BACKGROUND PAPER

Digital Entrepreneurship in Asia for Economic Resilience and Post-Pandemic Recovery: Country Report – Malaysia

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I. GENERAL INTRODUCTION TO MALAYSIA'S SYSTEM OF ENTREPRENEURSHIP

Malaysia's economy of 32 million inhabitants strong is close to reaching the status of a high-income country, with its gross national income per capita reaching US$11,200 in 2020.[1] Starting out in 1957 as an economy that is very dependent on natural resources like tin, rubber, palm oil, and oil, the government's policy has been focused on transforming its economy into one that is among the strongest, most diversified, and fastest growing in Southeast Asia. In 1996, further visionary nationwide policies were implemented to develop and support Malaysia's information and communication technology (ICT) and digital economy growth; Malaysia then became the first pioneering country in Asia to recognize digital technologies as a major industrial and economic contributor. Accommodating policies and incentives were established by creating special economic zones and high-tech business districts, the so-called Multimedia Super Corridor (also known as the MSC in Malaysia) from the KLCC Petronas twin towers in the north to the newly developed ICT city Cyberjaya, 35 kilometers south. The government agency Malaysia Digital Economy Corporation (MDEC) was created to execute and supervise MSC and its accommodating facilities and incentives.

Over the last 25 years, building Malaysia's current ecosystem has been a close interplay of government and private sector actors. On the side of the government at the federal level, with ministries like the Ministry of Science Technology and Innovation (MOSTI), the Ministry of Communications and Multimedia, and Ministry of Entrepreneur Development and Cooperatives, agencies like MDEC, the Malaysian Research Accelerator for Technology and Innovation (MRANTI), Cradle, and Penjana Kapital have supported the creation of a supply chain of new start-ups from ideation to funding and beyond. Today, these efforts are complemented by agencies at the state-level like Selangor Information Technology and Digital Economy Corporation (SIDEC), Sarawak Digital Economy Corporation (SDEC), and Sabah Creative Economy and Innovation Center (SCENIC). On the other side, private sector actors like angel investors organized through the Malaysia Business Angel Network (MBAN), and ScaleUp Malaysia, supplemented by networks of corporate innovation and coworking hubs, have operated intensive incubation and accelerator programs to provide entrepreneurs peer-to-peer (P2P) support, like 1337 Ventures, all enhancing the networking capabilities of the ecosystem. Current

[1] World Bank. 2021. Aiming High: Navigating the Next Stage of Malaysia's Development. Washington, DC (12 March).

estimates are that Malaysia's ecosystem harbors 1,500–2,000 start-ups.[2,3] Of those, 443 have successfully participated in venture capital funding rounds in the past 8 years.[4]

It is expected that the global health crisis in 2020 and 2021 with the economic lockdowns in the country has changed the nature of the ecosystem: far less networking opportunities, but with a period of forced experimentation with developing more digital capabilities. The relevant current policy initiatives, like the MSC status and Malaysia Tech Entrepreneur Programme visa, have been successful measures to stimulate innovation by making it easier to establish a firm and bring entrepreneurial talents to the country. Today, 4,699 companies have been awarded with the MSC Malaysia status, and more than 183 founders have received the Malaysia Tech Entrepreneur Programme visa.[5]

More recently, the Malaysia Digital Blueprint has identified focus areas and sectors. In 2021, the various government agencies are involved in aligning their ecosystem development efforts in The Malaysia Start-up Ecosystem Routemap (Super). On 18 November 2021, the MOSTI official launched the policy for (Super) 2021–2030 and the MYStartup platform to build a conducive start-up ecosystem.[6]

A. Characteristics of the Ecosystem

To understand the roles and contributions the various actors make in building and nurturing the ecosystem, we conducted a series of interviews with more than 50 government officers and other ecosystem leaders.[7] The results of this qualitative research are reported along the six main roles and contributions: general policy directives, key government agencies, human capital development, idea development, boundary-crossing, and venture capital funding.

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[2] Many ecosystem experts mention that many published estimates about the number of start-ups in the country are not precise; the assessments have ranged from 1,000 to 3,000. During the first national lockdowns in 2020, pioneering start-up incubator 1337 Ventures started to build a central database, open for public usage: the Malaysian Startup List. https://muru-ku.com/.

[3] Securities Commission Malaysia. 2020. *Annual Report 2020*. https://www.sc.com.my/api/documentms/download.ashx?id=e1c7eb21-53db-4f02-a8f8-55dc09f9ffff

[4] Crunchbase database of Malaysia-based start-ups receiving external funding in 2012–2020.

[5] MDEC website on the MSC facility. https://mdec.my/what-we-offer/msc-malaysia/.

[6] Mosti launches Malaysian Startup Ecosystem Roadmap, MYStartup. https://www.thesundaily.my/business/mosti-launches-malaysian-startup-ecosystem-roadmap-mystartup-IJ8579875.

[7] The list of people interviewed for collaboration in the study are from the private sector, public sector, and community. From the private sector: Dr Siva (Scale Up), Renuka Sena (Proficeo), Peter Wee (Nexea), Johnathan Lee (RISE), Sam Shafie (pitchIN), Tricia Francis (MBAN), Farah Fauzi (Techstars), Ralph (Impact Hub KL), Ee Ling Lim (500Startups), Ganesh Mahendranathan (RHB), and Bikesh Lakhmichand (1337 Ventures). From the public sector: Amiruddin Abdul Shukor (MaGIC), Rajen Dorairaj (MaGIC/MRANTI), Mohan Low (MDEC), Maisarah (SIDEC), Farhan Wan Mohd Fuadd (DRZ), Viviantie Sarjuni (SCENIC), Saverinus Kitingan (SATA), and Cradle. From the community and education sector: Melati Nungsari (RYSE, ASB), Loredana Padurean (ASB), Heislyc Loh (StartupMamak) Homam Alghorani (Startups Zone), Muhammad Farouq Abdul Patah (MESF), Arthur Raymond (Kota Kinabalu Coders), Daniel Cerventus (Malaysia Entrepreneurs Next Up Asia), and Johnson Lam (Kakidiy).

1. General Policy Directives

Current government policy framework about innovation and entrepreneurship consists of four national policies and frameworks: the National Policy on Science, Technology, and Innovation, the National 4IR policy, the National Entrepreneurship Policy 2030, and the Malaysian Start-up Ecosystem Roadmap (SUPER). Here, we focus on the more relevant latter two. The Government of Malaysia adopted the National Entrepreneurship Policy (NEP) in 2019, as a long-term strategy to chart a course and become an outstanding entrepreneurial nation by 2030.[8] Designed to be a catalyst for Malaysia to become an economic axis in Asia, the policy created the narrative for a united, inclusive, prosperous, and equitable economy. The five strategic objectives in the NEP for 2030: (i) Create a holistic and conducive ecosystem for entrepreneurs in Malaysia that are in line with inclusivity and sustainability objectives of the socioeconomic development agenda. (ii) Create a culture within Malaysian society for engendering entrepreneurial thinking. (iii) Boost the number of high-quality, viable, resilient, and competitive Malaysian entrepreneurs who possess a global mindset. (iv) Improve the capabilities of micro, small, and medium-sized enterprises and cooperatives. (v) Rebrand entrepreneurship as a preferred career choice for the society. As Malaysia aspires to become a developed and prosperous nation by 2024–2028, it has recognized the importance of an effective collaboration, efficient coordination, and commitment from both the government through policies and funding as well as the private sector through knowledge dissemination and venture capital finances.

The latest policy specifies the objectives for ecosystem growth further. On 18 November 2021, MOSTI launched the SUPER 2021–2030 and the MYStartup platform to build a conducive start-up ecosystem. “Super acts as the true north of all other national policies and guidelines on start-ups.”[9] The target for the policy is to grow the ecosystem to 5,000 start ups and 5 unicorns by 2025.[10] In addition to the MYStartup platform, it contains 15 other interventions. The government agency in charge for executing this plan is Cradle which was allocated RM20 million in the government budget of 2022.

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[8] Ministry of Entrepreneurship Development and Cooperatives. 2019. *National Entrepreneurship Policy Malaysia: An Outstanding Entrepreneurial Nation 2030.* https://www.medac.gov.my/admin/files/med/image/portal/NEP2030-Final.pdf (accessed 14 October 2021).

[9] Sunbiz. 2021. Mosti launches Malaysian Startup Ecosystem Roadmap, MYStartup. *The Sun Daily*. 18 November. https://www.thesundaily.my/business/mosti-launches-malaysian-startup-ecosystem-roadmap-mystartup-IJ8579875 (accessed 23 November 2021).

[10] Bernama. 2021. Mosti to create 5,000 companies including five unicorn start-ups by 2025, says Dr. Adham. *Malay Mail.* 11 October. https://www.malaymail.com/news/malaysia/2021/10/11/mosti-to-create-5000-companies-including-five-unicorn-startups-by-2025-says/2012507 (accessed 23 November 2021).

2. Key Government Agencies

At the heart of executing the policies for ecosystem development are four key government agencies operating at arm's length from their ministerial departments; each agency has its specialization and core strengths: MDEC, MRANTI, Cradle and Penjana Kapital. In 1996, the MDEC was established by the Government of Malaysia as the lead agency to implement Malaysia's digital economy forward, specifically the MSC. Gradually MDEC's mandate expanded by developing and implementing various digital initiatives and programs ranging from developing human capital (digital skills), supporting private sector transition (digital business), and stimulating foreign direct investments (digital investments).[11]

Another important organization in the country's ecosystem is the MRANTI. In October 2021, the new agency is created by merging the Malaysian Global Innovation & Creativity Centre (MaGIC) and Technology Park Malaysia (TPM), with the mandate to look into commercialization of technology and IR4.0. One of its predecessors, MaGIC, was established at a location in Cyberjaya in 2014 and had its focus on very early stage idea generation and talent development by running acceleration programs for local and international start-ups.[12] In its 8 years of operation, MaGIC supported more than 4,100 start-ups, of which 457 social enterprises. TPM is the other preceding MRANTI unit which was established as part of the MSC agenda to be the innovation facilitator and technology enabler of Malaysia in 1996. In its 25 years period, more than 3,000 technology-driven companies benefited from TPM, both local and multinational within various clusters of industry; mainly in the ICT cluster followed by engineering and biotech, telecommunication and content, and support services. The newly merged entity MRANTI combines MaGIC's accelerator capabilities with TPM's innovation and technology infrastructure. MaGIC's offices in Cyberjaya closed and the new agency is housed at the TPM's 686-acre technology park campus in Kuala Lumpur.

The third and fourth key government agencies are Cradle and Penjana Kapital, which are focused on funding innovation and entrepreneurial ventures. Launched in 2003, the Cradle Fund is an

[11] MDEC initiatives and programs under the three main areas are Digital Skills (mydigitalmaker, Premier Digital Tech Institutions, e-Usahawan, GLOW) Digital Business (Malaysia Digital Hubs, GAIN, DFTZ) and Digital Investments (MSC, Global Business Services, Global Testbed Initiative). Bernama. 2021. MDEC: 25 years of driving M'sia's digital transformation. *Daily Express*. 2 August. https://www.dailyexpress.com.my/news/175590/mdec-25-years-of-driving-m-sia-s-digital-transformation/ and www.mdec.my (accessed 14 October 2021).

[12] Rahimy Rahim. 2014. Young entrepreneurs important for the future, says Obama. *The Star.* 27 April. https://www.thestar.com.my/news/nation/2014/04/27/obama-at-magic/ (accessed 14 October 2021).

early-stage start-up contributor company incorporated under the Ministry of Finance. Its mandate is to fund high-capability and technology start-ups through the Cradle Investment Program (CIP). Until to date, Cradle has helped fund more than 700 Malaysian high-tech start-ups and holds the highest commercialization rate among government grants in the country.[13] In 2020, it allocated RM26.5 million to fund its two newly launched investment programs, namely Cradle Investment Programme Ignite (CIP Ignite) and Cradle Investment Programme Accelerate (CIP Accelerate), targeting about 38 start-ups. Recently, with the creation of MRANTI whose focus is primarily on technology commercialization, Cradle's mandate got expanded into not only providing funding and grants, but also absorb a large part of MaGIC's original portfolio by developing start-up capabilities. Thereby, Cradle became the key agency to lead the execution of the SUPER policy. To raise more capital in need for rebounding fast from the coronavirus disease (COVID-19) pandemic and to accelerate the development of a future innovation economy, the Government of Malaysia incorporated a matching fund-for-funds program Penjana Kapital on 1 July 2020. Its main role is to stimulate Malaysia's economy by futureproofing Malaysia businesses through innovation from start-ups, funded by private capital from strategic international and private domestic investors, matched by the government and in turn creating a vibrant and sustainable venture capital industry in Malaysia. In the first year of operation, it raised RM1.57 billion (US$370 million) in funding for start-ups.[14]

3. Human Capital: University Business Incubators and Entrepreneurship Programs

To get more young Malaysians interested in innovation and entrepreneurship, Malaysia's 20 public universities and many more of its private universities have launched specialized degrees related to entrepreneurship. All public universities also began intensifying the commercialization efforts of their intellectual property, in particular the five research-oriented universities: University of Malaya (UM), Universiti Kebangsaan Malaysia, Universiti Sains Malaysia, Universiti Putra Malaysia (UPM), and Universiti Teknologi Malaysia.[15] Good examples of technology transfer offices are the University of Malaya's UM Centre of Innovation and Commercialization (UMCIC) and UPM's Putra Science Park. UMCIC at UM is an important contributor by being a willing

[13] Sade Dayangku. 2020. Everything A Busy Entrepreneur Needs To Know About Cradle's 2 New Grants. *Vulcan Post.* 19 June. https://vulcanpost.com/702132/cradle-fund-malaysia-new-startup-grants-cip-ignite-accelerate/.

[14] Arjuna Chandran Shankar. 2021. Penjana Kapital brings in eight venture capital firms as part of Dana Penjana Nasional. *The Edge Markets*. theedgemarkets.com. https://www.theedgemarkets.com/article/penjana-kapital-brings-eight-vc-firms-part-dana-penjana-nasional (accessed 23 October 2021).

