



## BACKGROUND PAPER

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

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

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## **I. INTRODUCTION TO SINGAPORE SYSTEM OF ENTREPRENEURSHIP**

As one of the four founding members of the Association of Southeast Asian Nations (ASEAN), Singapore has been a leader in technology innovation and capital investments in the region and a strong supporter of ASEAN's goal to develop a strong and prosperous ASEAN community. Although Singapore is a country of only 728.6 square kilometers with a population of 5.45 million, the country enjoyed an average gross domestic product annual growth rate of 6.22% from 1976 until 2021. Since the severe economic recession in 1985, Singapore has set its development towards being a competitive economy on the global scene by positioning it as having a business-friendly and globally integrated environment. Singapore profoundly supports innovation and start-ups to achieve such an environment, creating a vibrant entrepreneurial scene.

### **A. Characteristics of the Ecosystem**

#### **1. Government Leadership Roles and Policy Initiatives**

Singapore has been embracing technology as a critical driver of the country's economy and society. Since 1980, the blueprint has been created to lead Singapore to be one of the world's most technologically advanced countries. Singapore has been investing substantially in digital infrastructure. By the start of 2000s, a fiber broadband network and wireless hotspots were deployed throughout the country. The Government of Singapore has proactively created a competitive entrepreneurial culture and ecosystem by constantly improving its digital services and technological readiness. Such attractiveness at the global level makes Singapore a regional home to global technological giants, like Google, Facebook, Microsoft, LinkedIn, and Stripe, making it a regional business hub.

In November 2014, Smart Nation was initiated by the government to create tech-enabled solutions with technologies, networks, and big data; and to make Singapore “An outstanding city in the world ... for people to live, work and play in, where the human spirit flourishes.” Several initiatives, such as a cashless system at hawker centers and account-based ticketing for public transport, were introduced under Smart Nation. With the development toward the Smart Nation goal, Singapore emerged top of the Global Smart City Performance Index in 2017 and has stayed on top throughout the years (Eden Strategy Institute 2021). Several financial grants and packages were rolled out for start-ups. For example, a S\$125 million support package was launched in April 2020 to assist the development of workforce and manpower, strengthen digitalization and operational resilience, and enhance financial technology (fintech) companies’ access to digital platforms and tools. In May 2020, the Monetary Authority of Singapore (MAS), the Singapore Fintech Association, and the AMTD International group provided the S\$6 million Fintech Solidarity Grant to support Singapore-based fintech start-ups.

## **2. Key Government Agencies**

In April 2018, Enterprise Singapore was formed from two government agencies, International Enterprise and SPRING Singapore, as a one-stop agency providing entrepreneurs and enterprises with both financial support (i.e., grants, loans, and tax incentives) and nonfinancial assistance (i.e., start-up hubs, networking events, knowledge transfer sessions, and business tool kits). Enterprise Singapore has a company-centric approach to providing entrepreneurs and enterprises with programs. Its support catered specifically to the companies’ stages of growth, the industries they are in, and the overseas markets of interest. With the 23 industry transformation maps, Enterprise Singapore enhances industry and enterprise competitiveness and assists companies in capturing new market share through innovation and adoption of new technologies. The agency’s goal coincides with that of the government is to “establish Singapore as a leading start-up and trading hub.”

## **3. Accelerators and Incubators**

Despite being considered a relatively small country, Singapore has one of the largest accelerators and incubators for start-ups, mainly because of the peninsula’s strategic location and the ease of access to other important cities in ASEAN countries. With numerous accelerators and incubators available, start-ups benefit from services and necessities that help them start businesses. In supporting the entrepreneurial ecosystem, the government has created agencies and provided

financial grants to entrepreneurs. Initially launched in 2003 and later restructured in 2014, the government founded a private-led initiative, Action Community for Entrepreneurship (ACE), to nurture innovation and entrepreneurship and provide mentorship, business, and funding networks to entrepreneurs. Currently, ACE is the driving force behind entrepreneurship initiatives in Singapore. In September 2016, Infocomm Media Development Authority was launched under the Ministry of Communication and Information, providing innovative programs, policies, and grants to talents and enterprises. Infocomm Media Development Authority has created numerous initiatives, such as SMEs Go Digital, Services 4.0, Digital Readiness, and TechSkill Accelerator, contributing to the entrepreneurial ecosystem.

