

Technology Market Scan

INTERNATIONAL

WHO establishes global biomanufacturing training hub

The World Health Organization (WHO), the Republic of Korea, and the WHO Academy have announced the establishment of a global biomanufacturing training hub that will serve all low- and middle-income countries wishing to produce biologicals, such as vaccines, insulin, monoclonal antibodies, and cancer treatments. The move comes after the successful establishment of a global mRNA (Messenger RNA) vaccine technology transfer hub in South Africa.

The Government of the Republic of Korea has offered a large facility outside Seoul that is already carrying out biomanufacturing training for companies based in the country and will now expand its operations to accommodate trainees from other countries. The facility will provide technical and hands-on training on operational and good manufacturing practice requirements and will complement specific trainings developed by the mRNA vaccine technology transfer hub in South Africa. The WHO Academy will work with the Korean Ministry of Health and Welfare to develop a comprehensive curriculum on general biomanufacturing.

In parallel, WHO is intensifying regulatory system strengthening through its Global Benchmarking Tool (GBT), an instrument that assesses the regulatory authorities' maturity level. The GBT will serve as the main parameter for WHO to include national regulators in the WHO-listed Authorities list. Another aim is to build a network of regional centres of excellence that will act as advisers and guides for countries with weaker regulatory systems.

Five more countries will also receive support from the global mRNA hub in South Africa: Bangladesh, Indonesia, Pakistan, Serbia and Viet Nam. These countries were vetted by a group of experts and proved that they had the capacity to absorb the technology and, with targeted training, move to the production stage relatively quickly. Argentina and Brazil were the first countries from the region of the

Americas to receive the mRNA technology from the global hub in South Africa, joining the initiative in September 2021. The companies from these two countries are already receiving training from the technology transfer hub.

Numerous countries responded to the call for expressions of interest from the technology transfer hub in late 2021. The WHO will provide support to all of the respondents but is currently prioritizing countries that do not have mRNA technology but already have some biomanufacturing infrastructure and capacity. The WHO will enter into discussions with other interested countries and other mRNA technology recipients will be announced in the coming months.

<https://www.who.int>

ASIA-PACIFIC BANGLADESH

New patents bill passed

The parliament has enacted the Bangladesh Patents Bill 2022, aiming to make a century-old patents law more time-befitting and to safeguard the intellectual property rights. The law, among others, extends the validity period of patents from 16 years to 20 years.

Sheikh Faezul Amin, the additional secretary (policy, law, and international co-operation) to the industries ministry, said the new law included provisions enabling joint registrations if needed. The pre-existing patent and design law was enacted in 1911. In 2016, the law was divided into two parts, a patent law and a design law. According to him, the act was needed to enable updates to stay attuned with the current growth of the economy and the expansion of trade and commerce.

The bill states that any technological product would be patentable if it has something new in it. However, inventions, scientific theories and mathematical methods, business methods, rules or methods of performing purely mental work or sports and any such computer programmes would not be patent protected. In addition to the need to prevent

commercial use within the borders of Bangladesh in order to protect public order and ethics, a number of other issues have been left out of patent protection, including innovation.

A registrar office will be there to issue or cancel patents of any single inventor or joint inventors of a technical innovation under the proposed law.

<https://www.thedailystar.net>

CHINA

R&D investment in 2012-2021

Researchers China's manufacturing sector saw an increase in research and development (R&D) investment during the 2012-2021 period, the Ministry of Industry and Information Technology (MIIT) said. Investments in the sector's R&D rose from 0.85 per cent in 2012 to 1.54 per cent in 2021, Wang Wei, an MIIT official, said at a press conference. In 2021, the R&D investment of China's specialized and sophisticated enterprises that produce new and unique products reached 10.3 per cent, according to Wang.

