom networks by optimizing heating, ventilation, and air conditioning (HVAC) and efficiently allocating resources on ISP and IT equipment by predicting load patterns. There is also a growing focus on developing more sustainable supply chains and creating a circular economy by reducing, reusing, and recycling electronic waste. Although sustainability is seen as essential, most of these trends could take three to five years to gain traction.

***API exposure***

The Internet of the future will also serve non-humans, and it's about much more than connectivity. Furthermore, ISPs are undergoing through a process of "platformization", evolving from traditional connectivity providers that offer a data pipe into platform business models that offer telecommunication APIs. This is achieved by implementing platforms that expose network functionality APIs to devices and third-party applications created by communities of developers who enrich the basic network functionality. This year has brought pivotal

progress on this front thanks to the launch of the GSMA Open Gateway initiative.

***Network slicing***

5G standalone—the full version of 5G—comes with one transformational innovation: network slicing. Network slicing is the ability to offer differentiated connectivity services with dedicated network resources: the slice. These services can be tailored to the specific needs of third-party applications that can selectively access and control the services or to specific customers who want a dedicated virtual 5G network. In addition, 5G and softwarization are boosting the emergence of private networks, where infrastructure can be more effectively scaled. These dedicated networks open the possibility for ISPs to escape commoditization, offer innovative new B2B2X business models, and foster innovation. We expect this trend to gain traction in Southeast Asia over the next two to four years.

***NTN convergence***

Non-terrestrial network (NTN) convergence is especially relevant for Southeast Asia, with its large rural, sparsely populated areas where mobile coverage is not economical. NTN convergence aims to integrate various NTNs (satellite) with mobile networks to provide seamless communication services. The 3rd Generation Partnership Project (3GPP), the standards body for mobile networks, has defined spectrum bands for satellite, and manufacturers such as Qualcomm are making chipsets that support NTN. This NTN convergence can help provide ubiquitous mobile coverage with no need for large investments along with a fallback from the mobile network for emergency services, ensuring continuity in the event of disruptions such as natural disasters or network outages. MWC 2023 gave the NTN convergence a big push.

***Management of bifurcation***

The risk of bifurcation will need to be managed by using open technologies and digital commons to promote a shared, collaborative approach to developing and using internet and digital infrastructure. Adopting open standards, using open-source software and blockchain technology, promoting decentralized communication protocols, and encouraging the use of digital commons can all help promote a collaborative approach to developing and using Internet and digital infrastructure, reinforcing interoperability between the various parts of the Internet, and mitigating the impact of the potential bifurcation split.

All of the above doesn't mean ISPs should limit their focus to these trends. Forward-thinking providers will need to pay close attention to a variety of technology trends—from elevating network security for the quantum computing era to delayering stacks to capture more value.

***Achieve the vision by embracing the top seven trends***

To make the Internet vision a reality for Southeast Asia, stakeholders will need to take a variety of actions. Below, we shed light on what OEMs, ISPs, hyperscalers, and regulators can do to help move the region forward in each of the top seven technology trends.

***Cloud computing evolution to edge***

Regulators and governments across Southeast Asia will need to focus on data protection, especially in the areas of privacy and security, and collaborate on adequacy-based interoperable frameworks that allow personally identifiable information (PII) to flow between countries that have comparable regulations, along with creating flexibility in data sovereignty to allow a workload mobility computing service that is standard and ubiquitous and provides the functional richness and developer experience of the traditional cloud. Hyperscalers and their data centre infrastructure providers, particularly

in emerging countries across the region, should prepare for an increase in computing capacity, driven by the Internet's shift to the edge, as well as the additional computing needs created by AI and natural language processing technologies.

***Network softwarization***

Operators will need to keep the momentum going on network softwarization, gradually evolving from hardware to software infrastructure. For this to be successful, a talent pipeline will need to be scaled. ISPs will have to reskill their workforce or work with governments and universities to create talent development programmes. Regulators should facilitate the technology adoption by making the necessary provisions in data protection regulations and critical infrastructure policies that allow for these evolutions. Policies should look more closely at network security and factor in the new cloud-native infrastructure resilience paradigms.

***Sustainability***

Southeast Asia's ISPs and hyperscalers should boost their use of renewable sources and benefit from power greenification initiatives such as the LTMS–PIP and large renewable initiatives available in their own countries, such as in Indonesia and Vietnam. Incentives for solar power on cell sites from governments will also help. ISPs and hyperscalers should also collaborate with tech OEMs to reduce their equipment power consumption and scope 3 emissions. One fundamental action is to phase out legacy energy-inefficient technologies that have a big impact in power consumption and benefit from modern technologies with power-saving features in the network and the data centre. Finally, regulators and governments should establish policies for managing e-waste to support the circularity of device and infrastructure equipment.

***API exposure***

To move to a platform business model based on API exposure, ISPs can work together to create, promote, and adopt open telecommunication APIs in the region. This can be achieved through initiatives such as the GSMA Open Gateway, in addition to creating Southeast Asia-specific APIs and seeding a regional community of developers. Regulators should also have simple, light-touch policies on telecommunication APIs to avoid stifling innovation and constraining the emergence of a local developer community. Hyperscalers should facilitate ISPs to integrate their products with their networks. Standardization and open interfaces will help.

***Network slicing***

Vendors, content providers, and hyperscalers should work together with ISPs as part of the slicing ecosystem through partnerships, innovation hubs, and other initiatives to push for specific use cases relevant to the region.

***NTN convergence***

NTN convergence will require spectrum regulation coordination between satellite and mobile. Regulators should also modify the universal service regulations to include NTNs. Mobile and satellite operators should get more involved in NTN convergence for the region. Network and device OEMs should also promote the affordability of chipsets through flexible systems on chips (SoCs) that tap into economies of scale to be more accessible for people across Southeast Asia.

***Management of bifurcation***

Finally, managing bifurcation and potential stack splits in Southeast Asia requires ISPs to collaborate with one another and devise scenarios and risk plans with roadmaps that embrace open technologies to bridge any technology gaps. Government bodies and regulators should establish policies that promote flexibility and adaptability among ISPs, mitigating the risk

of split Internet standards and governance. Forward-thinking OEMs should consider promoting open technologies beyond Internet standards to ease the impact of standard fragmentation and to maintain interoperability.

***A call to action***

The transformation of the Internet in Southeast Asia is at a crucial juncture. The region will need to bridge the digital divide with a trustworthy and inclusive Internet for everyone and seize the opportunity to leapfrog to the next step-change in the evolution of the Internet to continue growing competitively. Although technology trends such as edge cloud, software-centric networks, API exposure, NTN convergence, 5G slicing, and more sustainable connectivity are still nascent in the region, they hold a wealth of potential to empower all actors in the Internet ecosystem—regulators, OEMs, ISPs, and OTT hyperscalers—to realize the vision of a more accessible, affordable, sustainable, reliable, and secure Internet from with every party takes a fair benefit.