[15] Nooraini Mohamad Sheriff and Noordini Abdullah. 2017. Research Universities in Malaysia: What Beholds? *Asian Journal of University Education* v13 n2 p35-50 (December).

partner to entrepreneurs for exploration and research into technology development and licensing opportunities in various domains. They also host various accelerator programs and launchpads for innovation and collaboration.[16] Putra Science Park at UPM is organized along 11 research clusters for which it commercializes technologies; most acknowledged are its strengths in AgroTech and Biosystems and Biotechnology. In addition to licensing technologies, the center has its InnoHub to promote innovation, forster technopreneurs, and incubate start-ups.[17]

Involvement from the private sector to build human capital for the ecosystem comes through several universities and youth programs tasked to develop an exhaustive network of researchers, students, start-ups, and industries for the entrepreneurial space. The Rapid Youth Success Entrepreneurship (RYSE) Program at the Asia School of Business is one such program that is funded by the Citi Foundation, to reduce unemployment and increase the economic mobility of low-income youth. Participants of this program are taught to plan, design, and operate their own start-up from scratch. In this, looking into the university landscape of Malaysia's ecosystem, the recently established Asia School of Business (ASB) contributes to this space by offering action learning programs. Created through the collaboration of MIT Sloan Management School and Bank Negara in Malaysia, ASB became a hub for people from varying international background to come together and learn to become transformative and principled leaders; also in the space of innovation and entrepreneurship.[18]

4. Idea Development: Incubators and Accelerators

Malaysia has at least 28 accelerators and incubators active in its growing start-up ecosystem.[19] Most of these accelerators and incubators partner with each other and the government to collaborate and co-create a healthy environment for new entrepreneurs to grow their business. According to start-up research firm Tracxn, the most active local-born accelerators and incubators in Malaysia can be divided into three types. The first type of accelerators is the government agencies like MDEC and MRANTI/MaGIC, which run and/or support their own accelerator and venture building programs. In 2017, MDEC launched the Malaysia Digital Hub (MDH) initiative.

[16] University Malaya, Center of Innovation and Commercialization. https://umcic.um.edu.my/what-we-do.
[17] Rozana Sani. 2019. Managing technology transfer. *New Straits Times*. 17 October. https://www.nst.com.my/education/2018/10/422013/managing-technology-transfer (accessed 23 November 2021).
[18] American Malaysian Chamber Of Commerce (AMCHAM Malaysia). 2019. Citi in Community: Youth Empowerment, Financial Inclusion and Urban Transformation https://amcham.com.my/citibank-bhd/; and Melati Nungsari. 2021. What can I do that helps solve problems? *South China Morning Post.* https://www.scmp.com/presented/business/topics/china-conference-hong-kong/article/3136420/prof-melati-nungsari-what-can (accessed 14 October 2021).
[19] Tracxn database of accelerators and incubators. https://tracxn.com/d/investor-lists/Accelerators-&-Incubators-in-Malaysia.

The MDH initiative brings together all the key components and players for start-up growth into a common meeting place, with coworking spaces serving as the physical meeting point for this convergence. The MDH certification is awarded to coworking spaces that fulfils a set of criteria, which includes office space and internet connectivity, as well as community-focused elements, such as access to funding opportunities, talent, and tech partners. Today, MDEC has certified 10 coworking space operators, spanning 22 locations. Through this initiative, MDEC is supporting the growth of more than 600 start-ups.[20]

Second, the most prominent private sector incubators and accelerators are 1337 Ventures, Nexea, WatchTower and Friends, Incite Capital, and TH Capital. 1337 Ventures started in 2013 and is one of the pioneering incubators in the country when early-stage start-ups were lacking support. The unique property 1337 prides itself on is that pre-seed start-ups are matched with corporate venturing initiatives from the early beginning. In 2020 during the lockdowns, 1337 launched a fully online pre-accelerator program where start-up teams commit to 10 days over 5 weeks. The best ideas are awarded additional funding. Another start-up accelerator is Nexea which also has a venture capital fund that has backed multiple entrepreneurs across Southeast Asia in Mergers and Acquisition (M&A), Initial Public Offerings as well as provide guidance to the board of directors of organizations.[21] WatchTower and Friends runs a 4-month long acceleration program, a 3-day long Startup Campus Accelerator Lite Program, and a 5-day long S5D program for start-ups. It provides up to RM50,000 in initial funding and takes 8% equity in return. Incite Capital is a seed-focused fin-tech incubator, while TH Capital has a wider industry focus including mobile gaming, Internet of Things, e-commerce, and fin-tech. Finally, ScaleUp Malaysia was created in early 2019 when its founders had recognized a gap in the Malaysian start-up ecosystem between beyond ideation and initial product market fit to the next stage of growth. The accelerator is focused to build businesses that have high revenue growth and a path to profitability called the Pegasus model.[22]

The third group of incubators and accelerators in Malaysia are the international players that entered the ecosystem. Seed incubator Techstars came to the country as Up Global in 2014

[20] Stefanie Yeo. 2021. How Malaysia's coworking spaces can become more than just 'spaces'. *Tech in Asia*. 9 November. https://www.techinasia.com/malaysias-coworking-spaces-spaces (accessed 23 November 2021).
[21] *Digital News Asia*. 2021. Nexea Corporate Accelerator Program open for applications. 2 July. https://www.digitalnewsasia.com/startups/nexea-corporate-accelerator-program-open-applications (accessed 15 October 2021).
[22] Roehl Niño Bautista. 2021. ScaleUp Malaysia teams up with two venture capital firms for launch of third cohort. *Tech in Asia.* 24 August. https://www.techinasia.com/scaleup-malaysia-teams-vc-firms-launch-3rd-cohort (accessed 15 October 2021).

initially. In 2015, Techstars bought over Up Global and began to run Startup Weekends and other programs. Accelerator Endeavor started to be actively involved in the support and growth of Malaysia-based start-ups in 2013 when it launched its Kuala Lumpur office. Recently, the Bangkok-born RISE entered Malaysia as well, which has an extensive network within the start-up ecosystem as well as government agencies.[23] Through their people and international networks, they facilitate innovation for corporate and government partners, advising, mentoring, and judging start-ups as well as promoting programs through universities. They are built and run by entrepreneurs, and hence understand the complexities of putting ideas into action and scaling them. All these organizations have an important role to play moving forward the new innovative and entrepreneurial venture ideas as Malaysia starts to bounce back from the pandemic and work towards achieving their goals of being a start-up hub rivalling Singapore in the region.

5. Boundary Crossing: Corporate Innovation Hubs and Coworking Spaces

To embed the Malaysian start-up ecosystem into the greater economic fabric with larger companies, conglomerates, and government-linked companies, a considerable number of innovation and coworking hubs have been established aiding further growth of its fledgling start-up space. One of the most important ones in this space is the Hong Leong Bank Innovation Hub, which is attached to the Hong Leong Bank in Malaysia. Their mission is to create a collaboration-driven community to find innovative solutions to new challenges and embracing digital technologies. Their LaunchPad 2021 program is in its fourth instalment and has collaborated with at least 35 start-ups to reimagine financial services.[24] Another major player is the Sunway iLabs, part of the Sunway Group. The Sunway iLabs aim to foster entrepreneurship and simulate market-driven innovation and create entrepreneurs that are competitive in the rapidly changing environment. They are a nonprofit, smart partnership between a large conglomerate, a venture capital unit, and a university (Sunway Group, Sunway Ventures/SunSea Capital, and Sunway University).[25] Recently, insurance company FWD from Hong Kong, China entered Malaysia with an accelerator for FinTech and InsurTech, with seed funding of RM1.2 million over 2 years, in a partnership with 1,337 Ventures.[26]

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[23] Jennifer Jacobs. 2020. Innovation: A time to RISE. *The Edge Malaysia*. 30 April 2020. https://www.theedgemarkets.com/article/innovation-time-rise (accessed 16 October 2021).

[24] *Digital News Asia*. 2021. HLB collaborates with start-ups to build future together. 22 September 2021. https://www.digitalnewsasia.com/digital-economy/hlb-collaborates-startups-build-future-together (accessed 16 October 2021).

[25] Rahimi Yunus. 2020. Sunway City set to be epicentre of innovations, smart solutions. 29 December 2020. *Business News. The Malaysian Reserve*. https://themalaysianreserve.com/2020/12/29/sunway-city-set-to-be-epicentre-of-innovations-smart-solutions/ (accessed on 16 October 2021).

[26] https://www.fwd.com.my/en/press/2021/FWD-Start-Up-Studio/.

6. Venture Financing: Venture Capitalists and Angel Investors

Malaysia's ecosystem harbours many types of new venture funding – from formal and risk-taking to more informal and lending-based: from government grants, venture capital, angels, equity crowd funding (ECF), and to P2P lending. Government-backed funding for early-stage ventures come from grant schemes by Cradle and the newly created fund Penjana Kapital. The latter managed to attract nine more venture capital fund managers from the United States, the Republic of Korea, the People's Republic of China (PRC), Singapore, and Indonesia, interested in investing in Malaysian start-ups at various stages, from Pre-Seed to Post-Series A.

Venture capital funds active in Malaysia can be split into three groups. The local venture capitals form the first group which also run accelerators and tend to focus on early-stage ventures; like 1337 Ventures, Nexea, and TH Capital. The second group are the internationally operating venture capitals, often which a background in Sillicon Valley: 500Startups (500 Durians), Golden Gate Ventures, Monk Hill's. The pan-Asian venture capitals form the third group, like KL-based Gobi Partners and Catcha Group, and Singapore-based Jungle Ventures and KK. In total across the three groups, according to the Securities Commission of Malaysia, 106 registered venture capital invested in 311 companies for a total of RM4.31 billion in 2020 (footnote 3).

The MBAN, acting as the official trade association and governing body for 298 angel investors and 11 angel clubs in Malaysia, was founded in 2014. The network collaborates with the government fund Cradle to officially recognize investors for the Angel Tax Incentive, which has been designed to bridge the early-stage investment gap by encouraging qualified individual investors to invest in early-stage technology start-ups in Malaysia, to boost the growth of start-ups.[27]

An important vehicle for deal flow for the smaller retail and angel investors are the ECF platforms. In 2020, the Securities Commission of Malaysia granted three new ECF platforms a license to operate making the total of ECF rise to 10. In 2020, 78 companies have successfully fundraised on ECFs, with a 457% increase in total capital raised through ECF which amounts up to RM127.73 million compared to RM22.92 million pre–COVID-19 pandemic.[28] Typically, a start-up raises

[27] Cradle's Angel Tax Incentive. https://www.cradle.com.my/products/angel-tax-incentive/.

[28] *The Malaysian Reserve*. 2021. Investors eyeing tech start-ups offering post-pandemic solutions. 25 October. https://themalaysianreserve.com/2021/10/25/investors-eyeing-tech-start-ups-offering-post-pandemic-solutions/ (accessed 23 November 2021).

between RM500,000 and RM3 million through ECF. The largest ECF platform with almost 50% market share is PitchIN.

The P2P lending is still the largest source of venture funding. More than RM503 million in 2020, these financing deals are small and short-term: about RM50,000 for 3 months or even less. To further stimulate investments in new firms (and micro, small, and medium-sized firms) through ECF and P2P, the Government is taking three measures. First it decided to raise the cap on equity crowd-funding to RM20 million per deal. Second, the government has increased the budget for the Malaysia Co-Investment Fund (MyCIF) to RM80 million from the RM50 million in 2019. Third, Simple Agreement for Future Equity (SAFE) financing documents are getting allowed: initially it was illegal, but now the Security Commission of Malaysia has given several venture capitals permission to issue SAFE documents, which allows to convert the debt into equity later in time.

II. ASIAN INDEX OF DIGITAL ENTREPRENEURSHIP SYSTEMS

The Asian Index of Digital Entrepreneurship Systems (AIDES) provides a country's digital framework conditions for entrepreneurship. Earmarked as a catch-up economy, Malaysia is accelerating its well above-average scores for having the digital framework conditions for entrepreneurship globally for stand-up, start-up, and scale-up entrepreneurs. Within the Association of Southeast Asian Nations (ASEAN), Malaysia has one of the leading AIDES scores for all three entrepreneurial stages for going beyond both global average and regional ASEAN (Table 1), setting the stage for entrepreneurs to make the bridge between the more advanced urban areas of ASEAN and other more developing parts in ASEAN.

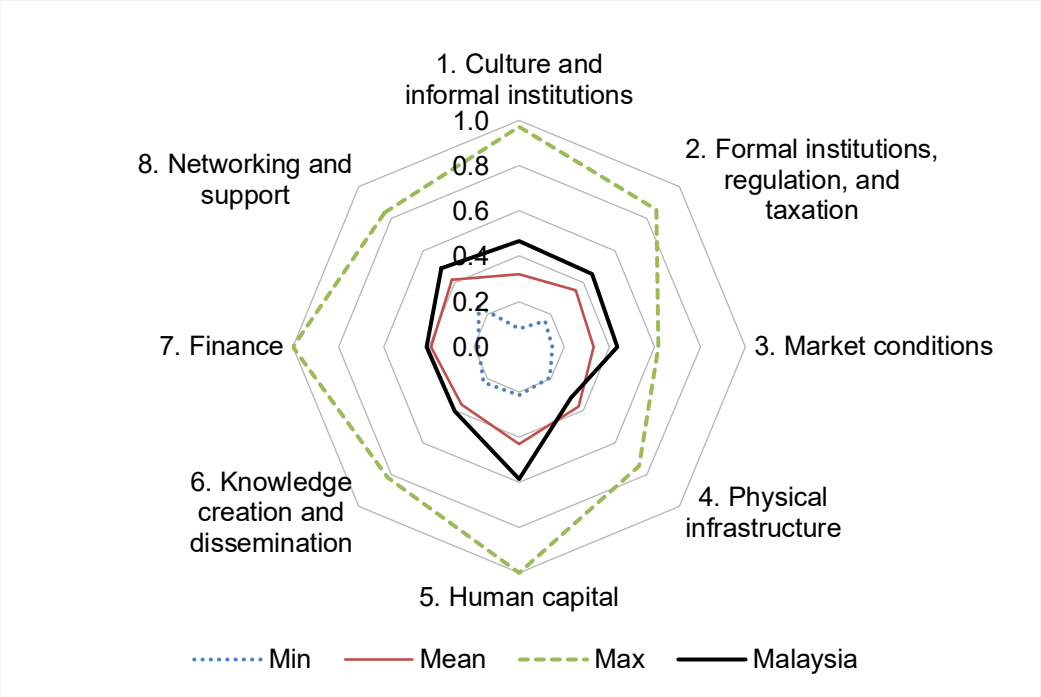
Table 1: Malaysia's Asian Index of Digital Entrepreneurship Systems Scores

Global / Region / Country	Digital Entrepreneurship Stand-up	Digital Entrepreneurship Start-up	Digital Entrepreneurship Scale-up
Global	31.96	31.91	31.96
ASEAN	35.45	34.20	36.44
Malaysia	43.14	41.69	44.34

ASEAN = Association of Southeast Asian Nations.
Source: Asian Development Bank.