The manufacturing sector is also seeing an improvement in its innovation system. A total of 23 manufacturing innovation centers have been set up by the central government or co-established by the central and local governments. Industrial enterprises with an annual business turnover of at least 20 million yuan (\$2.96 million) saw the share of the revenue brought by the new products in total business revenue increase from 11.9 per cent in 2012 to 22.4 per cent in 2021, according to Wang.

<https://www.chinadaily.com.cn>

State-owned enterprises invest more in R&D

China's centrally administered state-owned enterprises (SOEs) invested more in research and development (R&D) to boost innovation-driven growth in the first half of 2022, official data showed. The central SOEs' total expenditure on R&D amounted to around 378.62 billion yuan (about \$56.1 billion) in the first six months, an increase of 19.7 per cent over the same period of last year, said the State-owned

Assets Supervision and Administration Commission (SASAC) of the State Council.

The R&D input of the central SOEs has maintained a double-digit growth during the first six months, and the R&D investment intensity of those companies increased by 0.12 percentage points year on year, according to the SASAC. The SASAC data also showed that the combined revenue of China's central SOEs stood at 19.2 trillion yuan in the January-June period, an increase of 12 per cent year on year. Their net profits came in at 1.09 trillion yuan, up 6.1 per cent from the year earlier.

<https://www.chinadaily.com.cn>

INDIA

Establishment of BIMSTEC Technology Transfer Centre

The Union Cabinet chaired by the Prime Minister Shri Narendra Modi has approved a Memorandum of Association (MoA) by India for the establishment of Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) Technology Transfer Facility (TTF) was signed by the BIMSTEC member countries at the 5th BIMSTEC Summit held at Colombo, Sri Lanka on 30th March, 2022.

The main objectives of the BIMSTEC TTF are to coordinate, facilitate, and strengthen cooperation in technology transfer among the BIMSTEC Member States by promoting the transfer of technologies, sharing of experiences and capacity building.

The TTF shall facilitate transfer of technologies among the BIMSTEC Member States, amongst other things, in the following priority areas: Biotechnology, Nanotechnology, Information and Communication Technology, Space technology applications, Agricultural technology, Food processing technology, Pharmaceutical technology automation, New and renewable energy technology automation, New and Renewable energy technology, Oceanography, Nuclear Technology Applications, E-waste and solid waste management technology, Health Technologies, Technologies pertinent to Disaster Risk Reduction and Climate Change Adaptation.

The TTF shall have a Governing Board and the overall control of activities of the TTF shall be vested in the Governing Board. The Governing Board shall consist of one nominee from each Member State.

The expected outcomes of the BIMSTEC TTF are:

- i. Databank of technologies available in BIMSTEC Countries,
- ii. Repository of information on good practices in the areas of technology transfer management, standards, accreditation, metrology, testing and calibration facilities,
- iii. Capacity building, sharing of experiences and good practices in development, and
- iv. Transfer and use of technologies among the BIMSTEC countries.

<https://pib.gov.in>

Report on digital banks

A report from the National Institution for Transformation India (NITI Aayog) makes a case and offers a template and a roadmap for a licensing and a regulatory regime for digital banks. It focuses on avoiding any regulatory or policy arbitrage and offers a level playing field to incumbents as well as competitors.

The report recommends a carefully calibrated approach, comprising the following steps:

1. Issue of a restricted digital bank licence (to a given applicant, the license would be restricted in terms of volume/value of customers serviced and the like).
2. Enlistment (of the licensee) in a regulatory sandbox framework enacted by the Reserve Bank of India.
3. Issue of a "full-scale" digital bank licence (contingent on satisfactory performance of the licensee in the regulatory sandbox, including salient, prudential and technological risk management).

The report also maps prevalent business models in this domain and highlights the challenges presented by the "part-

nership model" of neo-banking—which has emerged in India due to a regulatory vacuum and in the absence of a digital bank licence.