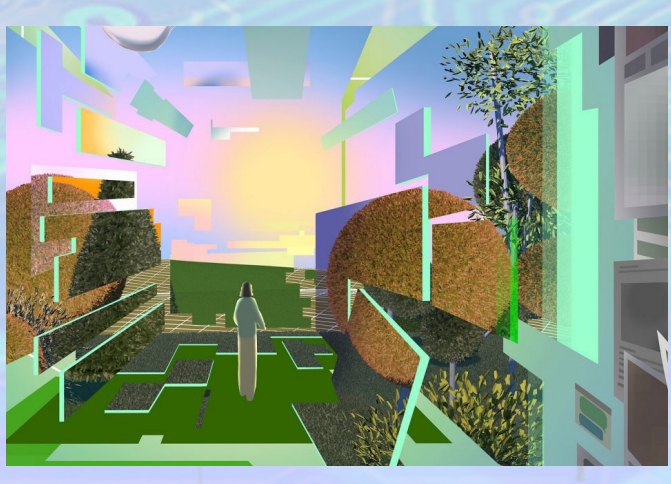
Embracing the emerging technologies is part of a long-term road map, but it is important to act now with close collaboration between all stakeholders to achieve the common vision. This means that all actors will need to own the actions that we have described and plan for the best ways to execute them.

In summary, making the vision of an Internet for Southeast Asia a reality will require concerted effort from every actor across the ecosystem. By working together and taking action now, Southeast Asia can move with surefootedness toward a powerful future of the Internet—one that is a driving force for the region's socioeconomic development.

# Will AI Fix Work?

*By Microsoft WorkLab*

The platform shift to AI is underway and will completely transform the way people work. And for many, the fix can't come soon enough. The pace of work has increased exponentially—along with the crush of data, information, and always-on communications. People are struggling to shoulder the weight of it all, while business leaders feel pressure to increase productivity amid economic uncertainty. We spend more and more of our days separating the signal from the noise—at the expense of creativity. And the tax on individual productivity is compounding, undermining organizational productivity and global GDP.



AI can help lift the burden. To date, AI has mostly been on autopilot. Now, next-generation copilots will work alongside people, freeing us from digital debt and

fueling innovation. Organizations that embrace AI will unleash creativity and unlock productivity for everyone—ushering in a new wave of productivity growth and value creation.

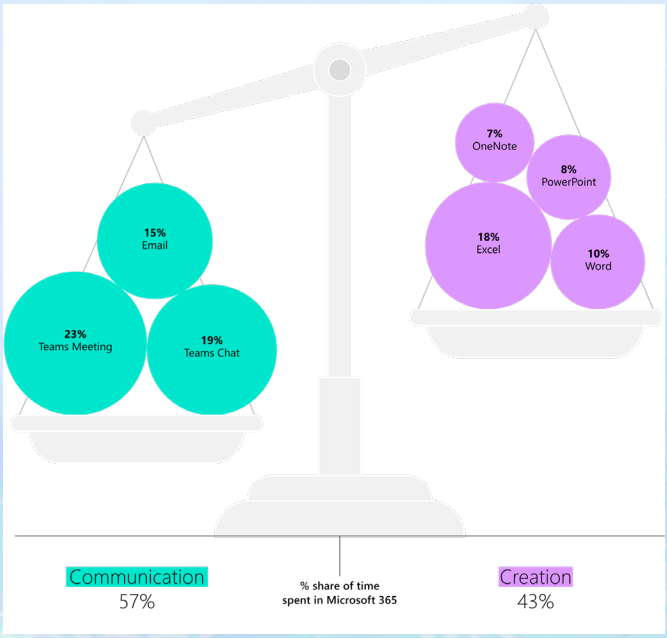
"This new generation of AI will remove the drudgery of work and unleash creativity," said Satya Nadella, Chairman and CEO, Microsoft. "There's an enormous opportunity for AI-powered tools to help alleviate digital debt, build AI aptitude, and empower employees."

To ready leaders and businesses for the age of AI, we surveyed 31,000 people in 31 countries and analyzed trillions of Microsoft 365 productivity signals, along with labor trends from the LinkedIn Economic Graph. The data points to three urgent insights business leaders must know as they look to quickly and responsibly adopt AI.

***1. Digital debt is costing us innovation***

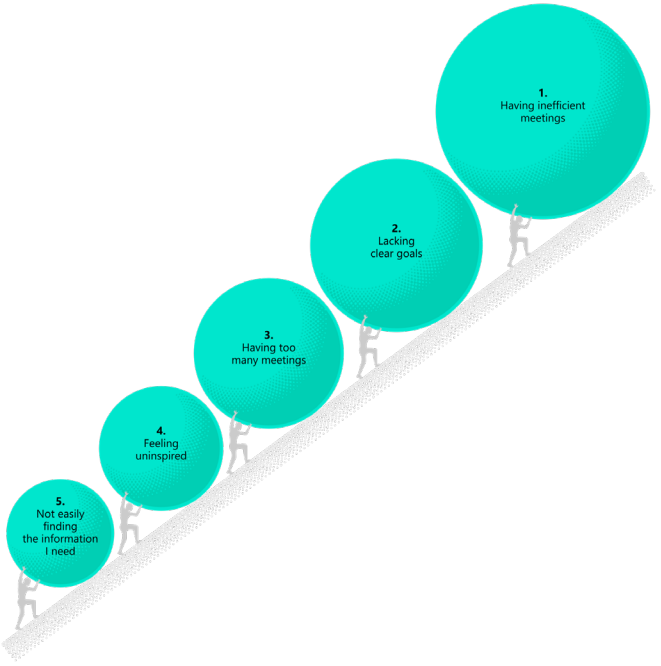
We're all carrying digital debt: the inflow of data, emails, meetings, and notifications has outpaced humans' ability to process it all. And the pace of work is only intensifying. Everything feels important, so we spend our workdays trying to get out of the red. Nearly 2 in 3 people (64%) say they struggle with having the time and energy to do their job—and those people are 3.5x more likely to also struggle with innovation and strategic thinking. And nearly 2 in 3 leaders (60%) are already feeling the effects, saying that a lack of innovation or breakthrough ideas on their teams is a concern. There are only so many minutes in the day—and every minute we spend managing this digital debt is a minute not spent on the creative work that leads to innovation. In a world where creativity is the new productivity, digital debt is more than an inconvenience—it's impacting business.

Hours worked, workday span, and time spent in meetings have steadily increased over the past few years—it's easier than ever




*The Weight of the Workday- With the balance of work hours spent communicating, 68% of people say they don't have enough uninterrupted focus time during the workday.*

to communicate and harder than ever to keep up. Taking a closer look at how people spend their time, it's clear that a lack of focus time, the search for information, and the volume of constant communications have an opportunity cost. Sixty-eight percent of people say they don't have enough uninterrupted focus time during the workday. And 62% of survey respondents say they struggle with too much time spent searching for information in their workday. Across the Microsoft 365 apps, the average employee spends 57% of their time communicating (in meetings, email, and chat) and 43% creating (in documents, spreadsheets, and presentations).1 The heaviest email users (top 25%) spend 8.8 hours a week on email, and the heaviest meeting users (top 25%) spend 7.5 hours a week in meetings.2 And this global average includes frontline workers— for knowledge workers, who rely even more on digital communication, the share of the week taken up by emails and meetings is even greater. AI can tip the balance in people's favor to reclaim time and energy for the important




*Top 5 Obstacles to Productivity - The data reveals an urgent need to make meetings more effective—people report 'inefficient meetings' as their number one productivity disruptor.*

work that fuels innovation.