Malaysia is particularly strong in cultural and informal institutions, human capital and formal institutions, and regulations and taxation (Figure 1).

Figure 1: Malaysia's Pillar Scores in Comparison to Association of Southeast Asian Nations



Source: Autio et al. (2022) DES Survey.

Malaysia has unique properties for marketing itself well as the "Prime Gateway to ASEAN." While its economic development made significant development steps ahead, compared to the ASEAN average, the country still enjoys relative similarity to many of its adjacent markets, giving its companies an advantage to adapt to the local conditions more easily. Malaysia's ecosystem is performing above par on seven of the eight pillars. The three strongest pillars compared to most ASEAN neighbours are human capital, networking and support, and cultural and informal institutions. In the first place, the country's main assets are its people. Human capital is relatively its best asset for its ecosystem. Historically, Malaysia is one of the ASEAN countries where government spending on education is among the highest,[29] and Malaysian families have put good education for their children high on their agendas. Further, the government has set out plans to promote the acceptance among parents for entrepreneurship as a career choice by their children. The second strongest pillar is networking and support. The 25-year long efforts to build the

[29] United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute for Statistics. The Government of Malaysia's spending on education hoovers between 4% and 6%. UNESCO Institute of Statistics website. http://www.uis.unesco.org/Education/.

country's digital economy has been an inclusive multi-stakeholder endeavor of government agencies, universities, investors, corporates, and start-ups.

Third, cultural and informal institutions are stronger in terms of information exchange and networking. Malaysia's culture, where both inclusivity and diversity are emphasized and valued, plays a major role as glue for the ecosystem. Therefore, public–private partnerships are very common and actors from both sectors have co-created conditions where networking and cross-boundary collaboration have become a norm: government-sponsored accelerators, corporate innovation hubs, and coworking spaces.

Looking at areas for improvement where the pillars are not strong but less developed, the three priorities for Malaysia are (i) physical infrastructure, (ii) finance, and (iii) knowledge creation and dissemination. According to a recent study from the Economist Intelligence Unit, Malaysia's rollout of 5G is lagging behind two of its ASEAN-6 peer-counties. Both Singapore and Thailand are ahead.[30] The lack of finance was (temporarily) addressed, partly because of the long-lasting COVID-19 pandemic outbreak. The Malaysia start-up ecosystem got affected because of the subsequent economic downturns. Various entities of the Government of Malaysia responded with relief facilities to help entrepreneurs weather and recover from the unprecedented COVID-19 pandemic.[31] The MOSTI and the Ministry of Finance jointly implemented three key initiatives to help start-ups, which also involve extending to the more established ones: (i) US$23 million (RM100 million) in low interest loans, via Malaysian Debt Ventures, to fund operations and growth; (ii) a soon-to-be-announced US$6.1 million (RM26.5 million) new grant from Cradle Fund; and (iii) an acceleration of capacity development programs led by Malaysian Global Innovation and Creativity Centre (MaGIC). MDEC introduced an Investor Matching Program, in collaboration with a Japanese venture capital KK, and that was acknowledge by the World Economic Forum as ways to ensure access to venture capital during uncertain times.[32] Finally, Bank Negara Malaysia, the central bank of Malaysia, also established a RM1 billion High Tech Facility – National Investment Aspirations (HTF-NIA), as part of efforts to provide additional assistance for SMEs

[30] ITnews. 2021. Is 5G primed to take off? Nine of 16 Asian countries are now 5G-ready. https://www.itnews.asia/news/is-5g-primed-to-take-off-nine-of-16-asian-countries-are-now-5g-ready-564018.

[31] Karamjit Singh. 2020. All eyes on execution of Mosti's start-up focused US$23mil relief facility. *Digital News Asia*. 17 May 2020. https://www.digitalnewsasia.com/startups/all-eyes-execution-mostis-startup-focused-us23mil-relief-facility (accessed 17 October 2021).

[32] Marc Penzel and JF Gauthier. 2020. 4 ways governments can support start-ups and save their economies. World Economic Forum. MYFORUM. 12 June. https://www.weforum.org/agenda/2020/06/4-ways-governments-can-support-start-ups-and-save-their-economies/ (accessed 23 November 2021).

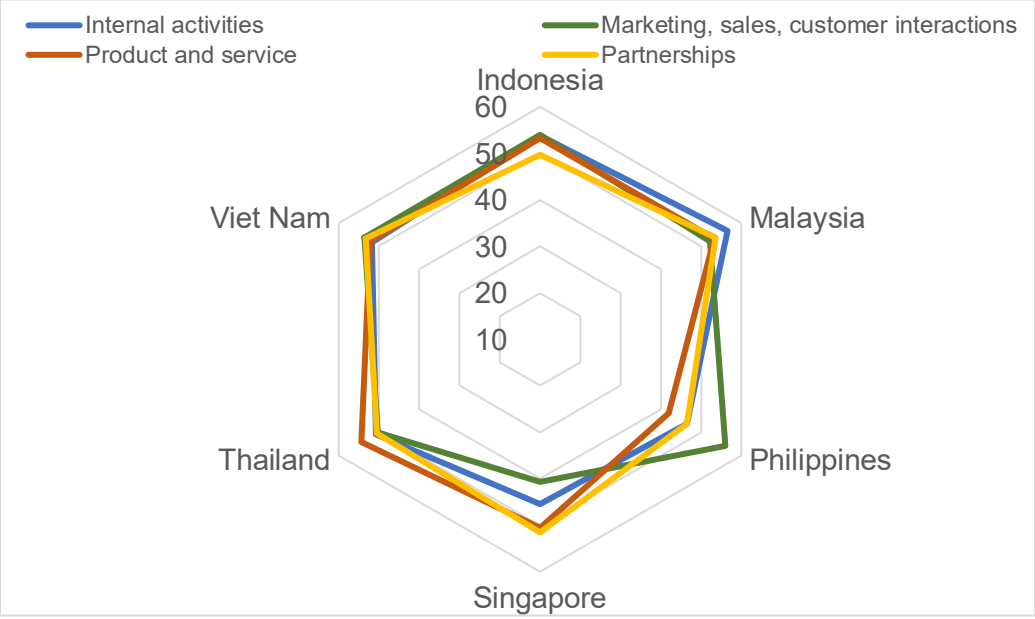
and start-ups affected by COVID-19, with MDEC and MOSTI's agencies as key partners in the program.[33]

III. OVERVIEW OF MALAYSIA'S DIGITAL ENTREPRENEURSHIP INTERVIEW SURVEY

When Malaysia started to build its ecosystem of innovation and entrepreneurship 25 years ago, the application of digital technologies was still a technological novelty. Today, the application of basic digital technologies has grown to be the norm. In our 139 start-ups interviewed, Malaysian start-ups are digitally native and digitally coordinate resources, share data and ideas, and create new services in collaboration with partners. Overall, Malaysian start-ups score constantly high and above average on all four dimensions.

On two dimensions, Malaysia has the highest digital technology application in business scores: (i) the internal activities aspect and (ii) partnerships. Moreover, the relatively weakest aspects in the digital technology application for Malaysia are marketing, sales, and customer interactions; where it ranks fourth among the ASEAN-6 countries. However, that score is still above average for that digital technology application score among ASEAN members.

Figure 2: Digital Technology Applications in Business

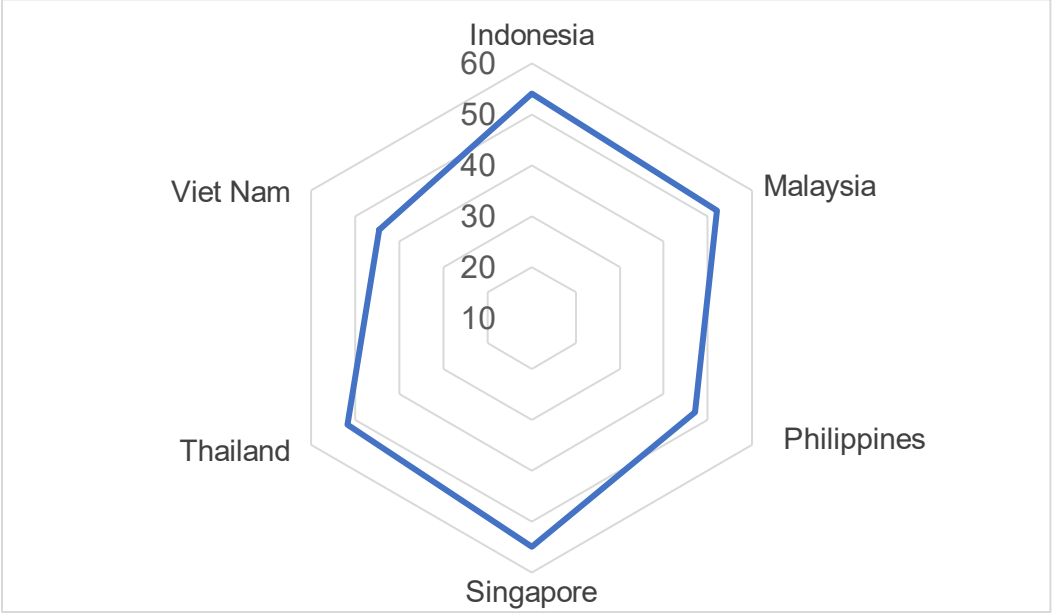


Source: Autio et al. (2022) DES Survey.

[33] Bank Negara Malaysia. 2020. Establishment of RM1 billion High Tech Facility – National Investment Aspirations (HTF-NIA). Press release. 15 December. https://www.bnm.gov.my/-/establishment-of-rm1-billion-high-tech-facility-national- investment-aspirations-htf-nia-1.

However, the overall high scores do not imply that Malaysian start-ups should rest on their laurels. Digital technologies are a field of constant change and investment. For Malaysian start-ups, the weakest aspect appears to be the one of marketing and customer interactions, which reflects the engagement and interaction with the customers through digital channels and social media, the customers' ability to order and/or pay online for the products and services, and the monitoring of online ratings and reviews. As what is happening also in start-ups across ASEAN, young firms put the least effort into monitoring online ratings and reviews and operating their customer communities. The focus is mainly on customer acquisition, and much of the attention is put into advertising through digital channels and communication through social media. This reflects the emphasis on one-way communication from the start-ups and the brands to the customers.

Figure 3: Business Model Changes

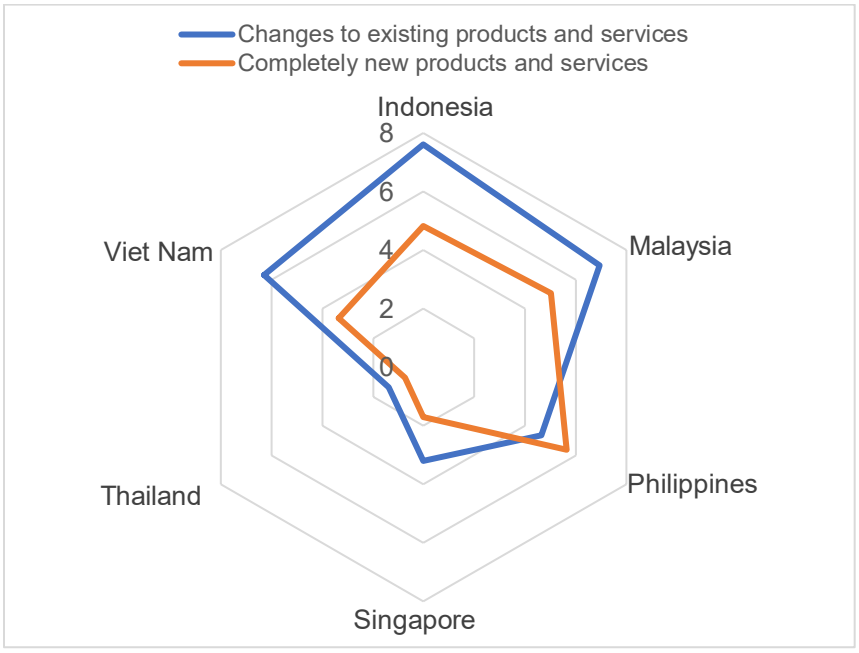


Source: Autio et al. (2022) DES Survey.