The methodology for the licensing and regulatory template offered by the report is based on an equally weighted "digital bank regulatory index." This comprises of four factors—(i) entry barriers; (ii) competition; (iii) business restrictions; and (iv) technological neutrality. The elements of these four factors are then mapped against the five benchmark jurisdictions of Singapore, Hong Kong, United Kingdom, Malaysia, Australia, and the Republic of Korea.

<https://www.pib.gov.in>

FDI equity inflows in R&D sector

In the calendar year (C.Y.) 2021, India attracted USD 343.64 million in Foreign Direct Investment (FDI) equity inflow, a 516 per cent increase over the previous C.Y. 2020. (USD 55.77 million). In the Research and Development (R&D) industry, FDI is allowed via a 100% automatic route, subject to any applicable laws, regulations, security requirements, and other restrictions. Following Telangana and Haryana in order of FDI Equity recipients in R&D for C.Y. 2021 is Karnataka. Telangana, Karnataka, Haryana, Andhra Pradesh, and Tamil Nadu all experienced growth of more than 250 per cent in C.Y. 2021 compared to C.Y. 2020.

With a 40% share of all FDI Equity in R&D, Singapore leads Germany (35%) and the United States in terms of R&D investment during the C.Y. 2021. (11 per cent). Additionally, the FDI equity inflow from a number of nations, including Germany, Mauritius, France, Singapore, Oman, and the United States, increased by more than 200 per cent from the previous C.Y. 2020.

Daimler Truck Innovation Center was the top FDI Equity inflow recipient company in R&D during the C.Y. 2021 with 35% share of the total FDI Equity in R&D, followed by Aragen Life Sciences Private Limited (34%), and Stelis Biopharma Private Limited (21%).

These trends indicate a robust and growing R&D sector, which would benefit the economy by driving innovation, increasing productivity, thereby leading to a higher economic growth.

<https://www.thestatesman.com>

INDONESIA

Formal registration of tech and game companies

The Ministry of Communication and Information Technology of the Republic of Indonesia (Kominfo) had issued regulation no. 5 of 2020 on Penyelenggara Sistem Elektronik Swasta (PSE) or Private Electronic System Providers. This regulation is imposed to local as well as foreign tech enterprises operating in the Republic of Indonesia, which include game companies, who are (1) providing services within the territory of the Republic of Indonesia, (2) doing business in the Republic of Indonesia, and/or (3) whose electronic system is used and/or offered in the territory of the Republic of Indonesia.

There are four main objectives of the regulation: (1) establishing a system of all Public Sector Enterprise (PSEs) operating in the Republic of Indonesia; (2) maintaining the Republic of Indonesia's digital space; (3) protecting public access on digital platforms; and (4) creating a fair system between the domestic and foreign PSEs, including in terms of tax collection.

According to the PSE website run by the Kominfo, there are currently 8,276 private PSEs that are registered, consisting of 8,069 domestic PSEs and 207 foreign PSEs. Some of the big names who have registered to the website are Google, YouTube, Search Engine, Playstore, Ragnarok Online, Valorant, PUBG Mobile, Mobile Legend, Roblox, and Google Maps. There are companies and games that have not yet registered to Kominfo's database, including Opera, LinkedIn, PayPal, Amazon.com, Alibaba.com, Yahoo, Bing, Steam, Epic Games, Battle.net, Origin, Counter-Strike: Global Offensive, and Dota 2. The failure to comply will be met with the following steps: a formal warning, a monetary fine, and an access termination.

The new regulation provides an opportunity to obtain information on the number of gaming companies that operate in the country. In a report launched by the Kominfo, there is a demand for more opportunities and jams for local game publishers to increase their experience. By tracking the gaming companies currently active in the country, the government can promote more game jams between the local and foreign game companies, or fund internship opportunities to major game studios. The registration requirement may also promote fairness in terms of tax issues in the gaming industry. Currently, foreign companies are yet to contribute to the country's tax revenue as compared to the local gaming companies.