Take meetings, for example. People report that the number one productivity disruptor is inefficient meetings, followed closely by having too many meetings at number three. Most people say it's difficult to brainstorm in a virtual meeting (58%) or catch up if they joined a meeting late (57%), that next steps at the end of a meeting are unclear (55%), and that it's hard to summarize what happens (56%). And since February 2020, people are in 3x more Teams meetings and calls per week (192%).

The data shows a clear need to make meetings better. Today, only 1 in 3 people (35%) think they would be missed in the majority of their meetings. But meeting FOMO is real. Asked what makes meetings worthwhile, people's top motivation was, "I will receive information that will help me do my job better"—ahead of giving feedback, making decisions, or advancing their career. With AI, every meeting becomes a digital artifact. When meetings are more than a point in time, you can engage and interact with them when and how it works best for you, whether synchronously or asynchronously.

Take action:

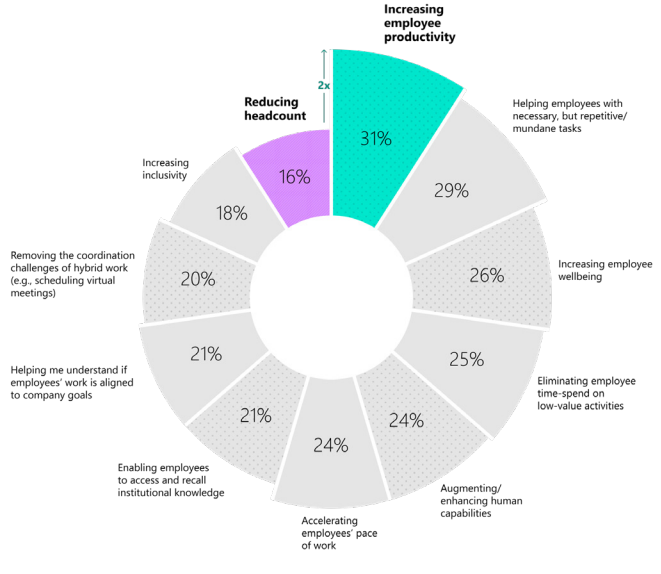
- Identify and address your organization's productivity disruptors with insights from employee listening.
- Radically rethink the workday. As AI frees up time and energy, protect focus time for the creative work that leads to innovation.
- Think of meetings as a digital artifact and not just a point in time. Encourage people to leverage AI-powered intelligent meeting recaps, transcripts, and recordings to engage with meetings how and when it works best for them.

### *2. There's a new AI-employee alliance*

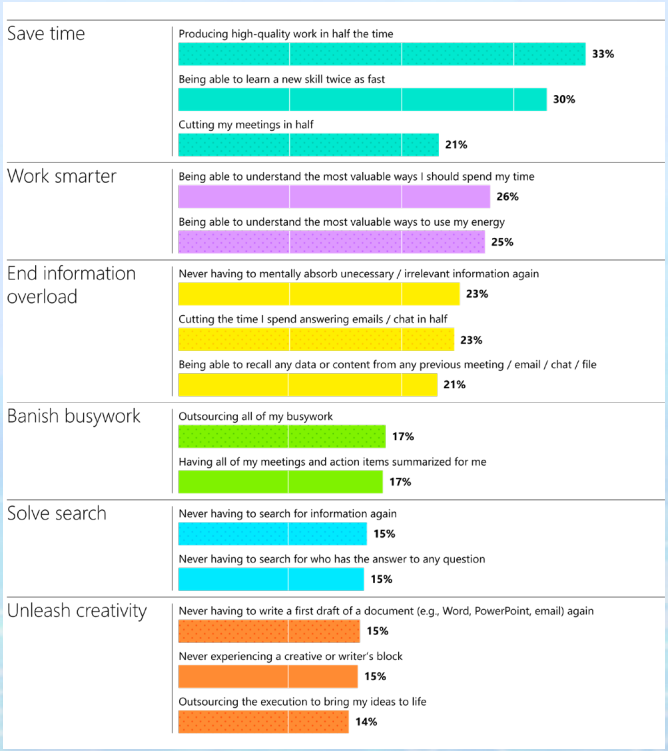
Amid concerns of AI replacing jobs, the data revealed an unexpected insight: employees are more eager for AI to lift the weight of work than they are afraid of job loss to AI. While 49% of people say they're worried AI will replace their jobs, even more—70%—would delegate as much work as possible to AI to lessen their workloads.

"It's fascinating that people are more excited about AI rescuing them from burnout than they are worried about it eliminating their jobs," said author and organizational psychology professor Adam Grant. And it turns out people are looking for AI to help in almost every aspect of their work. Not only did 3 in 4 people tell us they would be comfortable using AI for administrative tasks (76%), but most people also said they would be comfortable using it for analytical (79%) and even creative work (73%). People are also looking for AI to assist with finding the right information and answers they need (86%), summarizing their meetings and action items (80%), and planning their day (77%).

And the AI optimism doesn't stop there.




*Amid fears of AI job loss, business leaders are 2x more likely to choose 'increasing employee productivity' than 'reducing headcount' when asked what they would most value about AI in the workplace.*




*Work in 2030: What People Want—That AI Can Deliver - Asked to imagine work in 2030, people we surveyed say they'd most value changes that saved them time—like producing high-quality work and learning new skills faster.*

People also believe it can enhance creativity, from formulating ideas for their work (76%) to editing their work (75%). The more people understand AI, the more they see its promise to help with the most meaningful parts of their jobs. For example, 87% of workers in creative roles3 who are extremely familiar with AI said they'd be comfortable using AI for creative aspects of their job.

The data shows that business leaders are looking to empower people with AI rather than replace them—they're 2x more interested in using AI to increase productivity than to cut headcount. In fact, reducing headcount was last on the list of what leaders would value from AI. After "increasing productivity," leaders' top hopes for AI are to: help employees with necessary but repetitive tasks, increase employee wellbeing, eliminate employee time spent on low-value activities, enhance employees' capabilities, and accelerate employees' pace of work.

We also asked employees and managers to envision how work could change by 2030. Their answers paint a bright future—fueled by AI. When asked what changes they value most, people imagined producing high-quality work in half the time (33%), being able to understand the most valuable ways to spend their time (26%) and energy (25%), and never having to mentally absorb unnecessary or irrelevant information again (23%). And with AI poised to remake work, the future will arrive in months not years.

Take action:

- Bring leaders together across the organization to create guardrails that help people experiment safely and responsibly with AI.
- Be intentional and programmatic. Like any platform shift, adopting AI at scale requires change management. Pick specific disciplines, processes, and workflows to test and learn, and identify evangelists to lead the charge.
- As you begin to adopt AI, deploy it

where people need the most relief based on your organization's pain points and challenges.