In the past year under pandemic conditions, many start-ups had to change and update their business models. Compared to other start-ups in ASEAN, Malaysian start-ups made an above-average number of business model changes in the past 12 months with 52.0 compared to 50.7 for the ASEAN average. As COVID-19 disrupted the operations of almost every business worldwide, especially those with limited digital adoption (low digital technology scores), the start-ups in Malaysia seemed well prepared as they had already adopted digital technologies much more quickly than other ASEAN countries. That might explain also why Malaysian start-ups did

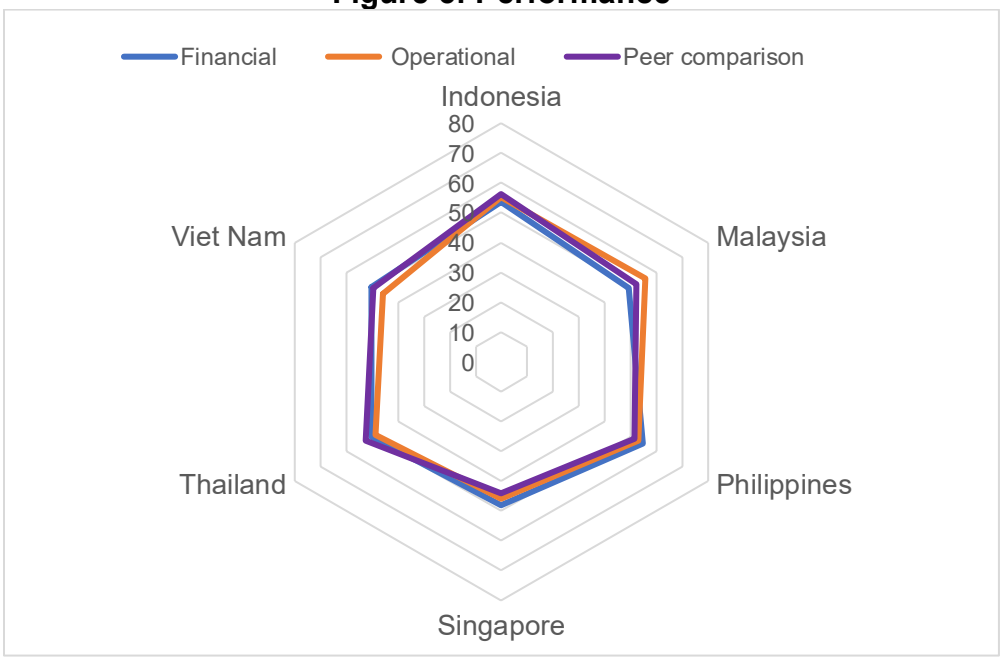
not need to pursue radical business model changes. Their focus on adaptations under COVID-19 circumstances was on updating existing products and services, as opposed to launching completely new products and services.

Figure 4: Number of Products and Services Idea in the Past 12 months



Source: Autio et al. (2022) DES Survey

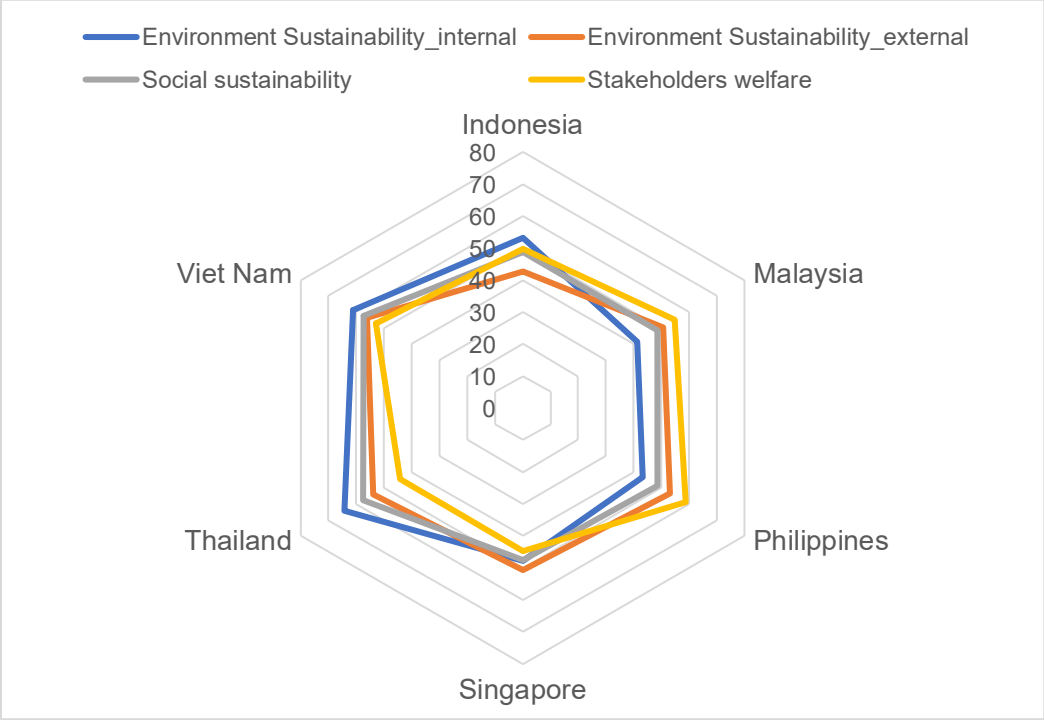
Figure 5: Performance



Source: Autio et al. (2022) DES Survey.

When start-ups are measured on performance, Malaysian start-ups are performing well operationally, especially in adapting to COVID-19 circumstances and improving efficiency. In terms of peer comparisons, Malaysian start-ups do fine on average. However, in terms of financial performance, the start-ups in Malaysia are not doing as well as how start-ups in other ASEAN countries perform, especially in sales growth and profitability.

Figure 6: Sustainability



Source: Autio et al. (2022) DES Survey.

When thinking beyond profit, Malaysian start-ups are primarily focused on stakeholder welfare: treating their employees and suppliers equitably. Especially when everyone is suffering under the global health crisis, Malaysian start-ups reflect the country's spirit of #kitajagakita (we take care of us). Considering sustainable development goals, Malaysian start-ups put a very low priority on environmental sustainability—for both internal as external. Similarly on social sustainability (community), Malaysian start-ups have a low score. Yet, the regulatory framework for larger (publicly listed) companies has changed: sustainability reporting has become mandatory for Malaysian companies.[34]

[34] EquitiesFirst. 2019. *Corporate Governance in Malaysia: Exceeding Expectations*. https://equitiesfirst.com/sg/whitepaper/corporate-governance-in-malaysia-exceeding-expectations/.

IV. MALAYSIA'S DRONE SECTOR[35]

A. Drone Industry Sector Background

The global industry of unmanned aerial vehicles (UAV) commonly known as drones, is expected to reach at least a value of US$20.45 billion by 2022, according to Technavio.[36] The last 10 years have seen a huge explosion in drone innovation and commercial interest. The sector consists of three parts: manufacturing, software, and service. The manufacturing of drones is dominated by a few major players such as DJI and Yuneec from the PRC, Parrot from France, and Wing (Google) and Skydio from the United States.

The two other parts of the sector, software and services, are more fragmented but at the same time characterized by faster growth rates exceeding 20% annually. The best-known drone applications are in military, sports, and entertainment. Defence is a large customer of drones; also known by the general public is the use of drones in film-making (for Harry Potter and Skyfall) and sports reporting events (for the Olympics). Yet, the most popular commercial applications are in data collection for the sectors of energy (infrastructure and power grid inspection); agriculture (mapping and surveying, and crop/livestock checks); civil security and public safety (surveillance). A new growth segment still quite small and nascent, but receiving much publicity is payload delivery; thanks to well-promoted pilots from innovative experimenters such as AirAsia and Amazon. With a change in regulations, there has been a rapid rise in demand for commercial applications.

B. Drone Industry in Malaysia

The world's largest projected commercial drone market size by 2024 is estimated to be located in Asia with US$18.4 billion;[37] more specifically the regions of the PRC, Japan, and India. Currently, in Southeast Asia, Malaysia is ranked second after Singapore. Singapore is characterized as having faster approval authorities and, while Indonesia's regulations are in place, they are not enforced. This leaves Malaysia right in the middle, as the country has developed regulations that the government has begun enforcing, but the response rate is not as fast as that of Singapore. In the current process, there is a challenge with the approval rate of requests because of limited human resources. There is a growing number of applications for operations permits (mapping,

[35] W. M. F. Wan Mohd Fuaad. 2021. *ADB Research Drone Industry Report.* W. Smit and L. Jasso Salazar, interviewers. Personal communication.
[36] Technavio. 2020. *UAV Market by Application and Geography - Forecast and Analysis 2020–2024*. December (pp. 2–4).
[37] Martin. 2021. Commercial drones: global market size by region 2024. *Statistica*. 30 August 2021.

surveillance, among other applications), but a limitation regarding the issuance of licences have not been approved yet. Despite all the past and present challenges, the drone industry has been evolving constantly in Malaysia. Three years ago, there was no Malaysian company appearing at the Drone Service Provider Ranking by DRONEII.com. In 2019, Aerodyne was acknowledged in the top 40, and in 2021 there are now four Malaysian companies listed.[38] Aerodyne is a company that was founded in 2014 and is present in 35 countries with 500 employees. Aerodyne is the largest drone service provider in Southeast Asia. Its core business is in the infrastructure asset inspection, serving various industries such as energy, oil and gas, and telecommunication. After Aerodyne's great rise, the Government of Malaysia started paying more attention to the drone tech space. Nowadays, Aerodyne is working to promote Malaysia as a regional hub for drone companies.

C. Digital Technologies of the Drone Industry

Drones have redefined and enhanced the productivity of several industries in Malaysia within a short period. The different technologies that are incorporated (mainly Internet of Things, artificial intelligence, Blockchain, and Computer Vision) have been very useful in providing more environment-friendly solutions to agriculture plantations, oil and gas, and logistics organizations. Drones offer end-to-end solutions, where analytics can be applied in a prescriptive and predictive way to better manage an organization's assets and lower maintenance costs.

D. Public and Private Sectors of the Drone Industry

Creating the right skill sets and the proper alignment between the public and private sector is fundamental in order to support the drone industry. Various agencies are starting to come together to ease the regulatory aspects of drone operations. For example, the National Technology and Innovation Sandbox (NTIS) was launched in 2020, which aims to coordinate and resolve the regulatory concerns around the grey areas for drone approvals. Also, in 2021, it was announced that the drone industry will fall under the aerospace industry budget. This will create an official avenue for further government support of the drone industry in Malaysia. Whereas before, the drone industry was highly dependent on larger airspace industry players.

In the public sector, there are at least four different authorities involved. First is the Civil Aviation Authority of Malaysia, whose main concern is understanding the safety requirements to set the

[38] L. Schroth. 2021. *Who are the top drone service providers in 2021?* Drone Industry Insights. https://droneii.com/drone-service-provider-ranking-2021.

baseline for continued growth of the industry in any application field. Next is the Department of Survey and Mapping Malaysia, the only authority able to certify operations for companies, per country's jurisdiction and national security. Then, the Standard and Industrial Research Institute of Malaysia makes sure every machine is airworthy. Last, the Malaysian Communications and Multimedia Commission manages the frequencies allocated for drones. In addition to these organizations, other airspaces need to be taken into consideration as part of the complexity of the system, including airports, military bases, telco towers, and residential areas. Insurance coverage and underwriters depend on all of them. Therefore, it is very important to understand the terms and conditions of legal operations and for every organization and operator to be aware of these rules. Further, there is a call to action for MDEC and MRANTI, which have stepped up to promote the drone ecosystem by drawing companies in the industry to the field, to also allocate more budget into educating and reaching more people on these topics.

Four test sites have been earmarked as NTIS. One in Felda Mempaga Pahang, Iskandar Drone and Robotics Zone (DRZ), urban delivery drones in Cyberjaya, and TPM's Area 57.[39] The DRZ Iskandar is based in Malaysia's southern state Johor. The company has contributed in numerous ways. DRZ Iskandar has mapped the ecosystem network of the national industry. They have also facilitated the attraction of foreign drone and robotics companies by providing infrastructure and facilities. Moreover, DRZ Iskandar has bridged industrial applications and academic institutions and provided support in "Proof of Concepts" for commercialization. Another key enabler is the Malaysia Unmanned Drone Activist Society, an organization involved in research, academia, and the aerospace industry. The Malaysia Unmanned Drone Activist Society has promoted dronetech and science, technology, engineering, and mathematics (STEM) education among schoolchildren.[40]

E. Recommendations for the Drone Industry in Malaysia

Particularly for Malaysia, to bolster more local and regional solutions both domestic and international, it is crucial to create an ecosystem of support within the various drone stakeholders. Currently, the progress is highly dependent on the private sector; sovereign funds cannot yet justify the investment in the drone industry as it implies new business models and risks. By focusing on unleashing the financial resources of larger corporations, Malaysia will be able to

[39] *The Malaysian Reserve*. 2021. Malaysia's drone industry to go full speed with TPM Area 57. https://themalaysianreserve.com/2021/10/14/malaysias-drone-industry-to-go-full-speed-with-tpm-area-57/.

[40] V. Tan. 2019. *From hobby to analytics: Malaysia's dronetech companies scale up for the future*. CNA. https://www.channelnewsasia.com/asia/drones-hobby-data-analytics-malaysia-dronetech-1321971.

attain a larger impact to the drone industry without creating future dependence solely on the government. This will improve Malaysia's position in the drone industry map. However, another challenge for Malaysia to overcome is the gap in fast-paced technological advancements in the drone industry for small and medium-sized farmers. The access to technology, support, and resources is also a key component to the drone ecosystem for all members. The challenges are present everywhere, but the concentration of key activities such as placing adaptive dronetech regulations and policies, and developing future skills and talent would generate growth and contribute to the future of drone and robotics business and jobs. The emerging regulatory framework combined with tech-driven demand provides abundant opportunity for Malaysian ecosystem builders to flourish. Market players will be able to enhance their market share by leveraging their products based on cost differentiation and superior technical capabilities, and by finding ways to innovate their business models.

V. MALAYSIA'S GAMING SECTOR

The global gaming market has been valued at US$173.70 billion in 2020 and is expected to reach a value of US$314.40 billion by 2026, registering a compound annual growth rate of 9.64% over the forecast period (2021–2026). Because of nationwide lockdowns, people are staying home, and some are turning to the gaming platforms to pass the time. These platforms are attracting more than hundreds and thousands of new visitors in "online traffic".[41]

Entrepreneurial policy makers in 2005 identified Malaysia's potential to play a part in the gaming sector. This sector includes all commercial activity related to the design and development of games, including (but not limited to) animation and digital art, game logic and architecture, the production of game objects and environments, gaming engines and platforms, and commercialization through Intellectual Property and publishers. Games for Personal Computer, console and mobile are all considered. In Malaysia, the development of the gaming sector can be considered in three main waves.