On the other hand, the regulation may potentially disrupt the current games market in the Republic of Indonesia. In terms of privacy, developers will be required to provide the government access to their users' personal data, which may violate one's rights to data protection. Furthermore, there is a lack of clarity in Article 14 point 3 in the PSE regulation. It states that an enterprise would be prone to lawsuits if certain contents are considered "disturbing public order," without providing further information on what this entails. This may hinder game development projects that are already under way and ultimately affect the prepublic of Indonesia's growing games industry. Global game companies could be deterred from investing and publishing games in Indonesia as the games could be banned without detailed reasons or due to fear that the companies have to compromise their users' private data.

<https://nikopartners.com>

MALAYSIA

Rules on tax treatment of R&D expenditures

The Inland Revenue Board of Malaysia has published an updated public ruling explaining the rules relating to qualifying research and development (R&D) expenditures for tax incentive deductions. The businesses residents in Malaysia that

undertake the R&D activity may be able to claim tax incentives on their qualifying R&D expenditures in the form of a single deduction or double deduction. To qualify for a double deduction, the expenditure must be incurred for an "approved" qualifying R&D activity.

The updated ruling includes some clarifications from the previous editions of the guidance. For instance, it specifies that any cash contribution or payment for the use of services that are capital in nature will not qualify for a double deduction (noting, as examples, the purchase of plant equipment, buildings, or vehicles for research purposes). Among other updates, the new public ruling also states that effective from 1 January 2021, no double deductions will be permitted if the payments for R&D expenditures undertaken outside Malaysia constitute more than 30% of the total allowable R&D expenditure.

<https://mnetax.com>

Centre to boost 4IR

The Malaysian Government announced the establishment of the Centre for the Fourth Industrial Revolution (C4IR), an independent centre within the World Economic Forum, to support the achievement of Malaysia's overarching vision under its 4IR Policy launched in 2021, as well as the Malaysia Digital Economy Blueprint. The new centre aims to accelerate technology adoption that will help secure a more equitable, inclusive, and sustainable growth for Malaysia as the economy recovers from the COVID-19 pandemic.

The establishment of this centre, also the first in Southeast Asia, highlights the Malaysian Government's commitment to prioritizing technology as a key catalyst for economic growth and post-pandemic recovery, as well as supports its aspiration to be a regional leader in the digital economy.

The "C4IR" will be a part of the Forum's global networks for multi-stakeholder cooperation to realize the benefits of emerging and innovative technology. Through its current network of centres globally, the C4IR is pioneering an agile

and human-centred model of tech-focused policy development and implementation. The C4IR will be officially set up and officiated by Malaysia's Prime Minister in the second half of 2022. The C4IR establishment was announced on behalf of the Malaysian Government by the Malaysia's Minister of Finance, on the sidelines of the World Economic Forum Meeting held from 23 to 26 May 2022.

Malaysia's Minister of Finance stated that the country is accelerating its digital transformation journey, and its ability to leverage 4IR technologies such as artificial intelligence, nanotechnology, renewable energies, and quantum computing will be one of the leading drivers for the nation's sustainable, resilient, and inclusive economic growth in the decades to come.

<https://opengovasia.com>

PHILIPPINES

Patent fee waivers

The Intellectual Property Office of the Philippines (IPOPHL) has launched programs to assist female inventors and female-led micro-, small-, and medium-sized enterprises (MSMEs) in protecting their intellectual property (IP). In a virtual launch, the IPOPHL-Bureau of Patents Director Lolibeth R. Medrano said the Juana Patent and Juana Design Incentive Protection programs seek to promote the registration of IP and improve IP awareness, particularly for women. "The Juana Patent and Juana Design programs are envisaged to assist women inventors, designers, and entrepreneurs (in) protecting their intellectual creations by (offering an) incentive package for invention, utility model (UM), and industrial design (ID) applications," Ms. Medrano said. The goal is to "promote gender inclusivity and enhance national innovation. IP is one of the areas where female participation can be greatly enhanced," she added.