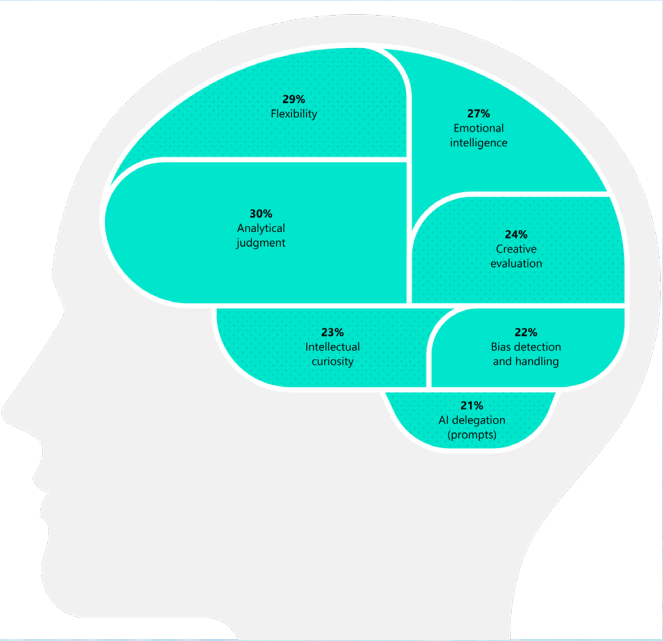
### *3. Every employee needs AI aptitude*

The paradigm shift to AI as copilot requires a whole new way of working—and a new AI aptitude. Working alongside AI—using natural language—will be as inherent to how we work as the internet and the PC. Skills like critical thinking and analytical judgment, complex problem solving, and creativity and originality are new core competencies—and not just for technical roles or AI experts. Leaders we surveyed said it's essential that employees learn when to leverage AI, how to write great prompts, how to evaluate creative work, and how to check for bias. As AI reshapes work, human-AI collaboration will be the next transformational work pattern—and the ability to work iteratively with AI will be a key skill for every employee.

Learning isn't keeping up with the pace of work. Already, 60% of people say they don't currently have the right capabilities to get their work done. AI will open new paths for learning, and success depends on leaders equipping employees for an AI-powered future.

And they'll need to start building those new skills today: there are 33x as many LinkedIn posts mentioning topics like generative AI and GPT than there were one year ago. "We're in the next phase of change with the introduction of generative AI, and it's already starting to reshape the labor market," said Karin Kimbrough, chief economist at LinkedIn. "While it's still early days, this shift will expand opportunities, create new roles, and augment productivity." In fact, as of March 2023, the share of US job postings on LinkedIn mentioning GPT are already up 79% year-over-year. And 82% of leaders in our survey say their employees will need new skills to be prepared for the growth of AI.

Take action:




*New Skills for a New Way of Working - 'Analytical judgment,' 'flexibility,' and 'emotional intelligence' top the list of skills leaders believe will be essential for employees in an AI-powered future.*

- Help people embrace a new way of working, starting with building AI aptitude—from practicing prompt engineering to fact-checking and verifying AI-generated content.
- Leverage learning resources and crowdsource best practices from employees as they adapt to AI as copilot.
- Consider how roles and functions can evolve alongside AI, creating opportunities for reinvention.

### *The Path Forward*

AI is poised to lift the weight of work—and has great potential to free people from digital debt and fuel innovation. And for both overwhelmed employees and leaders looking to bolster productivity, that promise is overdue. But AI won't simply "fix" work—it will create a whole new way of working. Leaders will need to help employees learn to work responsibly alongside AI to reap the rewards of the AI-employee alliance: more value creation for businesses and a brighter, more fulfilling future of work for everyone.

# Singapore is Asia's smartest city, Zurich tops World's Smart City Index 2023

*By Anushka Goel, Lifestyle Asia*

According to the latest update by the 2023 Smart City Index, Singapore is the smartest city in Asia and the seventh smartest city in the world.

The index was published by The Smart City Observatory, which is a part of the Swiss business school Institute for Management Development (IMD). It ranks 141 cities based on how they use technology to address the challenges its citizens face, to be able to achieve a higher quality of life. The index ranked Zurich at the first spot, while Oslo was at the second. Canberra grabbed the third spot on this index.

This is the third time Singapore has been seventh on the list. In 2020 and 2021, too, the city was in the same spot, while in 2022, the index was not released.

The top ten smartest cities are a mix of European, Australian and Asian destinations. These are:

1. Zurich, Switzerland
2. Oslo, Norway
3. Canberra, Australia
4. Copenhagen, Denmark
5. Lausanne, Switzerland
6. London, the UK
7. Singapore
8. Helsinki, Finland
9. Geneva, Switzerland
10. Stockholm, Sweden

According to the report, The Smart City Index takes into account input from the cities' residents on how technology has improved their lives. It combines both survey responses as well as hard data, to understand (and represent) the extent to which technology

has helped achieve a higher quality of life for a city's residents.

Asian and European cities dominate the top 20 list of the 141 cities that have been surveyed, and of these 20, six have been constantly working towards improving their performance. These 'super champions', as the report calls them, are Zurich, Oslo, Singapore, Beijing, Seoul and Hong Kong.

The data has been collected from over 20,000 citizens, who were surveyed on about 15 aspects of living in these cities. Some of the questions included those on affordable housing, road congestion, green spaces, fulfilling employment needs structures and technologies built to address their concerns and how comfortable the respondents were with technologies such as face recognition and sharing personal data to improve traffic congestion.

# Asia-Pacific's highly skilled digital workers earn up to 65% more than peers: survey

*By Sheila Chiang, CNBC*

Workers in Asia-Pacific who have advanced digital skills potentially earn up to 65% more than those who do not use digital skills at work, according to a new report by workplace consultancy Gallup and Amazon Web Services.

That's comparing workers with the same educational background and years of working experience.

Advanced digital skills refer to skills in complex areas such as software or application development, artificial intelligence and machine learning. Cloud architects and software developers are considered advanced digital workers.

Digitally skilled workers — those with advanced skills as well as those with basic or intermediate skills like email and word processing — add approximately $4.7 trillion to the region's annual gross domestic product, according to the Asia Pacific 2023 Digital Skills report.

"Organizations in the APAC region that employ advanced digital workers — such as software developers or cloud architects — report 2021 annual revenues 150% higher than organizations that employ only basic digital workers, and 286% higher than those that employ intermediate digital workers," the report said.

More than 30,000 employees and 9,000 employers across 19 countries participated in the survey. Respondents were from countries including Australia, India, Indonesia, Japan, Malaysia, New Zealand, Singapore, South Korea, and Thailand.

***Higher salaries***

The findings revealed the more highly skilled digital workers are, on average, drawing 58% higher wages than their peers who do not use digital skills at all.

Even workers who use basic digital skills such as emailing or word processing earn 39% more than those who do not use any digital skill at work.

This is more pronounced in Singapore and Indonesia, where employees who use any level of digital skills are earning 97% and 93% higher wages respectively, compared to their non-digital peers, according to the report.

Gallup estimates that 72% of workers in Asia-Pacific do not use a computer at work, and as much as 83% of India's workforce are non-digital. For the 28% who actually use a computer, only 8% use advanced digital skills while 14% use basic digital skills.