The Malaysian National Creative Industry Policies, governed by the Ministry of Communication and Multimedia, has identified the gaming industry as one of the 10 important categories of the creative industry. In 2018, this industry alone made $100 million in terms of revenues for Malaysia

[41] Mordor Intelligence. 2020. *Gaming Market - Growth, Trends, Covid-19 Impact, and Forecasts (2021–2026).* Market Research Report. https://www.mordorintelligence.com/industry-reports/global-gaming-market.

and is expected to grow at 10.19% till 2023. Overall, Malaysia ranks 21st worldwide in terms of the revenue from this sector, with the total amount at $633 million.[42]

According to the Startup Genome 2020 Report, Kuala Lumpur subsector strength is in gaming: Nine universities and colleges in Kuala Lumpur offer courses around game development and esports. This includes the Asia Pacific University of Technology, which partnered with esports Malaysia Innovation to launch the country's first esports academy. Local game developers Metronomik and Magnus Games are two key players that are contributing greatly to the homegrown digital gaming industry. Gaming incubator Level Up Inc., which was founded in 2017, already has 10 portfolio companies.

A. Wave 1: Trailblazers (1998–2005)

The first activity in the gaming sector was mostly led by larger Japanese assignments that were outsourcing some of their game development work to Malaysia. This inspired several ambitious start-ups to attempt to create Intellectual Property (IP), yet there was limited commercial success because of lack of capacity. This period also saw the launch of the inaugural Asia Game Developers Summit by MDEC in October 2005. Two local universities started offering courses in game development: Multimedia Universiti and The One Academy.

B. Wave 2: Talent Development (2006–2013)

This phase is typified by a dedicated and proactive sector development strategy by MDEC. When the Intellectual Property Creators Challenge was first founded, start-up grants and mentorship became available for commercialization with a vision to develop local creative talent first and foremost.

A key strength in operationalizing this vision was to include industry experts and practitioners in the strategy development for strengthening the ecosystem by looking at policies, funding modalities, market access, and, most importantly, raising awareness on the opportunities of this industry within the government.

[42] MIDA Insights -- Serivices. *The Gaming Industry: A New Game of Growth. MIDA Malaysian Investment Development Authority*. https://www.mida.gov.my/the-gaming-industry-a-new-game-of-growth/ (accessed 25 November 2021).

This phase saw the emergence and proliferation of numerous smaller “indie studios”. Most start-ups at this point were involved in independent game development, while others continued to service larger (foreign) game developers to develop game art.

C. Wave 3: Incubation and Acceleration (2014–2020)

Since 2015, Malaysia has been hosting the LEVEL UP KL, a yearly gathering for the games industry in Southeast Asia, led by the MDEC. The event was developed to bring together the local and international talent, share knowledge and best practices as well as network, and create partnerships. Notable organizations that have taken part in this event are Sony Interactive Entertainment, Google, Epic Gaming, and Microsoft Gaming.[42]

In 2019, Malaysia’s gaming industry was worth RM7 billion with RM1 billion in exports. As the gaming sector starts to mature, this phase is characterized by a proactive attempt to develop the industry towards higher value-adding activities like Intellectual Property (IP) development, by continuing to provide resources and reduce risk for investors. In the same year, a total of RM10 million was allocated to develop the esports scene by the Government of Malaysia. With this level of commitment, the esports in Malaysia is expected to boom in the coming years, with the Ministry of Youth and Sports aspiring for Malaysia to become a hub for region.[42]

In the entrepreneurship scene, there is an aspiration for local companies to develop AAA-games. This highlights a clear need for business-savvy entrepreneurs to complement the strong creative talent that has been developed, either by upskilling existing game developers or by attracting existing entrepreneurs to the sector.

D. Conclusion

On a global level, there is a growing trend among major console platforms to look at Southeast Asia for independent game developers. This is because shorter, more unique games are gaining popularity, as more mature consumers look for variety and lower-commitment games to play. Larger studios that have taken base in Malaysia are attracting investors and venture capital’s interest.

There has also been an interest by the Olympic Council of Asia, which has indicated that esports is expected to be an official medal sport in the 2022 Asian Games, which would increase the calls for its inclusion in the 2024 Summer Olympics by the International Olympics Committee.

This industry has been a massive creator of jobs, such as esports players, coaches, referees, event managers, game designers, and marketing experts. With the pandemic pushing the number

of unemployed massively, this is an exciting avenue for people to pivot into and follow their passion.[43]

Finally, looking into the future, we have the Metaverse, which is expected to be the next iteration of the internet, a completely immersive digital world completed with its own economy, jobs, shopping areas, and its own games. The gaming industry is expected to be its training wheels, with the metaverse existing in some form in the industry—think Fortnite and Robolox. With Facebook staking its future on this concept and major investments from Google, the metaverse would be the way forward and the light for the experiments in the gaming industry.

We believe that the gaming industry in general and the Malaysian gaming space in particular are well positioned to capitalize on the next big trends within the industry and would be a prime player within the market.

VI. ANALYSIS OF SECTOR DATA AGAINST THE OTHER SECTORS: GAMING AND DRONES SERVICES

Two sectors are highlighted in the Malaysia country report: the gaming sector and the drones services sector. The first represents one of the country's earliest efforts to promote digital economy. The gaming sector was identified as a spearhead industry in 2005. The second sector, drone services, represents the latest efforts to nurture a new emerging sector for global competition.

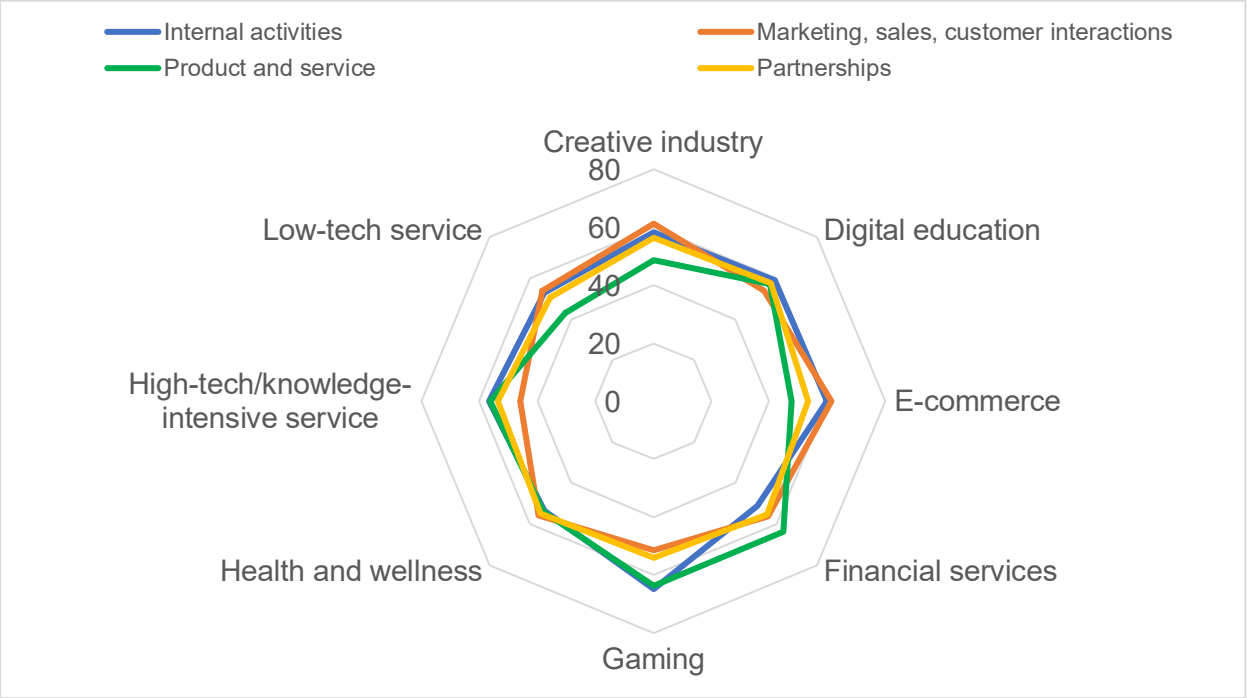
Table 2: Digital Technology Application in Business by Sector

Sector	Internal Activities	Marketing, Sales, Customer Interactions	Product and Service	Partnerships	Number of Firms in Sector
Creative industry	58.3	61.2	48.6	56.4	
Digital education	59.1	53.9	57.1	57.5	6
E-commerce	59.9	61.4	47.7	53.4	19
Financial services	51.0	56.1	63.5	55.4	9
Gaming	64.8	51.4	63.7	54.0	9
Health and wellness	53.2	55.9	53.9	54.8	11
High-tech/knowledge-intensive service	56.7	45.9	56.3	53.6	55
-- Focus: Drone services	53.3	45.7	52.9	54.8	11
Low-tech service	53.1	54.1	42.9	50.6	23
Average	**56.6**	**52.3**	**53.3**	**53.6**	139

Source: Autio et al. (2022) DES Survey.

[43] https://focusmalaysia.my/the-big-future-potentials-of-esports-industry-as-a-new-driver-of-economic-growth/.

Figure 7: Digital Technology Application in Business by Sector

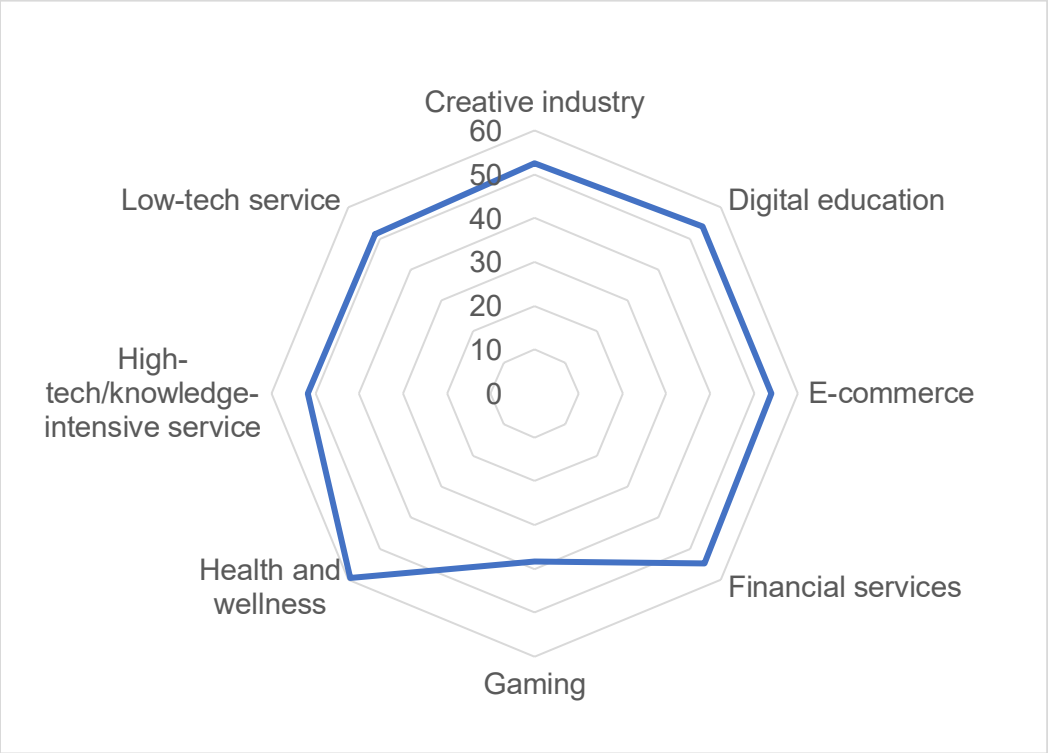


Source: Autio et al. (2022) DES Survey.

In applying digital technologies, the gaming sector start-ups play at the forefront in terms of internal activities and products and services. For the other areas, the companies in this sector are at par with their digital technologies application for marketing, sales and customer interactions, and partnerships. Their digitalization on those fields are very comparable to the overall average. The drone service sector has digitalized their internal activities, and marketing, sales, and customer interactions to a lesser extent than the companies in the gaming sector do and compared to the overall average of Malaysian companies.

For the past 12 months, gaming start-ups had to make relatively fewer business changes as other industries had to. It looks like that increased demand for games because of more screen time from locked down audiences made it less urgent to make adaptations. On the other hand, drone services had to make many more business changes in general, compared to the overall average.

Figure 8: Business Changes by Sector



Source: Autio et al. (2022) DES Survey.