In 2017, Start-up SG was created by the government to unify supportive efforts in the entrepreneurial ecosystem under various initiatives and programs to allow start-ups to discover and access all available supports. Start-up SG partners up with ACE, the National University of Singapore Enterprise, and private firms to provide the necessary knowledge, communities, and networks for start-ups. Moreover, Start-up SG acts as a venture builder, an accelerator, and an investor for Singapore-based technology start-ups.

#### **4. University Business Incubators and Pollinate**

With the Government of Singapore involved in several universities, the government develops a strong network of researchers, students, start-ups, and industries in the entrepreneurial ecosystem. Strong university business incubators were set up by leading universities supporting entrepreneurs and start-ups with workspaces, equipment, and services necessary to form start-ups. The Singapore Management University Institute of Innovation and Entrepreneurship nurtures entrepreneurial mindsets and motivation for young talents. It provides them with the necessary knowledge, commercialization efforts, and administrative support, and has incubated more than 300 start-ups and helped raise over S\$180 million. Further, Singapore Polytechnic, Ngee Ann Polytechnic, and Temasek Polytechnic joined forces and pulled together their resources to initiate Pollinate in April 2016 to support the current polytechnic students and alumni entrepreneurship efforts and provide a platform to cross-collaborate on innovation within and between industries.

#### **5. Nonprofit Organization and Coworking Innovation Hub**

Apart from government grants and university business incubators, other vital supporters in the ecosystem are in the private sector. Some numerous accelerators and incubators provide

industry-specific specialized support for entrepreneurs. The notable \*SCAPE is a nonprofit organization set up in 2007 to support and empower youths, talents, and entrepreneurs to realize their potential by providing new skills and spaces to express their impactful creativity. \*SCAPE focuses mainly on entrepreneurship and career, creative arts, and media and entertainment. CATALYST is Singapore's first coworking innovation hub for medical and health tech start-ups explicitly created for entrepreneurs and clinician-innovators to turn their ideas into products and services. CATALYST provides start-up advisory clinics, networking events, and talks to accelerate start-ups' development and growth in the medical and health tech ecosystem.

## II. ASIAN INDEX OF DIGITAL ENTREPRENEURSHIP SYSTEMS

The Asian Index of Digital Entrepreneurship Systems (AIDES) provides a country's digital framework conditions for entrepreneurship. Singapore has the best digital framework conditions for entrepreneurship globally for stand-up, start-up, and scale-up entrepreneurs. Singapore's AIDES scores for all three entrepreneurial stages far exceed both global average and regional ASEAN (table), setting the maximum boundaries for a general framework and systematic framework conditions for other ASEAN members.

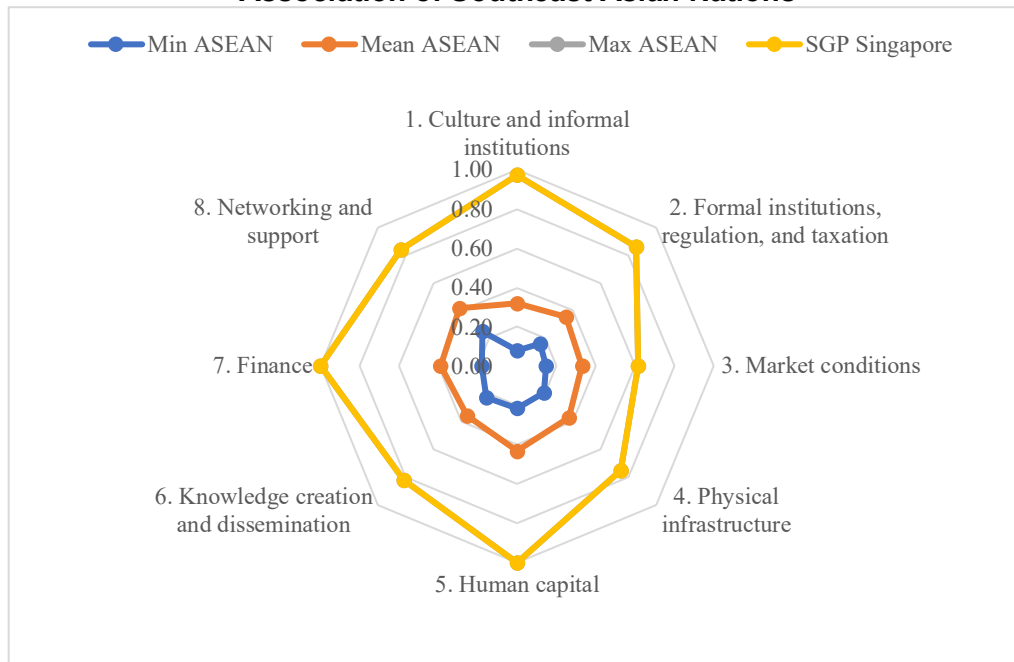
### Singapore's Asian Index of Digital Entrepreneurship Systems Scores