According to the IPOPHL, the program will waive fees for up to 50 patents, 150 UMs, and 150 ID applications for applicants that qualify for the program. "Waiving the fees for application, publication and substantive examination, the new program will

provide women inventors and innovative, women-led MSMEs and startups with application savings from P2,700 for IDs and UMs up to about P5,100 for patents," IPOPHL said. IPOPHL also signed a memorandum of agreement with the Department of Trade and Industry (DTI) to promote the programs.

The IPOPHL said those interested in the incentives must have been in business for at least one year, with a limited financial capacity. An applicant must also not have previously availed or funding under the Republic Act 7459 or the Philippine Inventors and Inventions Incentives Act. Enterprises whose principals apply for the program must have no more than 20 employees.

"IPOPHL's programs highlight the role of IP as a valued asset and business tool for entrepreneurs. Protecting IP goes hand in hand with the DTI's objective of shaping a culture of innovation and creativity. Again, we reiterate that we don't want to just create MSMEs. We want to create smarter and higher-value MSMEs," Trade Secretary Ramon M. Lopez said. "As the pandemic deepened risks to vulnerable groups like women, the (program) comes at an opportune time to help them bounce back from the livelihood losses and economic challenges from the pandemic. By helping them capitalize on their ingenuity and protect their IP, we are also fulfilling our commitment to do more in empowering women to spur innovation in the country," the IPOPHL Director General, Rowel S. Barba said.

<https://www.bworldonline.com>

Rules for geography-based intellectual property

The Intellectual Property Office of the Philippines (IPOPHL) has drafted the implementing rules and regulations on geographical indications (GI)—which essentially identify a good to a specific locality—in a bid to strengthen the protection of these products in the country. The regulations, drafted by the Bureau of Trademarks, aims to fulfill the recognition of GIs as "protectable" intellectual property

under the law. It will also fulfill the obligation of the Philippines as a member of the World Trade Organization to provide reciprocal rights and GI protection to other members.

In a recent statement, the IPOPHL said the draft defines geographical indicators (GI) as "any indication which identifies a good as originating in a territory, region or locality, where a given quality, reputation, or other characteristic of the good is essentially attributable to its geographical origin and/or human factors." The IPOPHL, citing the draft, said it is important to protect GIs since it is vital in the competitive advantage of local and indigenous products. The protection for a GI is not subject to a certain period and will remain valid unless its registration is canceled.

Under the draft, registrants will have the rights to prevent their products from being misused by other stakeholders, such as a false representation that a good actually comes from somewhere else, among other cases. The GIs in the Philippines are protected under the trademarks section of the Intellectual Property Code of 1997. The popular Guimaras Mangoes and the Tau Sebu "T'nalak," registered as collective marks, are identified as potential GIs.

Other possible examples are Bicol Pili, Davao Pomelo, Cordillera Heirloom Rice; Camiguin "Lanzones;" Davao Cacao; Kalinga Coffee; Antique's Bagtason Loom; Aurora's Sabutan Weave; Samar's Basey Banig; Basilan and Zamboanga's Yakan cloth; and, most recently, the Masbate beef and Baguio Strawberry.

<https://business.inquirer.net>

REPUBLIC OF KOREA

R&D Spending

The Republic of Korea placed second in the research and development (R&D) spending as a portion of its gross domestic product (GDP) among major developed countries in 2020, but its tepid growth in recent years call for more policy support,

a report said. The Republic of Korea's R&D expenditures reached 93.1 trillion won (\$75.4 billion) in 2020, accounting for 4.81 per cent of the GDP, according to a recent report by the Federation of Korean Industries (FKI), the country's largest business lobby. This made the Republic of Korea the biggest R&D spender among 36 out of 38 member countries of the Organization for Economic Cooperation and Development (OECD) trailing only Israel, whose R&D portion came to 5.44 per cent, the report said.

Chile was excluded from the finding due to limited available data. Costa Rica was also excluded from the report because it joined a Paris-based organization last year.