Table 3: Business Changes by Sector

Sector	Business Changes
Creative industry	52.5
Digital education	54.0
E-commerce	54.0
Financial services	54.6
Gaming	38.3
Health and wellness	59.5
High-tech/knowledge-intensive service	51.7
Focus: Drone services	51.4
Low-tech service	51.4
Average	**52.0**

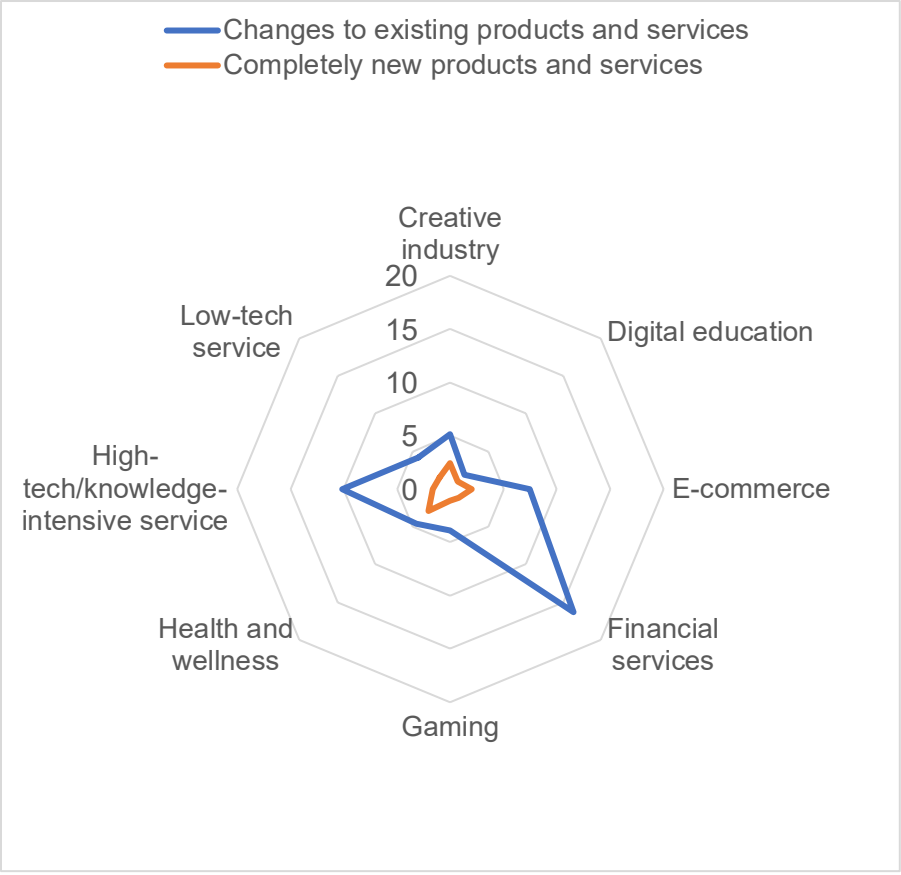
Source(s): Autio et al. (2022) DES Survey.

Table 4: Number of New Products, Services Ideas in the Past 12 Months

Sector	Changes to Existing Products and Services	Completely New Products and Services
Creative industry	5.14	2.43
Digital education	1.83	1.00
E-commerce	7.47	2.00
Financial services	16.33	1.11
Gaming	**3.9**	**1.1**
Health and wellness	4.55	2.91
High-tech/knowledge-intensive service	10.15	1.69
Low-tech service	4.22	1.48
Average	7.74	1.73
Extra: Drone services	**28.4**	**1.2**

Source: Autio et al. (2022) DES Survey.

Figure 9: Number of New Products, Services Ideas in the Past 12 Months by Sector



Source: Autio et al. (2022) DES Survey.

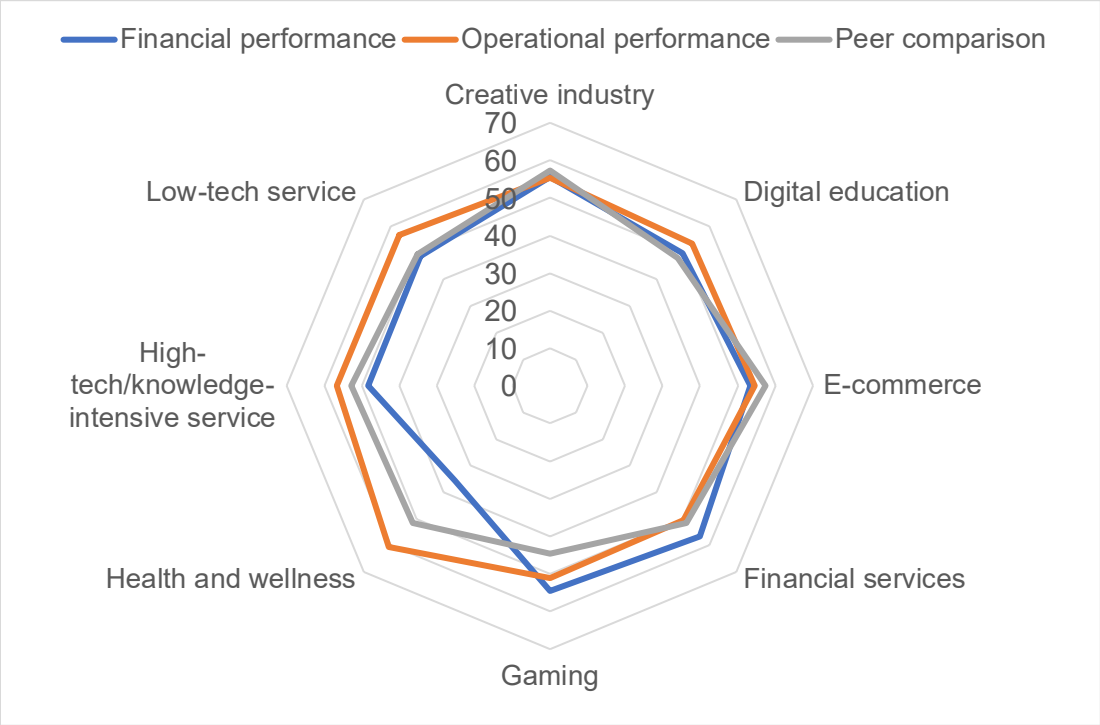
When performance is considered, the gaming start-ups have been able to convert the increased gaming demand during COVID-19 lockdowns into better financial performance. Responding to demand growth came at the expense of lower operational performance and peer performance. Drone services performed differently in the past 12 months: slightly above average financial performance, but with a much better operational performance.

Table 5: Performance by Sector

Sector	Financial Performance	Operational Performance	Peer Comparison
Creative industry	55.6	55.4	57.3
Digital education	50.0	53.5	48.2
E-commerce	53.3	54.5	57.4
Financial services	56.5	50.3	51.4
Gaming	54.5	51.1	44.6
Health and wellness	35.5	60.5	51.6
High-tech/knowledge-intensive service	48.3	56.7	52.8
Focus: Drone services	51.6	56.0	53.0
Low-tech service	48.8	56.6	49.7
Average	**49.4**	**55.7**	**52.2**

Source: Autio et al. (2022) DES Survey.

Figure 10: Performance by Sector



Source: Autio et al. (2022) DES Survey.

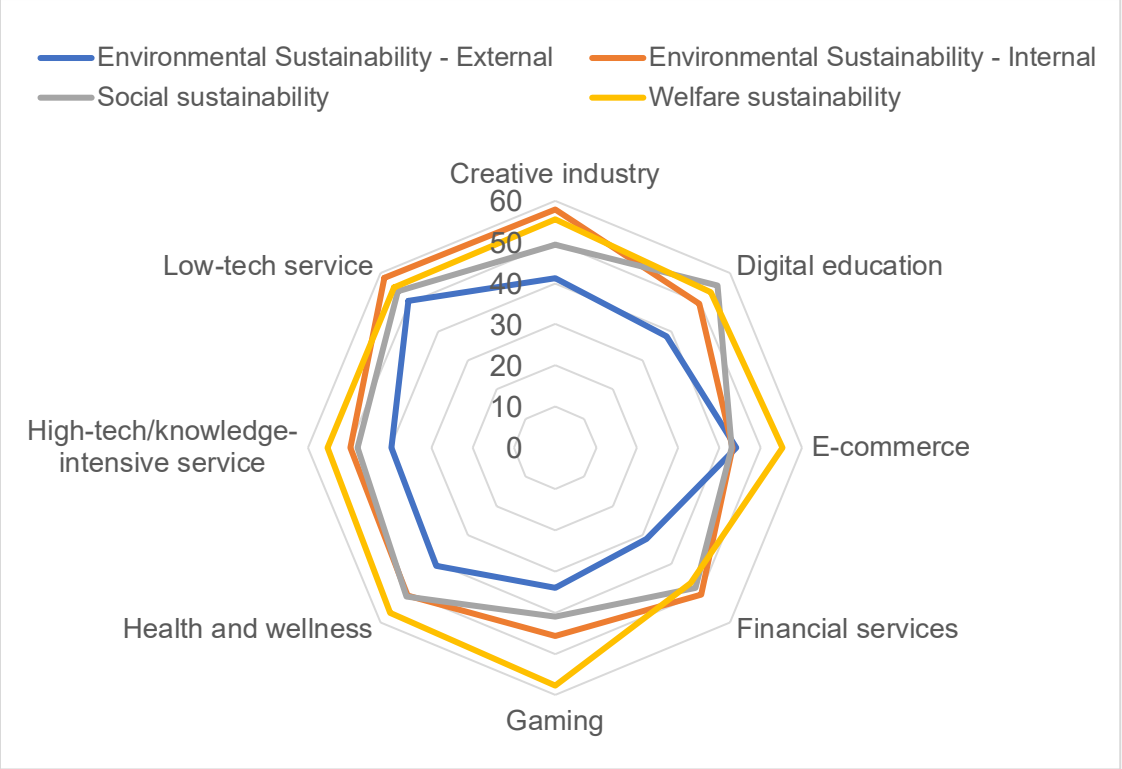
Compared to gaming sector start-ups, drone services are among the best at environmental sustainability. The stark difference can be explained partly by the indoor-versus-outdoor nature of gaming versus drone services industry. This means that the drone services entrepreneurs need to pay much more attention to incorporating environmental considerations into their business models. On social sustainability, drones services start-ups are doing better than gaming and other sectors. Start-ups in both sectors score fairly high on welfare sustainability, which means that companies pay above average attention to the fair treatment towards stakeholders in addition to shareholders.

Table 6: Sustainability by Sector

Sector	Environmental Sustainability - External	Environmental Sustainability – Internal	Social Sustainability	Welfare Sustainability
Creative industry	41.2	57.9	49.4	55.5
Digital education	38.4	49.5	55.8	53.6
E-commerce	44.0	43.1	42.9	55.3
Financial services	31.3	50.3	48.2	46.6
Gaming	34.0	45.7	41.0	57.7
Health and wellness	40.7	50.7	51.2	56.7
High-tech/knowledge-intensive service	39.7	49.7	48.0	55.3
Focus: Drone services	50.3	57.3	56.8	58.3
Low-tech service	50.4	58.5	54.0	55.2
Average	**41.3**	**50.5**	**48.5**	**54.9**

Source: Autio et al. (2022) DES Survey.

Figure 11: Sustainability by Sector



Source: Autio et al. (2022) DES Survey.

VII. CASE VIGNETTES OF INNOVATIVE DIGITAL BUSINESS MODELS

The following start-ups were selected because of their contribution to the entrepreneurship ecosystem in Malaysia. All of them have something unique that makes them stand out. Carsome is the first Malaysian-based unicorn that solved the pain of selling and looking for a used car. Aerodyne Group is the world's no. 1 provider of drone-based enterprise solutions. VStream evolved as a key enabler in the drone space by providing insurance and expert advice. Persona Theory Games is an indie game studio that immerses their audience into great Southeast Asian tales, and intrigues them with the deepest social thoughts from the region. Finally, Kaigan Games, which has a growing accumulation of success and won seven international awards, is a well-renowned Indie game maker in the mobile gaming space.

A. Carsome: Driving Southeast Asia's Used Car Industry Forward

Selling your car used to give major headaches, and often these headaches were so painful that just accepting the low "trade-in" deal from the new car dealer was much more convenient. That is the main pain point that Carsome is solving for millions of car owners in Southeast Asia.[44] With more than 50 centers in more than 50 cities, the Malaysian-born Carsome is a Southeast Asian powerhouse. Founded in 2015, the brand has expanded into neighboring Indonesia, Thailand, and Singapore. As a platform for selling used cars, Carsoe makes it possible for customers to sell their cars easily and rapidly. Thanks to their 175-point inspection process, selling used cars became a much more standardized and logical process without the cumbersome hacking, checking, among other procedures. Carsome eliminates the many pain points in the traditional used car selling process by offering effective solutions to consumers and used car dealers. In August 2020, Carsome launched the car buying side of the platform, thereby increasing the capabilities of the ecosystem. With 8,000+ dealers, 100,000 cars sold annually, and more than 4.4 million bids placed, Carsome has lived up to its vision of "Driving Southeast Asia's automotive industry forward in the used car ecosystem". Even so, the industry is estimated at US$60 billion and, at the current rate, market penetration is only 2%, this gives Carsome a large area of growth in the future.

The last two decades have seen impressive evolution in the used car sales in Southeast Asia. When compared to developed countries, developing countries in Southeast Asian, especially Indonesia, Thailand, and Malaysia, have seen rocketing growth in used car sales. Based on the

[44] Carsome. https://www.carsome.my/.

recent report published by Mordor Intelligence, it is expected that the used car market in the ASEAN region will reach a compound annual growth rate of about 6.7% from 2020 to 2025.[45] The last few years have seen a boom in the second-hand automobile market with total sales recorded at 1.3 times in comparison with that of new four-wheeled vehicles. The major drivers for this boom are the relative safety, accessibility, and reasonable pricing. Additionally, the market is expected to double in the coming decade because of a boom in population, economic growth, and a general uptick in investor sentiments. Finally, the e-commerce aspect of the journey is particularly attractive because of the speed and accessibility to more offerings.[46]

The traditional journey for a used car buyer has been filled with challenges making the entire market inefficient and limiting its growth. The large number of intermediaries and middlemen who thrive in the lack of transparency add little value, and take a disproportionate part of the profits, which have created an environment of distrust. It was obvious for many that this was a perfect situation for a disruptive business model that, finally, could be cleaned up and optimise the process for all parties involved without middlemen taking an unfair share. It is here that the transactional model of platforms like Carsome has gained prominence by offering compelling value propositions to sellers and dealers. The commission-based model has created an easy monetization opportunity for these platforms with potential to explore other value-added services that would improve the overall value created for both the seller and buyer.

The pandemic and the subsequent disruption to car production because of chip shortages have accelerated the growth of used car sales as a viable option for budget-conscious car buyers. While the overall investment in Southeast Asia has reduced because of the pandemic, interest from used car dealers has helped this marketplace to be the first to rebound. Carsome falls in this segment with a $1.3 billion valuation in 2021 after fresh investments from MediaTek, Catcha Group, and the Government of Malaysia's Penjana Kapital fund. "We are deeply honoured and encouraged by the confidence and support accorded by our investors," Carsome's cofounder and group chief executive officer (CEO) Eric Cheng, said in a statement. "We are geared up to achieve

[45] WaTech. 2021. *The fastest-growing spot for used cars in Southeast Asia*. Market research. 15 April. https://www.whatech.com/markets-research/transport/690907-the-fastest-growing-spot-for-used-cars-in-southeast-asia (accessed 24 November 2021).