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
Singapore	79.79	83.64	80.44

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

Singapore is particularly strong in cultural and informal institutions, human capital, and finance (Figure 1). These three strengths reflect the constant development to achieve Smart Nation and the clear national vision and mission toward Smart Nation.

**Figure 1: Singapore's Pillar Scores in Comparison to the Association of Southeast Asian Nations**



ASEAN = Association of Southeast Asian Nations, Max = maximum, Min = minimum, SGP = Singapore pillar score.

Source: Asian Development Bank.

Regarding cultural and informal institutions, Singapore's low corruption results in high quality of governance and a high level of acceptance of entrepreneurial risks. In 2020, Singapore ranked the third least-corrupt country among 179 countries in the Corruption Perceptions Index (Transparency International 2020). With a high level of acceptance of entrepreneurial risks, entrepreneurs reflect a higher willingness to delegate the decision-making to their subordinates, who are one of the fundamental essentials in business growth. Moreover, a fear of failure has virtually no impact at any stage of the entrepreneurial stages (i.e., stand-up, start-up, and scale-up). Singapore invests heavily in the citizens since their early education and training need to improve themselves constantly when it comes to human capital. Singapore's education has been world-leading with the highest performance in international education, topping the ranking by the Programme for International Student Assessment (Organisation for Economic Co-operation and Development 2018). Human capital development is one of the national strategies set by the government to align with national economic policies.

Further, the government provides financial and nonfinancial support to businesses of all sizes in strengthening their human resource capabilities to assist business growth. Last, Singapore offers high accessibility to finance for entrepreneurs at all stages of their development. With ease,

entrepreneurs can choose their preferred financing option from various alternatives ranging from bank loans, government grants, private funds, and angel investors to venture capitalists.

With strengths come weaknesses, and Singapore has one distinct challenge: market conditions. On the supply side, the government and organizations have put remarkable efforts into supporting the development of the local entrepreneurial ecosystem. However, with neighboring countries, such as Malaysia and Indonesia, having their start-up ecosystems, Singapore faces an increasing challenge in terms of market power in the regional market. Such a troubling challenge reflects in the AIDES market condition pillar.

With the long-lasting coronavirus disease (COVID-19) pandemic outbreak, the Singapore start-up ecosystem has been affected because of the subsequent economic downturn. The government unveiled regulations and initiatives to help entrepreneurs weather and recover from the unprecedented COVID-19 pandemic. For example, MAS, together with the Association of Banks in Singapore, the Life Insurance Association, the General Insurance Association, and the Finance Houses Association of Singapore, announced several packages to support businesses and entrepreneurs with access to bank credit and insurance cover, payment deferment of loan principals, lower interests on loans, and subsidies on workforce training and manpower costs (Monetary Authority of Singapore 2021a, 2021b).