Close to half of digital workers surveyed said that a higher pay motivates them to seek out additional digital skills training. Advanced digital workers in Indonesia are twice as likely to be highly satisfied with their jobs as compared to basic digital workers.

On the other hand, job satisfaction of basic digital and advanced digital workers

are nearly on par in high-income countries such as Australia and Japan.

***A challenge to hire degree holders***

The report further revealed that 72% of employers in Asia-Pacific find it challenging to hire digitally skilled workers.

This is partly because of strict bachelor's degree requirements for those job openings.

While almost two-thirds, or 63%, of the most advanced digital workers possess digital certifications, they do not have a bachelor's degree. This makes them ineligible to apply for the jobs, despite having the skills required.

Digital workers in Asia-Pacific are about twice as likely to hold digital certifications than degrees, said AWS and Gallup.

Many companies in the region are aware that they are narrowing the hiring pool due to the strict degree requirements, and are trying to adjust their hiring practices.

"This is an important development, as digital workers in the Asia Pacific region are about twice as likely to hold a digital certification (50%) as they are to hold a bachelor's degree (27%)," the report said.

"By relaxing the degree requirements of their job openings, organizations that allow digital certifications or trainings to substitute or complement degrees may be more than doubling the pool of digital workers who are eligible to apply for these roles."

Some 38% of companies in the region want to hire degree holders for entry-level tech roles, but only 27% of Asia's digital workers have a bachelor's degree.

The countries that found it most difficult to hire digital workers — namely Thailand, India, Indonesia, and Malaysia — are the most likely to require degrees for entry-level tech jobs.

Meanwhile, more advanced economies like Australia, New Zealand, South Korea, and Japan have looser degree requirements for tech workers despite having large proportions of university graduates in their workforces.

# Slow tech adoption 'costs business $9m a day': Australian survey

*By Josh Needs, Accountants Daily*

According to a recent study, slow tech adoption by small businesses costs the economy more than $3 billion a year, or $9 million a day, while another highlights concerns about how far the sector trails its Asia-Pacific counterparts.

Firms had to reinvent themselves and increase investment in both technology and training, said the interim CEO of RMIT Online, Claire Hopkins, commenting on the first report, but it would repay the spending rapidly.

The report from RMIT and Deloitte Access Economics found the price of reskilling was dwarfed by the cost of under-investment.

"Now is the time for businesses to invest in skills and development capabilities if we are to grow a resilient and competitive workforce," said Ms. Hopkins.

"As demand for digital skills continues

to grow, the cost to businesses will also grow if decisive action is not taken to address these gaps."

Ms. Hopkins said that closing the digital skills gap and the subsequent technology uptake would be expensive but it would be more costly if businesses did nothing.

"While the upfront cost to solve our upskilling and reskilling crisis may seem high, our research shows investing in training is necessary for Australian businesses to reap substantial and long-lasting benefits, and to mitigate the impact of the digital skills gap."

The study found the technological skills gap was costing Australian firms up to $3.1 billion annually – $9 million a day – but could be closed through a $1.5 billion investment.

Partner at Deloitte Access Economics John O'Mahony doubled down on the findings and said firms were losing money through a lack of investment in technological expertise.

"If businesses underinvest in digital skills training it can result in a loss of revenue, additional costs of outsourcing work to external staff or contractors and reduced productivity," said Mr. O'Mahony.

"That's why training is an investment, not just a cost."

While a lack of digital skills was hindering businesses, CPA Australia's recent Asia-Pacific small business survey found that Australian organisations were also significantly lacking when it came to the use and application of technology.

Australian businesses were the least likely to say their firm had been impacted by internet connectivity issues but for the wrong reasons, according to CPA Australia.

CPA Australia attributed this to a lack of use: "Rather than reflecting the reliability of their internet connection, service and speed, this result is most likely due to low technology adoption among small businesses in those markets."

For the same reason, Australian businesses were least likely to expect a cyber attack, at less than 27 per cent.

"Given the low digital uptake of many Australian small businesses, it's not surprising that they have the lowest percentage expecting a cyber attack this year," said the association.

While Australian small businesses have improved in the use of some technologies such as social media, increasing from 49 per cent usage in 2014 to 66 per cent today, the industry still lagged its Asian counterparts on 88 per cent.

A concern raised by the survey was that when local firms did invest in technology only just over 30 per cent said their investment increased profitability compared with 80 per cent of Indian firms reporting an increase.

"Even when Australian small businesses do invest in technology, they underperform their regional counterparts in selecting technology that improves profitability," said CPA Australia.

"Australia's lower technology adoption rates and an older demographic profile is likely contributing to that result."

"As with selling online and using social media, older respondents, older businesses and micro businesses continue to be significantly less likely to be investing in technology that improves profitability."

Australian businesses were also found to be investing heavily in outdated technology, with firms putting the most funds into websites at 18 per cent, computer equipment at 16 per cent, and accounting software at 9 per cent.

By comparison, fellow Asia-Pacific nations were predominantly investing in artificial intelligence, enterprise resource planning software, customer relationship management software, and even mobile applications.

The lack of technological adoption also carried over to small business innovation

with CPA Australia revealing local firms were the least likely to innovate while Indian entities were most likely.

CPA Australia's senior manager of business and investment policy Gavan Ord said bringing through younger business owners would improve innovation.

"A lack of innovation is a drag on economic growth and productivity that we will feel for years to come," said Mr. Ord.

"Encouraging new talent to launch small businesses can boost long-term innovation."

# Smart data powers business sustainability

*By Agnes Heftberger*
*General Manager & Technology Leader for IBM Australia, for Channel Asia*

In recent years, data has been at the front and center for enterprises seeking to stay relevant, sustainable and emerge as industry leaders. The democratisation of data has further led to the availability, demand and use of data at an unprecedented pace. This phenomenon, however, has surfaced challenges and opportunities for enterprises. The rise of generative AI such as ChatGPT has accelerated this further. Forward thinking enterprises recognise the opportunities and are looking at ways to turn generative AI into productive data for their industries.

The current landscape underscores the belief that data is the lifeblood for enterprises to grow their business in a sustainable way. Becoming more sustainable is an opportunity to innovate, make a difference and scale. While top performing enterprises are data driven, research found that data veracity is still a challenge with up to 68% of data not getting analysed and data silos persists at 82% of these organisations. A joint study by IBM and Morning Consult found that businesses are drawing from more than 20 different data sources - such as databases, data warehouses and data lakes – with some up to a whopping 500 data sources.

These issues are only intensified by the complexities of the platforms that enterprises have parked their data on. Enterprises aren't just dealing with data spread all over their company, it's also being stored and managed across a variety of places - public clouds, private clouds, on-premises and data centers. The average enterprise has five different environments, cloud-wise, turning the data challenge into a hybrid cloud problem as cloud spend continues to rise in Thailand (95%), Indonesia (94%), Philippines (91%) and Singapore (83%) while Malaysia has

committed to migrate 80% of government data to the cloud.

***Why data fabric***

Clearly a robust strategy is needed to manage the complexity of data to harvest useful insights within heterogeneous environments. How can enterprises simplify access and governance of data quality, regardless of where it resides? There are industry leaders who have adopted a data fabric architecture to improve "findability" of data.