The report also found that the Republic of Korea's R&D portion jumped 2.54 percentage points last year from 2001, a nearly fivefold increase compared with the OECD average of 0.53 percentage point.

Large companies spent 71.3 trillion won, representing a bulk of the expenditures, while 21.6 trillion won was spent by the government or other public entities. The R&D spending, however, has remained stalled at the average of around 7.5 to 8.0 per cent in the past decade, retreating from the average 11.4 per cent for 2001-2010.

In 2018, the Republic of Korea ranked far below the OECD average in earnings from intellectual property royalties versus the R&D spending, with the percentage coming to 9.9 per cent, compared with the OECD's 27.7 per cent. The FKI called for a stronger policy support for large enterprises, whose R&D spending makes up more than half of all the corporate R&D investments.

"The corporate R&D investment has a greater positive effect on the total factor productivity than government or public R&D," the report said. "It is necessary to revitalize domestic R&D by strengthening tax support for large corporations that are leading the private sector R&D," it said.

<https://m.koreaherald.com>

R&D investment-to-sales ratio in semiconductor companies

The market research firm IC Insights said that the Republic of Korea's semiconductor companies' R&D investment was equivalent to 8.1 per cent of their sales last year, whereas the figure was 16.9 per cent, 12.7 per cent, 11.5 per cent and 11.3 per cent in the case of the U.S., Chinese, Japanese, and Taiwanese semiconductor companies, respectively. From 2011 to 2021, the annual R&D spending in the global semiconductor sector increased from \$50.8 billion to \$80.5 billion. U.S.-headquartered companies increased their R&D investment-to-sales ratio from 54.5 per cent to 55.8 per cent.

In non-Japan Asia, the ratio jumped from 18 per cent to 29.5 per cent in that period. The Republic of Korea's companies' R&D spending, \$9.9 billion, accounted for 11.9 per cent of the global total in 2021. On the other hand, the ratios of the European and Japanese companies fell from 11.6 per cent and 15.9 per cent to 8.1 per cent and 6.6 per cent from 2011 to 2021, respectively. Still, the absolute amount of R&D investment of the companies in the industry in the Republic of Korea is relatively smaller. Intel's R&D investment amounted to \$15.2 billion in 2020, when Taiwanese companies' was \$11.7 billion.

<http://www.businesskorea.co.kr>

THAILAND

Digital economy

Thailand's Deputy Prime Minister and Chair of the DE Fund Executive Committee, General Prawit Wongsuwan, has set the direction of the country's Digital Economy and Society Development Fund (DE Fund) for 2023, with the goal of enhancing the Thai people's economic and social development capacity through digital technology. The DE Fund Management Committee acknowledged the Fund's performance, which can be carried out as planned because progress has been made and nearly 100 per cent of the money has been disbursed for projects funded from the Fiscal Year 2019 to date, particularly for projects funded in the Fiscal Year 2019.

The committee discussed and approved the Long-Term Action Plan (B.E. 2023-2027), which included the Fund's Operational Plan and Budget for the Fiscal Year 2023 as a guide for future operations. They have also collaborated on the creation of a general funding policy framework. The seven areas for the Fiscal Year 2023 are:

- Education for the new generation in the digital age
- Digital Government and Infrastructure
- Proactive Agriculture with Digital Innovation
- Digital Technology in the Future
- Health Technology
- Security in the digital world
- Digital environment saves

Thailand Smart City is utilizing innovative technologies to improve the efficiency and effectiveness of city management and services in seven areas: intelligent environment, intelligent economy, intelligent transportation, intelligent energy, intelligent citizens, intelligent living, and intelligent public administration.

The DE Fund is currently considering projects that request funding for the Fiscal Year 2022 under the cap of 2,500 million baht. After the proposal was closed, over 600 projects were submitted. The Fund has formed a working group of specialists from various sectors to select a digital development project that is compatible with the country's development context and can provide visible results. The outcomes of the annual sponsored projects will be made public on the Digital Economy and Society Development Fund's website.