[46] Redseer. 2020. *ASEAN Used Cars: Digitized Supply Meets Elevated Demand*. December. https://redseer.com/newsletters/asean-used-cars-digitized-supply-meets-elevated-demand/ (accessed 24 November 2021); and Celine Chen. 2021. Online platforms drive Southeast Asia's booming used car market. *NNA Business News*. https://english.nna.jp/articles/30692.

even greater heights while rolling out Southeast Asia's integrated car e-commerce platform, now further solidified by various strengths within the ecosystem."[47]

As part of the next stage of its evolution, Eric and Teoh Jun Ee, fellow cofounder and Carsome academy director, have hinted at more services being added to their ecosystem to make the platform well rounded so that they are able to *single-home* their customers to Carsome. Another area that the Carsome team has concentrated on is the Carsome Academy. Detecting an imminent shortage of standardized quality controllers in the ecosystem, Carsome team has invested in creating a 1-year program that helps candidates become a certified Carsome inspector and be deployed within the ecosystem. Additionally, they have been increasing their offline presence by opening multiple retail centres in Malaysia, Indonesia, and Thailand which would greatly increase the convenience of its customers to evaluate, view, and test drive possible vehicles.[48]

B. Aerodyne: ASEAN-Born Leader in Drone Services

Its impressive track-record of 450,000 flight operations having inspected more than 560,000 assets and surveyed in excess of 380,000 kilometers of power infrastructure; a full-time staff of more than 500 including pilots, engineers, software developers, and industry experts; and an international presence in 35 countries has made the Malaysia-headquartered Aerodyne Group the world's no. 1 provider of drone-based enterprise solutions.[49]

Before 2014 when Aerodyne started, CEO Kamarul Muhamed already had identified this growth opportunity. By spinning off a three-person team from a drone division of the media company he founded in 2006, he created a separate entity to pursue bigger and focused opportunities in drone-based enterprise solutions. Initially, Aerodyne was founded with the sole objective to transform visuals into data. "But soon after, we realized, even that was not enough. Customers need total solutions. We upped the ante by providing total managed solutions driven by artificial intelligence and suites of various applications specifically developed to help our clients manage their critical infrastructure assets, megaprojects, large plantations, and more," explained the CEO when he

[47] Zennia Lee. 2021. Malaysia's Carsome Reaches $1.3 Billion Valuation in Funding Round From MediaTek and Others. *Forbes Asia*. https://www.forbes.com/sites/zinnialee/2021/09/01/malaysias-carsome-reaches-13-billion-valuation-in-funding-round-from-mediatek-and-others/?sh=72f2e38f7a3c (accessed 23 November 2021).

[48] Nurina. 2021. Report: Used car platforms in Southeast Asia. The Low Down by Momentum Works. https://thelowdown.momentum.asia/what-is-the-potential-of-used-car-platforms-in-southeast-asia/ (accessed 24 November 2021).

[49] L. Schroth. 2021. *Who are the top drone service providers in 2021?* Drone Industry Insights. https://droneii.com/drone-service-provider-ranking-2021.

accepted the Ernst-Young Entrepreneur of the Year award in 2020.[50] That is how the firm was repositioned as "DT3" (Drone Tech, Data Tech, and Digital Transformation) drone-based enterprise solutions provider, and a pioneer in the use of artificial intelligence. As a result, by 2019, its artificial intelligence and software development team had grown tenfold in just 1 year. More than 70% are engineers from various fields.

In the last 16 months of the global health crisis, Aerodyne's business was affected but the impact was minimized because of a strong focus on agriculture and reducing the dependency on oil and gas (energy) clients. Kamarul said: "We had existing projects that we couldn't execute because of travel. It got to a point where we were really at a crossroads and considering layoffs. So we had to pivot and forge ahead. We used our scarce resources to develop a new engine of growth, and one of the areas we are in is agriculture. We offered solutions that would help with labor issues and now we are helping large plantation companies, and even created a super app for agriculture that we can deploy regionally."

In strategizing ahead, Aerodyne's CEO thinks the world is approaching technology singularity, where the collective intelligence of artificial intelligence will transform the future of business, and that entrepreneurs need to be ready for that. "However, the difference now compared with earlier technology booms is an equal focus on environmental, social and governance or ESG. Simply put, most investors these days are placing just as much emphasis on a company's conscience as on its business, and an organization's ability to leave the world in better shape than when it started."

C. Vstream Revolution: Transforming into the Enabler of Malaysia's Drone Industry

"Fly - Capture - Analyze" is VStream's Revolution slogan. As one of the top five Malaysian drone companies, Mr. Saravanan Chettiar and his team brought 16 years of experience in execution, design and implementation of integrated security management system to the nascent drone industry. While in this industry, Saravanan began to see the emerging demand for implementing drone solutions. As he says "It takes just one person to believe in us to depart our passion and

[50] EY Entrepreneur of the Year. 2020. Malaysia Kamarul A Muhamed of Aerodyne Group on drone-based enterprise solutions. Options, *The Edge*. https://www.optionstheedge.com/topic/people/ey-entrepreneur-year-2020-malaysia-kamarul-muhamed-aerodyne-group-drone-based (accessed 24 October 2021).

make it grow," Mr. Saravanan had that and, since his first customer in 2017, he has continued doing and specializing in his passion.[51]

As Malaysia's drone industry continues to expand and mature, VStream identified a new unique and defendable business niche for itself. As one of the first movers into the industry, the young firm gained drone service operating experience. It began to identify unmet needs at both sides of the market. Among government agencies who want to ask for infrastructure proposals, there is a need for writing better drone service tenders. On the side of the drone service suppliers, there is a need to incorporate the risks in giving more complex infrastructure proposals, and hence the idea for drone service Insurance was born. As a result, VStream began to position itself as ecosystem enablers through drone consultancy and insurance. Although the start-up was born in 2017, its founder, Saravanan Chettiar, has vast experience in the execution, design, and implementation of integrated security management systems. Further combined with his certifiable drone knowledge, Saravanan has been able to create a team of well-prepared consultants who are market ready. These consultants help other members of the drone space in Malaysia operate their businesses and understand the rules and regulations involved. Civil aviation would agree that it takes more than just buying drones to run a drone organization.

Since its founding, VStream has been followed by constant successful achievements. In 2019, it started commercializing and building brand recognition by carrying out three different projects related to security and surveillance solutions, and inspecting and supplying drones to Malaysia's national oil company, Petronas. In 2020, it launched drone insurance. Bing the only drone company in Malaysia to offer such a service, it became a pioneer partner as a reputable insurance provider for the specially dedicated economic zone in the southern state of Malaysia, Drone & Robotics Zone Iskandar. VStream started testing a new Proof of Concept (POC) for DRZ Iskander and continued offering Autonomous Drone Security and Surveillance Solution for Smart City. In 2021, as if COVID-19 has not knocked on its door, it continued to work on consultancy projects, developing a drone delivery POC related to an important NTIS project with MaGIC and an AirAsia partnership for drone deliveries.[52] It sought to explore more on what the drone insurance could offer to its customers by providing a comprehensive Drone Ecosystem.

[51] S. Chettiar. 2021. *VStream Revolution Case Vignette Featured for ADB Digital Entrepreneurship Study.* W. Smit and L. Jasso Salazar, interviewers. Personal communication.

[52] The Star Online. 2021. MaGIC-AirAsia Partnership a Game Changer for Drone Deliveries. *The Star*. https://www.thestar.com.my/news/nation/2021/03/16/magic-airasia-partnership-a-game-changer-for-drone-deliveries (accessed 17 October 2021).

VStream has demonstrated several times that their its is market ready and believe it is important to start getting serious on the development of the drone industry in Malaysia. Group CEO at Technology Park Malaysia Corporation, Ms. Dzuleira could not agree more as she mentioned previously, “Malaysia needs to innovate quickly to set up a network of drone talents and technology to carve out its slice of the drone delivery pie.”

“Demos are exciting, but we need to see drones flying in regulated airspace and facilitating first and last-mile deliveries. Making drone deliveries viable will take hardware, tech, talent, and regulation all pulling in one direction,” Mr. Saravanan added. VStream aims to understand the challenges that the drone industry has in delivery, software, hardware, and regulations among other challenges. Since March 2020, VStream has been working with Penang Port to establish its own drone air unit. Coordination, tendering, POC, user acceptance test, and hand over of the project was done within 18 months despite the COVID-19 pandemic and movement restrictions. Currently, Vstream can provide specialized consulting services that will help drone operators get the proper documentation, manuals, and permits; and train staff, pilots, and carry out project management for new businesses. Vstream seeks to become a knowledgeable industry enabler that will facilitate and grow the emerging drone ecosystem across ASEAN through its consultancy and insurance. It looks after the development of the skills, experience, approval process, deployment readiness, and service expansion of drone operators.

D. Persona Theory Games: Disclosing Southeast Asia Heritage

Telling the world about the rich culture and mysterious history of Southeast Asia is Persona Theory Games’ mission: The Selangor-based indie studio develops experimental narrative games to bring the gamer into an interactive environment, immersing them into great tales and deepest social thoughts from the region.

Founded by three passionate film makers—Dereck Mui, Saqina Latif, and Buddy Anwardi—who discovered that video games are a much more engaging medium to tell their stories. Additionally in this space, expression is not submitted to any censorship authority which may curtail artistic freedom. It all started as a side project in 2015 when the trio developed a storyline for a different game developer. This game “Sara is Missing” went viral soon after its launch. They realized their potential as a team of independent video game developers and storytellers; they would be able to connect closer to their Malaysian roots bringing that intimacy as well to their audience.

Officially launched in 2017, Persona Theory Games specializes in storytelling of visual novel games. Its debut title “Fires at Midnight” was a top 40 finalist for the 2020 Southeast Asian Game Awards. It features a photographer and his girlfriend living in 1999 Malaysia fighting a mysterious virus called “The Love Bug” causing mass panic across the country. Beyond that, the game also pictures part of the cultural aspects interweaving old social traits that are still present among Malaysians.

In the coming months, Persona Theory Games hopes to strike again with a dark fantasy novel “Kabaret”; an adventure inspired by Southeast Asian myths, playing in a monster realm which questions our own humanity. “It will take us to the era before Islam and Christianity arrived to Southeast Asia, when ghosts and monsters ruled people’s beliefs. The gamers discover that, to some extent, these beliefs are still rooted in peoples’ minds today. For the moment, both games will be available on STEAM, a platform for purchasing online games for indie studios,” explained cofounder Saqina Latif. [53]

Persona Theory Games’ approach towards the gaming industry is different from anybody else. Having experience in the film industry, it is able to tackle stories differently. It prioritizes emotions and intuition over ratio, aspiring to bring on the table social critique subjects, inherited since ancient times.

Making games with multiple endings in which your choices matter is a way to give freedom for people’s reflection. “People have many faces, our stories will always be layered and explore this concept of persona”, Saqina once said. In their games, one does not have to compete but enjoy. Generally, games would last for 2– 3 hours just like watching movies.[54]

Aside from the games development, Persona Theory Games has a more “bohemian” work culture. Everybody in the team: from managing directors, to interns, all are linked, everyone is important. Their offices are more like a coworking space than an actual office. The power distance

[53] S. Latif. 2021. *Persona Theory Games Case Vignette Featured for ADB Digital Entrepreneurship Study*. W. Smit and L. Jasso Salazar, interviewers. Personal communication.

[54] WargaBiz. 2020. This young & daring woman from persona theory games breaks barrier in the gaming industry. *Warga Biz Media*. https://www.wargabiz.com.my/2020/09/03/this-young-daring-woman-from-persona-theory-games-breaks-barrier-in-the-gaming-industry/.

is not felt within their organization, communication is not a matter of hierarchy, but listening and accepting all sorts of ideas coming from different people.[55]

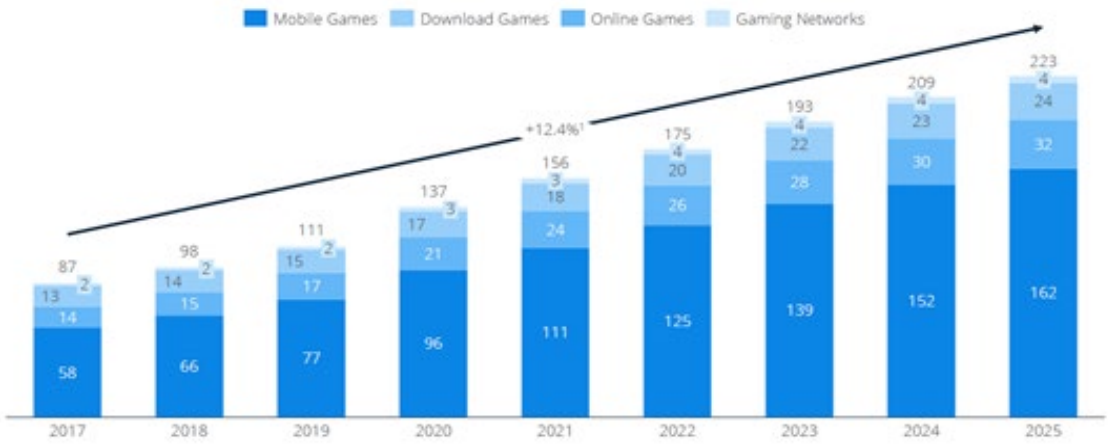
"Don't be surprised these games are made by Malaysians nor the fact that successful women are leading them as well." Actually it was venture capitalist WINGS Interactive who financed "Kabaret". WINGS provides support for founder teams made up by women and marginalized genders holding key positions.

Going further, Persona Theory Games would like to continue promoting the history and culture behind Southeast Asia, exposing more local content and collaborating with local musicians, so locals can relate to their stories, and the rest of the world can fall in love with them; giving a taste of artistry and spirituality by telling amazing stories of this mix contemporary and ancient culture. Out there, there are many jewels yet to be discovered.