ING and Citigroup are great examples enterprises that have maximised the data fabric architecture for business sustainability. ING put in place a set governing and data quality rules, defined business taxonomy, access rights, privacy, and protection across its data stores regardless of the platform where it resides help its team make informed decisions. Citigroup introduced machine learning and AI into the full audit lifecycle to find anomalies within business monitoring, then planned and scoped audits more effectively using all the fresh findings. IBM collaborated with Citi to build a new audit platform injected with advanced analytics and AI.

Their success presents opportunities for enterprises in ASEAN given that this region had added 70 million new online shoppers during the pandemic with 80% buying goods and services through mobile and web platforms. Indonesia, for example, will account for 50% of South-East Asia's e-commerce market by 2025, followed by Malaysia, Philippines, Thailand and Vietnam.

The prolific increase in online shopping increased the variety of new information such as shopping habits and interests to the already burgeoning data velocity that is already in the quintillions, prompting the need for a data fabric architecture to support the need to obtain timely and meaningful insights to make informed decisions. A survey of 500 ASEAN leaders found that they will use data and AI for customer experience (77%), human resources (75%) and marketing (72%) in the next two years. The possibility of mining the same data for trends and other practical purposes to potentially improve societal welfare also exists.

This also makes the case for a data fabric architecture stronger especially with the demand by regulators to ensure data quality, fairness, governance and equitable access to boost secure sharing without compromising personally identifiable information.

***Productive data with AI***

The first step is usually the hardest as enterprises struggle to make sense of vast data volume and tapping into AI tools had helped reduce manual labour needed to sift and analyse data, remove data duplication and develop a recommendation engine while meeting regulatory compliance.

Removing bottlenecks to data with a data fabric architecture also allowed enterprises to foster more productivity, enable users to make informed decisions and free up valuable time for teams to focus on higher value work. Done right, a data fabric will connect the right people with the right data at the right time. It will eliminate the complexities involved in data movement, data transformation and data integration.

The urgency for right data at the right place and right time is vital with initiatives such as the ASEAN Connectivity Master Plan 2025 and the ASEAN Smart Logistics Network that is spurring infrastructure growth in this region. Technology is at the heart of this wave for enterprises to achieve sustainable growth that is translated into true productivity, efficiency and operational stability. And a well-designed data fabric architecture to manage the influx of data without compromising the integrity is surely the way forward to an agile, resilient and sustainable business enterprise.

# Digging into Southeast Asia's generative AI excitement

*By Tech in Asia, in partnership with ATxSummit*

While Southeast Asia's cultural diversity is one of its strengths, navigating its many languages can be unwieldy for businesses looking to operate across multiple markets in the region.

That was one of the issues faced by HD, a healthcare and surgery marketplace with operations in Thailand and Indonesia. On its HDMall platform, which offers outpatient and inpatient healthcare services, 30% of transactions are processed through chat commerce. The firm needed to find a solution that could answer customer queries not just in English but also in local languages like Bahasa Indonesia.

To overcome this issue, the company is experimenting with a novel solution: generative AI. By leveraging OpenAI's GPT-4 model – the technology behind the popular ChatGPT – HD hopes to use the tech to facilitate and streamline communication with customers across different languages.

HD is not the only Southeast Asian business trying to harness generative AI, which has taken the world by storm. While the tech as we know it today has been around since 2014, its popularity skyrocketed with the launch of ChatGPT back in November 2022.

For Southeast Asia in particular, generative AI's arrival signals many good things to come.

*Ahmad Mazhari, president of Microsoft Asia (Microsoft)*

***The AI hype in Southeast Asia***

Within the region, excitement around AI has been building as companies explore its potential to increase productivity. In Vietnam, for example, ChatGPT fever has resulted in dozens of Facebook groups devoted to the tech.

By 2030, AI is predicted to add almost US$1 trillion to Southeast Asia's overall GDP.

While it's hard to say how much of that uplift will come from generative AI, its contribution seems promising given the opportunities it presents for the region.

"AI is a defining technology for our time," says Ahmad Mazhari, president of tech conglomerate Microsoft's Asia operations.

Keith Strier, vice president of computing giant Nvidia's worldwide AI

initiatives, says that the tech will supercharge how companies communicate, strategize, and research without added costs.

Within Asia Pacific, Microsoft's 2023 Work Trend Index found that 78% of employees would delegate as much of their work as possible to AI to lessen their workloads.

"There is a significant opportunity to enhance products and services while unlocking innovation and business value that will shape the future of many industries," adds Mazhari.

*Keith Strier, vice president of computing giant Nvidia's worldwide AI initiatives (Nvidia)*

### *Plenty of experimentation*

Aside from easing workloads, generative AI is also fueling experimentation and innovation in the startup scene.

"There are many creative avenues and opportunities – be it in ecommerce, education, operations, maintenance, or even in building virtual assistance for better workflows and user experience," says Strier. "We see a lot of interest and experimentation among startups around generative AI, which is a good thing to see happening across the region."

Currently, some of the biggest use cases for generative AI can be seen in communication-centric industries. Aside from HD, other companies exploring the tech's applications in communications include Singapore's Wiz.ai, which is developing conversational voice AI for customer engagement, and Indonesia's Kata.ai, which offers conversational AI chatbots.

Generative AI could also change the retail sector in Southeast Asia. Ong Chen Hui, assistant chief executive for the business-technology group at the Infocomm Media Development Authority of Singapore, notes that within the region, generative AI has been most visibly used in automated chats for customer service or troubleshooting.

The tech's applications aren't just limited to for-profit ends either. Mazhari highlights that it could even "supercharge social and economic progress by unlocking creativity and innovation in a way that empowers people and organizations to thrive."

For instance, generative AI could help solve many of the challenges faced by people with disabilities through assistive technologies such as audio description tools which aid blind people in navigating their surroundings.

"Generative AI democratizes AI, making it more accessible and affordable," says Ong.

*Ong Chen Hui, assistant chief executive for the business-technology group at IMDA (IMDA)*

### *Facing hurdles to adoption*

Southeast Asia could prove to be fertile ground for generative AI to thrive, thanks

to rapid digitalization in the region and its "young and digitally native" populations who are very open to experimenting with it, says Ong. She also highlights the region's burgeoning workforce of tech-skilled workers.

That said, there are a number of challenges that could complicate the industry's growth, ranging from inadequate investments in AI research and development to inconsistent governance across markets.

"While we embrace its good, there is also a need to take a cautious approach," says Ong. She adds that governments must figure out how to design and implement governance frameworks to regulate the technology.

"We need to make the technology safe and aligned to human values and ethical considerations, while also helping companies understand their responsibilities," she explains.

Nvidia's Strier agrees and highlights that generative AI innovators must ensure the information and content being made are not only accurate but also respectful of creators' concerns around intellectual property and copyright protections.

"How can we ensure their work is protected and not misused?" he says. "For consumers, this is also about how we can discern between fake and real content. There has to be guardrails and ethical sounding boards."

***The road ahead***

Looking ahead, Microsoft's Mazhari says the generative AI movement will have to focus on tackling the global AI skills shortage. Without the necessary talent, firms won't be able to harness the full potential of the tech.