<https://opengovasia.com>

Funding support key R&D projects

The Thai government is set to tap into the Global Partnership Fund and Competitive Business Fund as tools to draw foreign investments in high technology and targeted industries. Luxmon Attapich, advisor to the president of the Thailand Science Research and Innovation (TSRI), which

handles the Global Partnership Fund, recently discussed with the Board of Investment (BoI) using existing funds as a tool to draw foreign investments. The BoI agreed to use its Competitiveness Fund, worth 10 billion baht, to support the R&D projects that can be developed to commercial scale.

The Global Partnership Fund was established in 2020 to strengthen national science, research and innovation; create opportunities for the development of science, research, and the basic infrastructure of innovation; and support collaboration and networking between domestic and foreign research institutions.

The fund is supported by the government's annual budget through the TSRI, and is supervised by the National Higher Education Science, Research and Innovation Policy Council. It offers three main groups of projects—competitiveness enhancement, research excellence, and environment and sustainable development.

The TSRI plans to allocate 17.1 billion baht in the fiscal year 2023 to support R&D projects, an increase of 2.85 billion from 14.2 billion in the fiscal year 2022.

Thailand spent 193 billion baht on R&D in 2019, an increase of 5.9 per cent year-on-year. Of this amount, 23 per cent or 43.8 billion baht came from the government sector, while the private sector spent 77 per cent or 149 billion baht. The top three industries with the most R&D investment were food, petroleum, and finance and insurance. The government has a targeted spending on R&D to reach two per cent of the GDP in 2027.

<https://www.bangkokpost.com>

VIET NAM

IT, telecoms development trends

Cloud computing services, artificial intelligence (AI), the Internet of Things (IoT), 5G technology, fixed broadband internet, and blockchain technology are expected to lead the information technology and telecommunications sector in Viet Nam

in the time ahead, according to a recent survey. The survey, conducted by the Vietnam Report JSC, revealed that technology companies are investing in core and fundamental technologies to serve digital transformation.

Cloud computing services in Viet Nam are forecast to develop with better security than physical servers, helping organizations and businesses increase productivity and save machinery and infrastructure expenses. The country's cloud computing market is predicted to grow by some 26 per cent annually, the fastest pace in Southeast Asia and much higher than the global average of 16 per cent.

Meanwhile, about 66.67 per cent of enterprises are applying AI to their digital transformation process. Capable of managing and optimizing infrastructure and customer support, AI is expected to access all businesses in the future. The survey also found that the rate of firms using the IoT in 2022 has reached 86.67 per cent, an increase from 66.67 per cent in 2021.

The 5G technology is also believed to be part of the IT and telecommunications sector's future. Its contribution to Viet Nam's GDP will reach 7.34 per cent by 2025 as projected by the Institute of Information and Communications Strategy under the Ministry of Information and Communications (MIC). The application of 5G services will help telecoms enterprises boost the use of AI and IoT in smart city building and business operations, and meet digital users' demand for high-definition videos, virtual reality, and augmented reality.

According to the MIC's Authority of Telecommunications, telecoms network infrastructure has been expanded to 100 per cent of communal-level localities. The 2G, 3G, and 4G mobile networks have covered 99.8 per cent of the population while 5G has been piloted in 16 provinces and cities.

By the end of 2021, there were nearly 71 million mobile broadband subscribers and 18.8 million fixed ones, respectively rising 4 per cent and 14.6 per cent from 2020. Internet traffic in Viet Nam also surged by over 40 per cent in 2020. The

development of broadband networks is said to have created new spaces for businesses in the post-pandemic recovery period, especially opportunities for telecoms service suppliers to fuel growth in the future.

Regarding blockchain, this is a technology enabling safe transmission of data on the basis of a complicated data encoding system. It has developed beyond the financial and monetary sector to enter many different social aspects. Thanks to its development potential, blockchain is opening up chances for the technology - telecommunications industry, according to the report.