E. Kaigan Games

With more than seven international awards, millions of downloads on their flagship content and a loyal and growing community of followers, 10,000+ members in their dedicated Discord channel, a full-time staff of more than 20, including designers, engineers, software developers and industry experts, and a growing international presence in Southeast Asian countries, the Malaysia-headquartered Kaigan Games is a well-renowned Indie game maker in the mobile gaming space.

Figure 12: Global Revenue Forecast
(US$ billion)



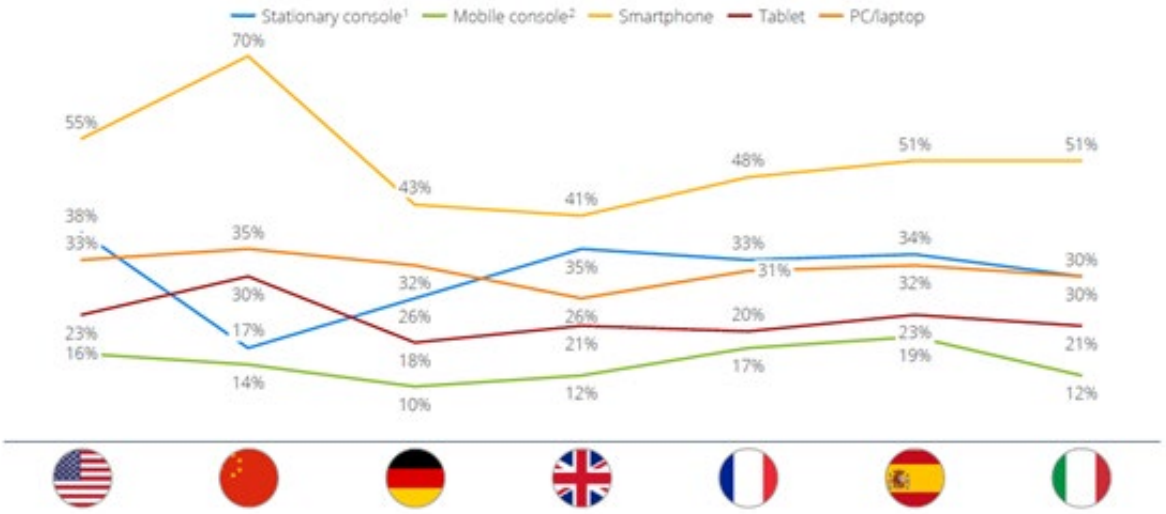
Source: Statista Digital Market Outlook 2021.

[55] https://www.personatheory.com/post/7-more-lessons-learned-as-a-persona-theory-games-intern (accessed 24 October 2021).

The global gaming industry is expected to see consistent growth of more than 12% year-on-year and is expected to reach a total market size of $223 billion by 2025. This growth will be driven primarily by the booming mobile-based gaming sector. Which consistently accounts for more than 60% of the global revenue. Most of the gaming revenue is expected to come from the Chinese market, which has dominated the space with forecast growth expected to be at $71.2 billion by 2025. The other sector within the industry is the downloadable games like Assassin's Creed or God of War series which are dominated by big name marquee studios. With most games currently released with an online multiplayer component as well, the lines between downloadable and online games are blurred. This also means that the gaming industry is also moving towards an online based network with a loyal fan base. Although not currently involved in making online games, Kaigan Games is building Intellectual properties for long-term and cross-platform application. Because of the sudden boom in the industry, there has not been a lot of regulatory oversight on the online component of games. However, game ratings agencies and platforms like Steam or Epic Game serve as a regulatory body for such communities.

Throughout the pandemic, as people were forced to stay at home and quarantined, there was a massive shift towards games that helped simulate the community experience. At this point, in the early days of the pandemic, Kaigan released "Doctor Who: Lonely Assassins" onto the mobile platform which proved to captivate its fans. The game went on to create a huge following within the gaming industry of the United Kingdom and the United States because of its immersive storytelling and well-written character arcs as described by Ian Hambleton "It's the same with the mobile game. It's about immersion. It's modern day. It feels like you're receiving texts from these characters. This is what drove us to Kaigan Games. Because we were asking ourselves that if we do something on mobile, how do we keep it immersive? And it's definitely our approach on console as well."[3]

Figure 13: Usage Shares, 2021



Source: Statista Digital Market Outlook 2021.

In strategizing ahead, the gaming world is expected to be dominated by the smartphone platform that would be driving the growth, positioning Kaigan Gaming at the sweet spot to capitalize these changes. With hardware becoming faster, powerful, and cheap, the growth of metaverses and more immersive gaming would be the trends of the coming decades.

VII. MALAYSIA: KEY TAKEAWAYS

This research examines the economic resilience of start-ups in Malaysia on multiple levels: from the country's ecosystem, the sectors, and the individual firms. Hence, some of the takeaways relate to a specific level individually, while others relate to the cross-section or the relationship among these.

A. Continuing to Nurture Ecosystem Strengths

Malaysia's long policy history in economic diversification began with transforming its country from one dependent on natural resources into a nation globally competitive in manufacturing and services. Now the country is enhancing its economy by adopting digital technologies and IR 4.0 capabilities. Already 25 years ago, the nation began that visionary journey by building the Multimedia Super Corridor (MSC). Supported by policies, multiple government agencies, investment incentives, and government grants, firms and employees learned to adopt digital capabilities, and sought international market access. As a result, Malaysia's ecosystem has evolved as one of the leading digitally developed ecosystems within ASEAN and globally. Its ecosystem's core strengths are human capital, networking and support, and cultural and informal institutions. For the future, it will be important to continue nurturing these strengths. With regard to human capital, new government initiatives are focused on upskilling and reskilling the nation's workforce for IR 4.0 skills. Entrepreneurship syllabi are becoming part of the schooling, and the Next Gen learns about *enterprising*. The networking strength is being further enhanced by initiative to create more transparency across the ecosystem from start-ups, grants, events, venture capital's, mentors, like muru-ku.my. Similarly, the new MYstartup platform is a national digital portal with resources to help entrepreneurs navigate the start-up ecosystem; and thanks to its increased connectedness, this platform will also help to reinforce the ecosystem strength of cultural and informal institutions.

B. Spearheading Competitiveness of Selected Sectors

In 1996, the government began with spearheading the ICT sector and, 10 years later, it began supporting the infant-stage development of the gaming sector. The lessons from that clustering strategy are now applied the support given to sectors identified by the 10x10 MySTIE framework. This framework classifies 10 different socioeconomic drivers and 10 technologies important for Malaysia. The sectors are energy, business and financial services, culture-arts-tourism, medical and health care, smart technology and systems, smart cities and transportation, water and food, agriculture and forestry, education, and environment and biodiversity. Through matching these

sectors with new technologies, the government finds the new white spaces to prioritize and support. In creating these new spaces, it is suggested to courage corporates and other ecosystem actors to work with young start-ups via programs and incentives. Further, government regulations to get funding and approvals are often perceived as arduous and time consuming. New technology sandboxes have been a good workaround for the timing being. It remains important to review and review such impediments especially when regulated sectors like drones are scaling and expanding. The new focus on increasing the rate of innovation is more important that the rate of filing patents. As Elon Musk said, “increasing the rate of a firm’s innovation is better than slowing down competition.”

C. Empowering Start-ups to Lead Business Model Digitalization

Malaysian young firms are leading the business model digitalization in ASEAN. Their relative strengths lie in digitalizing internal activities and partnerships. The business model area where Malaysian start-ups can improve further are in digitalizing marketing and customer interactions. Start-ups in the country are also much better at experimentation and making business model changes. Caresome (described elsewhere in the report) which recently acquired the Unicorn status is a great example. The rapidly internationalizing Aerodyne is as well a good showcase on how to digitally grow abroad to often-locked down markets. These two are among numerous other great examples in the ecosystem. Collectively, they set high standards for start-up digitalization. This all makes Malaysia an interesting place for technopreneurs who want to settle and set up their businesses here. Accommodating government policies will let in foreign technopreneurs to come to Malaysia. We need to quickly develop more deep technology expertise.

D. Further Bolstering the Ecosystem

In preparing the ecosystem for the post-pandemic era, large-scale strategy consultations were conducted involving multiple stakeholders. These conversations have resulted in adopting a new strategic direction, SUPER, based on tech and IR 4.0, encouraging faster technology commercialization and growing the number of start-ups in the ecosystem: from 2,000 to 5,000. This goal is more likely to be achieved when the weaknesses in the ecosystem are collectively addressed. Our analysis showed that the pillars in Malaysia’s digital ecosystem are relatively weak: physical infrastructure, finance, and knowledge creation and dissemination. The first in addressing the physical infrastructure is related to the speed of rolling out 5G networks. Second, several measures have been taken to address the availability of funds for start-up investments. More international venture capitals have been attracted to the country and more financial

instruments have recently become available, thanks to Penjana's new fund, more ECFs, and the Security Commission's lifting of the ECF cap and allowing SAFE documents. Third, to stimulate knowledge creation and dissemination, the government has rearranged government agencies and created MRANTI aimed at tech and commercializing research and development.

E. Thinking About How ASEAN Competes in the World

Start-ups and entrepreneurs are globally mobile. In the last decade, ASEAN governments have started to compete against each other to attract more and better start-up founders. Programs in the forms of grants, entrepreneurship visas, accelerators, and other accommodating financial incentives have been effective in getting these internationally mobile individuals join the national ecosystems. They help the local start-ups to get more exposure and become more "global" in their thinking. Ultimately, encouraging these local-global exposures can create into opportunities and more creative and innovative mindsets.

Yet, sometimes this ASEAN competition is not productive for the region when it turns to poaching and competing for start-ups already based in ASEAN. Ideally, the whole ASEAN region as a collective is to benefit more from attracting global non-ASEAN start-ups and entrepreneurs to the ASEAN region as the ASEAN ecosystems get more and more digitally connected.

References

Bautista, R. N. 2021. ScaleUp Malaysia Teams up With Two Venture Capital Firms for Launch of Third Cohort. Tech in Asia. 24 August. https://www.techinasia.com/scaleup-malaysia-teams-vc-firms-launch-3rd-cohort (accessed 15 October 2021).

Business Today. 2021. MOSTI Launches Startup Ecosystem Roadmap (SUPER) And MyStartup Digital Platform. https://www.businesstoday.com.my/2021/11/18/mosti-launches-startup-ecosystem-roadmap-super-and-mystartup-digital-platform/

Carsome. 2021.https://www.carsome.my/.

Cradle's Angel Tax Incentive. 2021. https://www.cradle.com.my/products/angel-tax-incentive/.

Crunchbase database of Malaysia-based Start-ups Receiving External Funding in 2012–2020. MDEC website on the MSC facility. https://mdec.my/what-we-offer/msc-malaysia/.

Dayangku, S. 2020. Everything A Busy Entrepreneur Needs To Know About Cradle's 2 New Grants. Vulcan Post. 19 June. https://vulcanpost.com/702132/cradle-fund-malaysia-new-startup-grants-cip-ignite-accelerate/.

Digital News Asia. 2021. Nexea Corporate Accelerator Program Open for Applications. 2 July. https://www.digitalnewsasia.com/startups/nexea-corporate-accelerator-program-open-applications (accessed 15 October 2021).

ITnews. 2021. Is 5G Primed to Take Off? Nine of 16 Asian Countries are now 5G-ready. https://www.itnews.asia/news/is-5g-primed-to-take-off-nine-of-16-asian-countries-are-now-5g-ready-564018.

Martin. 2021. Commercial Drones: Global Market Size by Region 2024. Statistica. 30 August 2021.

Mohtar, J. and T. M. Si. 2020. The Big, Future Potentials of E-sports Industry as a New Driver of Economic Growth. *Focus Malaysia*. https://focusmalaysia.my/the-big-future-potentials-of-esports-industry-as-a-new-driver-of-economic-growth/.

Ministry of Entrepreneurship Development and Cooperatives. 2019. National Entrepreneurship Policy Malaysia: An Outstanding Entrepreneurial Nation 2030. https://www.medac.gov.my/admin/files/med/image/portal/NEP2030-Final.pdf (accessed 14 October 2021).

Rahim, R. 2014. Young Entrepreneurs Important for the Future, says Obama. *The Star*. https://www.thestar.com.my/news/nation/2014/04/27/obama-at-magic/ (accessed 14 October 2021).

Securities Commission Malaysia. 2020. Annual Report 2020. https://www.sc.com.my/api/documentms/download.ashx?id=e1c7eb21-53db-4f02-a8f8-55dc09f9ffff

The Malaysian Reserve. 2021. Investors Eyeing Tech Start-ups Offering Post-pandemic Solutions. 25 October. https://themalaysianreserve.com/2021/10/25/investors-eyeing-tech-start-ups-offering-post-pandemic-solutions/ (accessed 23 November 2021).

United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute for Statistics. The Government of Malaysia's Spending on Education Hoovers Between 4% and 6%. UNESCO Institute of Statistics website. http://www.uis.unesco.org/Education/.

WaTech. 2021. The Fastest-Growing Spot for Used Cars in Southeast Asia. Market Research. 15 April. https://www.whatech.com/markets-research/transport/690907-the-fastest-growing-spot-for-used-cars-in-southeast-asia (accessed 24 November 2021).

World Bank. 2021. Aiming High: Navigating the Next Stage of Malaysia's Development. Washington, DC (12 March).

Yeo, S. 2021. How Malaysia's Coworking Spaces can Become more than Just 'Spaces'. *Tech in Asia*. 9 November. https://www.techinasia.com/malaysias-coworking-spaces-spaces (accessed 23 November 2021).

Yunus, R. 2020. Sunway City Set to be Epicentre of Innovations, Smart Solutions. 29 December 2020. Business News. *The Malaysian Reserve*. https://themalaysianreserve.com/2020/12/29/sunway-city-set-to-be-epicentre-of-innovations-smart-solutions/ (accessed on 16 October 2021).