"This new, in-demand, and AI-centric skillset highlights the need to invest in skilling and reskilling," he adds.

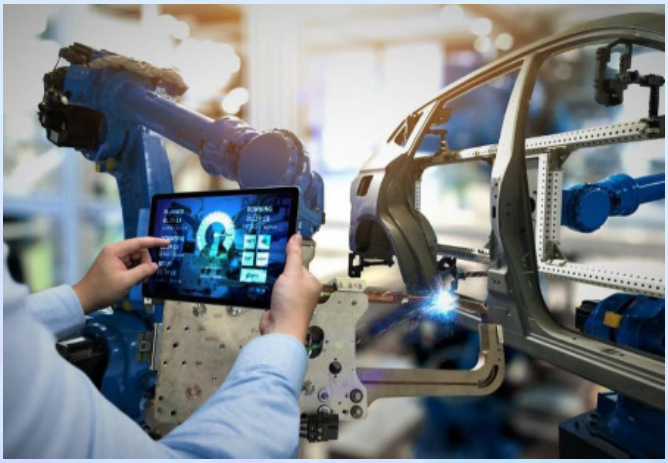
Despite the complexity of untangling these challenges, Southeast Asia's excitement around generative AI is unlikely to abate, as Strier notes that stakeholders across the business community, government, and consumer bases are signaling plenty of interest.

"Humans can harness generative AI to free up capacity to do higher-value jobs or increase individual productivity," says Ong. "I don't think generative AI will take away jobs, but those who know how to harness it will definitely go far."

# Smart Manufacturing: A Growth Driver for Business Model Innovation

*By Aveek Pal Chaudhuri, Asia Business Outlook*

In today's fast-changing and hyper-competitive business environment, the automotive industry, business model (BMI) innovation, and equivalents have emerged as a promising approach for achieving competitive advantage. At the same time, BMI involves a high level of uncertainty and financial risk. Product and process innovation, as well as manufacturing - particularly smart manufacturing - have recently become more



open and collaborative in order to reduce costs and risks. The goal of this study is to look into the role of open and collaborative innovation practises in BMI as a foundation for competitive manufacturing ecosystems and to provide a comprehensive review of the available literature in this field.

Accelerating change, shortening product life cycles and excess supply in most markets put severe economic pressure on today's market players. As a result, firms increasingly use business model differentiation to break out of intense competition, particularly in the face of the (higher) imitability of products and processes. In fact, business models have become the new basis of competition. Since the dot-com boom and the wave of new information and communication technology-based business models, however, Business Model Innovation (BMI), on the one hand, has received increasing attention from both academia and practice. BMI requires a change in the three primary dimensions of the business model, i.e., value creation, value proposition and value capture. A firm employing BMI has found a way to create value (for its customers) and capture value (for itself) at the same time. Huang et al. (2013) have defined BMI as the process of repositioning the value proposition, including a redesign of the profit formula and the adjustment of other related business model elements (e.g. new key partners or activities). In general, BMI occurs in two forms: it can be the introduction of a new business model or stem from improvements of an existing one.

***Goals of Support Smart Manufacturing***

The goals of smart manufacturing, on the other hand, lie in the recognition of automatable workflows and the improvement of the manufacturing process. It involves logistics, production and the Internet of things. To exploit the full potential of smart manufacturing a fundamental strategic vision needs to be developed. In the mid 90's, the first applications of supply chain management left behind a strictly isolated, enterprise-centred view, which had dominated management decisions. Supply chain management at that time was an important step in linking business functions and business processes within and across firms into enhanced business models. In fact, it was a forerunner of collaborative value generation. Since co-creation and collaboration as generic organizational types or even paradigms are strong drivers in the design of smart manufacturing systems, in a first step we need to analyze the possible roles, players, and approaches that determine manufacturing ecosystems. Against this background, a systematic literature review has been conducted to provide a comprehensive overview of available literature on BMI to identify the major topics and concepts discussed in this field. Five leading scientific databases were selected for the literature search. The analysis of the literature has revealed that publications within the field of open BMI in manufacturing ecosystems show different thematic priorities as analyzed in the next section.

Smart manufacturing leverages Industry 4.0, which is characterized by interconnected cyber-physical systems such as intelligent robots and machines that can

self-diagnose and warn of possible failures. The proliferating IoT brings more powerful devices and machines with smart sensors that upload continuous streams of usage data to the cloud for analysis. Those Big Data sets are crunched using AI with machine learning that becomes more accurate and predictive as it absorbs more data. Automation and data connectivity create more agile supply chains, in which ships and trucks "talk" to warehouses, autonomous or semiautonomous vehicles, and drones. Mobile robots and cobots (collaborative robots) are also folded into this process, making shipping and logistics more automated. Smart manufacturing helps manufacturers become more efficient, stay ahead of the competitive curve, and explore new business models and practices.

***Conclusion***

The term "smart manufacturing" refers to a new-age, connected manufacturing system that employs cutting-edge technologies throughout the manufacturing value chain. Technology has the potential to transform the Indian manufacturing sector by driving efficiency and cost savings through innovative strategies. Because of the need for digitization, leading manufacturers are taking a more proactive and strategic approach to new programmes. However, with limited resources and skill gaps, redefining future manufacturing organisations and identifying focused themes for top and bottom-line impact remain significant challenges.

# Japan drug and chemical makers tap AI for faster development

*By Akira Oikawa and Shoya Okinaga, Nikkei Asia*

More Japanese companies are incorporating artificial intelligence into their research and development in fields like pharmaceuticals and chemicals where overseas rivals have a head start in using AI to speed up breakthroughs.

Astellas Pharma and chemicals group Asahi Kasei are among the companies set to roll out AI-assisted development platforms.

AI is central to the trend of laboratory automation -- which leaves some tasks to machines in order to free up researchers to focus on ideas or strategies.

Astellas Pharma's Mahol-A-Ba drug development platform combines AI with image analysis and robotics. It can help with tasks such as culturing cells for testing new treatments, cutting the time needed from a month down to an hour and a half. The platform will make its debut at Astellas' research center in the city of Tsukuba, an R&D hub northeast of Tokyo.

Drug industry peer Eisai's Tsukuba

laboratory uses AI to crunch past research data to model chemical compounds, then quickly narrow them down based on their potential as drug candidates

The company is also working on equipment to fully automate production of these compounds, aiming to have workable technology three years from now. These systems are expected to be able to synthesize 10 times as many compounds as human researchers alone.

Drug development is a long process of trial and error. Creating a single new drug can take a decade or more and cost hundreds of millions to several billion dollars. The success rate in Japan is estimated at 1 in 20,000.

Morgan Stanley estimates that AI's use in drug development could lead to 50 more successful treatments over a decade, potentially creating a $50 billion market.

AI-supported R&D picked up in the early 2010s with innovations in deep learning technology, and has made its way into manufacturing fields that vary from food to steel.

Asahi Kasei plans to open a "smart lab" in April that can autonomously test potential new materials under different conditions, combining variables such as temperature, mixing speed and drying. The facility is expected to focus on applications such as batteries that can contribute to the transition from fossil fuels.