<https://en.vietnamplus.vn>

Vietnamese startups attract millions of US dollars

According to the Viet Nam Innovation and Technology Investment Report published by the National Innovation Center of the Ministry of Planning and Investment and Do Ventures, Viet Nam ranks third in Southeast Asia (after Singapore and Indonesia) in terms of the number of invested startup projects and the value of capital invested in start-ups.

In early 2022, many startups in Viet Nam also lured millions of US dollars from foreign funds.

SoBanHang: In March 2022, SoBanHang, a management application for small business households and online retailers, raised \$2.5 million from FEBE Ventures, Class 5, Trihill Capital and others.

SoBanHang was developed by two brothers Bui Hai Nam and Bui Hai Long to help small businesses and business households create online stores and manage orders. Mr. Bui Hai Nam was once the CEO of Lazada Viet Nam, while his brother Bui Hai Long used to be the Chief Analyst and CTO of the supermarket chain Landers Superstore in the Philippines. The capital will help SoBanHang focus on products and develop new features to support sellers in a more comprehensive way.

Infina: In February 2022, Infina platform announced that it had successfully raised \$ 6 million in a seed round

from six foreign investors, including Sequoia India's Surge program, Y Combinator incubator, Saison Capital Ventures, Starling Ventures, Alpha JWC, and AppWorks. Some of the other investors participating in this round have invested in similar startups and fintech models in other markets. Infina is an investment and accumulation platform focused on the Vietnamese market. Users have a wide range of investment options ranging from fixed income products to fund certificates, and stocks.

OpenCommerce Group: In late February 2022, cross-border e-commerce company OpenCommerce Group (OCG) announced it had raised \$7 million in a Series A funding round. Headquartered in Hanoi with representative offices in San Francisco (USA) and Shenzhen (China), OCG provides whole-package support services for online sellers with low costs and limited risks. More than two years after its launch, the platform has helped more than 86,700 people from 195 countries do their e-commerce business globally, reaching \$670 million in the GMV value. The company's tech-

nology ecosystem currently consists of three key products: ShopBase, PrintBase, and PlusBase.

Mio: In early 2022, Mio, an e-commerce platform announced via social networks, a funding of \$8 million in the Series A round, bringing the total capital raised by the company since its establishment to \$9.1 million. The new investors include Jungle Ventures, Patamar Capital, Oliver Jung, GGV, Venturra, Hustle Fund, iSEED SEA and Gokul Rajaram. Established in June 2020, Mio is a trading platform for buying and selling agricultural products and FMCG for tier two and three cities in Viet Nam. The criteria that the startup sets for commodity products on its platform are consistent quality, affordable price, and next-day delivery.

Timo: Timo digital bank in 2022 raised \$20 million from Square Peg, an investment fund with experience in supporting and investing in Fintechs such as FinAccel and Airwallex, along with the participation of investment funds Jungle Ventures, Granite Oak, Phoenix Holdings, and other angel investors.

Established in 2015, Timo provides digital banking products related to payment and processing banking requests without the need for customers to visit physical branches. Users can even open a bank account without going to a bank for fulfilling the registration procedures. Notably, Tech in Asia says that Timo is aiming to be licensed as a digital bank in Viet Nam.

Jio Health: In early March 2022, Jio Health—a healthcare startup based in Viet Nam—announced the completion of a series B funding round worth \$20 million led by Singapore-based investment fund Heritas Capital. Other investors include Fuchsia Ventures, Kasikorn Bank Group, and existing investor Monk's Hill Ventures.

Jio Health was founded in 2014 with the goal of using modern technology to provide affordable healthcare on demand. Through a smartphone application, this platform helps doctors and nurses to visit and care for patients more conveniently anytime and anywhere. The company currently has 150 general care providers on its platform.

<https://vietnamnet.vn>