Using this along with its proprietary method for finding new materials, the company aims to eventually slash development time to around two to three months from as much as a decade in some cases.

On the consumer side, brewer Sapporo Holdings and consumer goods maker Lion are tapping AI to speed up development of canned cocktails and toothpaste.

Companies outside Japan, particularly in the U.S., were quicker to adopt the technology. Eli Lilly in 2020 opened a "remote-controlled lab" for drug discovery in San Diego. IBM used AI to find potential new photoresist chemicals for semiconductor production, speeding up the initial design phase 100-fold.

A survey by PwC Japan found that 53% of large Japanese companies had plans to implement AI as of last year, up from 27% in 2020 and on par with the U.S. figure of 55%.

But many look to use it in only limited contexts. Just 13% of the Japanese businesses plan widespread adoption, compared with 26% in the U.S.

# Alibaba: Four in five businesses in Asia are planning complete cloud migration by 2024

*By Dashveenjit Kaur, Techwire Asia*

The speed of cloud adoption in Asia is incredible—almost every business, organization, and leader is talking about it. A recent report by Alibaba Cloud, the biggest Chinese cloud service provider, stated that 84% of existing users of cloud services in Asia expect to increase their cloud technology investment this year.

"The Next-Generation Cloud Strategy in Asia" report is based on the outcome of a survey conducted by Alibaba between the end of September and early October 2022. The result of online questionnaires among 1,000 cloud strategy decision-makers in small to large-sized businesses indicated that more than four in five (84%) are planning a complete cloud migration in two years.

Individuals surveyed are cloud services users from eight markets in Asia, including Malaysia, Hong Kong, Singapore, the Philippines, Indonesia, Thailand, Japan, and South Korea. Respondents came from various industries, including financial services, gaming, internet & technology, manufacturing, media & telecommunications, public sector, and retail.

"As more companies move their critical businesses online to efficiently handle their workloads in the post-pandemic world, businesses in Asia that are already using cloud services plan to increase their investment across various cloud strategies over the coming year," Alibaba Cloud said in a statement.

Alibaba Cloud predicts that the increase in investment will most likely come from Thailand (95%), Indonesia (94%), the Philippines (91%), Hong Kong (83%), and Singapore (83%). A majority of the surveyed businesses in Japan and South Korea indicated that they would maintain their current levels of investment.

Key industries like the gaming sector are expected to see the highest increase in cloud investment, followed by media & telecommunications, internet & technology, and financial services. In terms of investment priorities, a majority of businesses in Asia will focus on data analytics & AI (53%), cloud computing (52%), and automation (46%).

Global market research firm NielsenIQ commissioned the survey by Alibaba Cloud to understand better the state of adoption of


the overall cloud strategies – private, public, and hybrid – across Asia.

Alibaba Cloud believes that respondents' sentiment underscores the importance of cloud infrastructure in supporting business growth. "This has also been reflected in the survey that 94% of organizations in Malaysia have plans to evolve its cloud strategy in the future," the statement reads.

Interestingly, over two-thirds (69%) of the surveyed businesses have used the cloud for at least three years. "Those in Hong Kong, Japan, and Singapore are the earliest adopters, with only one in five (20%) having less than three years of cloud services experience. Industry-wise, internet and technology, manufacturing, and financial services show the highest level of cloud maturity," Alibaba Cloud stated.

At the time of the survey, private cloud (40%) was the most popular strategy in Asia, followed by public cloud (27%). "Strong reputation for security, reliable local support, and attractive pricing are the main reasons businesses choose public cloud, in which 38% of the surveyed businesses expect to boost investment by more than one-fifth in the coming year," the Chinese cloud computing arm shared.

South Korea has the highest public cloud adoption rate (43%) among the Asian markets surveyed. On the other hand, hybrid cloud adoption is on the rise, with the survey recording a seven percentage-point net increase in the current adoption rate compared to the respondents' initial cloud strategy adoption.

# Computer literacy programme to help ex-offenders learn digital skills

*By Calvin Yang, Channel News Asia*

A dedicated computer classroom has been launched at charity HCSA Community Services' Highpoint Halfway House to offer ex-offenders lessons in digital literacy.

Some 60 ex-offenders will learn basic computer skills by next year, as part of efforts to boost their chances of finding a job sooner.

This comes as Singapore looks at how to keep ex-offenders out of jail for longer.

About 20 per cent re-offend within two years, but this rises to 40 per cent at the five-year mark, according to the Singapore Prison Service (SPS).

Research by SPS has shown that many ex-offenders undergo multiple attempts to remain crime or drug-free before eventually succeeding.

Those who successfully desist are able to recognise the consequences of their actions, make intentional lifestyle shifts, and participate in structured activities, the agency noted.

Keeping ex-offenders out of jail

Senior Parliamentary Secretary for Social and Family Development Eric Chua said refreshing skills can help keep ex-offenders out of jail, as they can use the training and their new skills to find work immediately.

"It is a key component in rehabilitation and for re-integration into society," Mr. Chua noted.

"With financial stability, ex-offenders will be in better stead to rebuild their lives, take care of themselves and their families, and contribute back to society."

Self-employed batik artist Hameed Maricar is among 10 ex-offenders who have recently completed a six-day digital literacy course at the halfway house, which provides a safe space for these individuals to rebuild their lives and become more employable.

Mr. Hameed, who first learnt batik painting while serving his prison sentence, was released four years ago.

The full-time artist, who also teaches workshops, is now improving what he can offer to his customers with his new-found digital skills.

"So before this, I use physical things to show them and explain to them," he said.

"But now that I learn to use (Microsoft) PowerPoint and Word, I can use them to do my presentation slides. I can add more things, like pictures of other famous artists, that I couldn't do before."

Helping ex-offenders to find work sooner

HCSA is now working towards finding jobs for those who have completed the computer literacy course.

The non-profit organisation has, for instance, employed one resident of Highpoint Halfway House to do data entry.

"I used to be intimidated by computers. So now, I have more confidence to use

them," said Mr. Larry Sociago, a programme coordinator at HCSA Community Services.

"I would like to go further (with my Microsoft skills). This is only a basic course. So my intention is to go for an advanced one, hopefully."

HCSA has plans to work with its partner, technology company Acronis, to offer more of such courses.

"Currently, they are training in Microsoft skills, the essentials of Word, Excel and PowerPoint, but as the world gets more digital, we want to make them future ready," said Ms. Trish Ng, education projects manager at Acronis Cyber Foundation.

"Acronis is looking into perhaps more information or knowledge about machine learning, AI (artificial intelligence), and also of course, cybersecurity."

HCSA also has an academy that conducts a similar culinary training course for its residents who are looking for a stable career in the food and beverage industry.

It has plans to replicate these programmes for the logistics sector by next year.

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David Hsu, Director General; Amador R. Honrado, Jr. Editor; Abby Moreno, Assistant Editor
7F-2, No. 760, Sec. 4, Bade Road, Taipei 10567, Taiwan; Tel: (886 2) 2760-1139; Fax: (886 2) 2760-7569
Email: cacci@cacci.org.tw; Website: www.cacci.biz