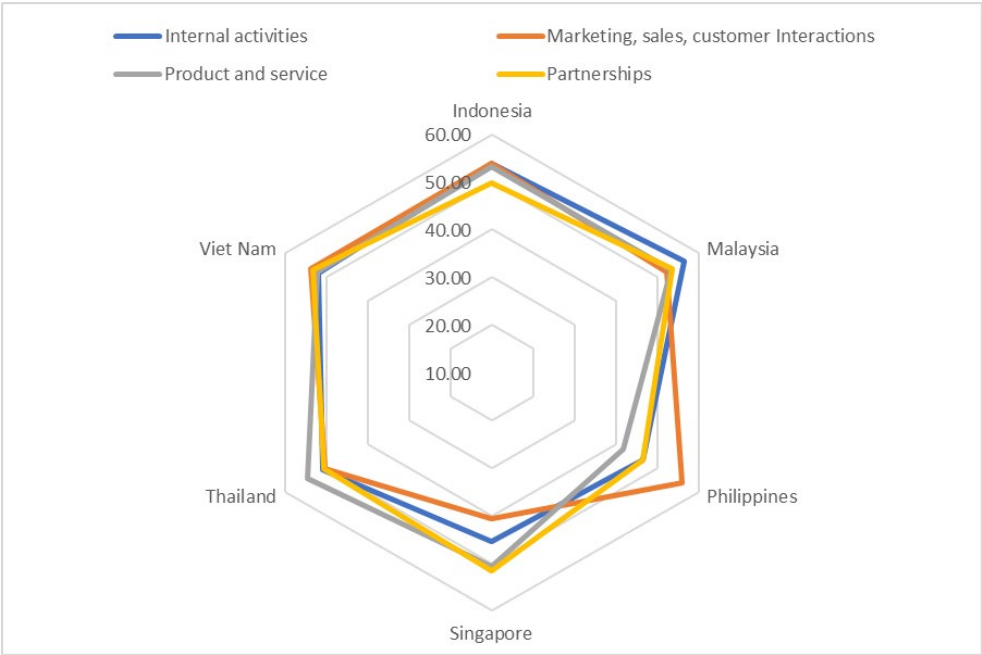
### **III. OVERVIEW OF DIGITAL ENTREPRENEURSHIP INTERVIEW SURVEY**

When it comes to the application of digital technologies (Figure 2), Singapore start-ups coordinate resources, share data and ideas, and create new services in collaboration with partners. Thus, Singapore has the highest digital technology application in business score in the partnership aspect. Moreover, the weakest part of the digital technology application for Singapore is marketing, sales and customer interactions resulting in the lowest digital technology application score among ASEAN members.

However, the low score does not imply that Singapore start-ups do not perform well in this aspect. This aspect reflects the engagement and interaction with the customers through digital channels and social media, the ability of the customers to order and pay online for the products and services, and the monitoring of online ratings and reviews. Among these facets, Singapore start-ups put the least effort into monitoring online ratings and reviews and operating their customer communities. In contrast, most actions are put into advertising through digital channels and

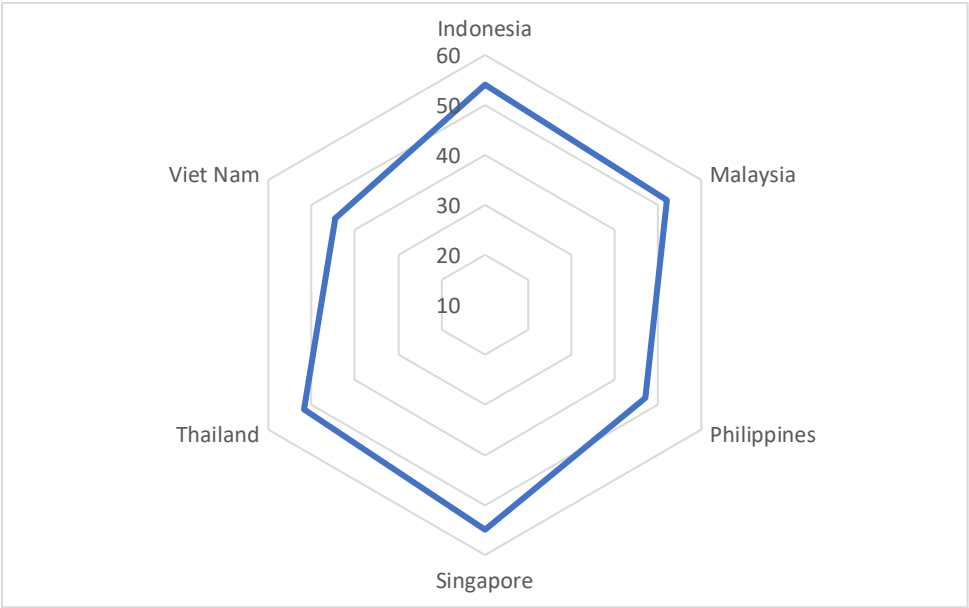
communication through social media. This reflects the emphasis on one-way communication from the start-ups and the brands to the customers.

**Figure 2: Digital Technology Applications in Business**



Source: Asian Development Bank.

**Figure 3: Business Model Changes**

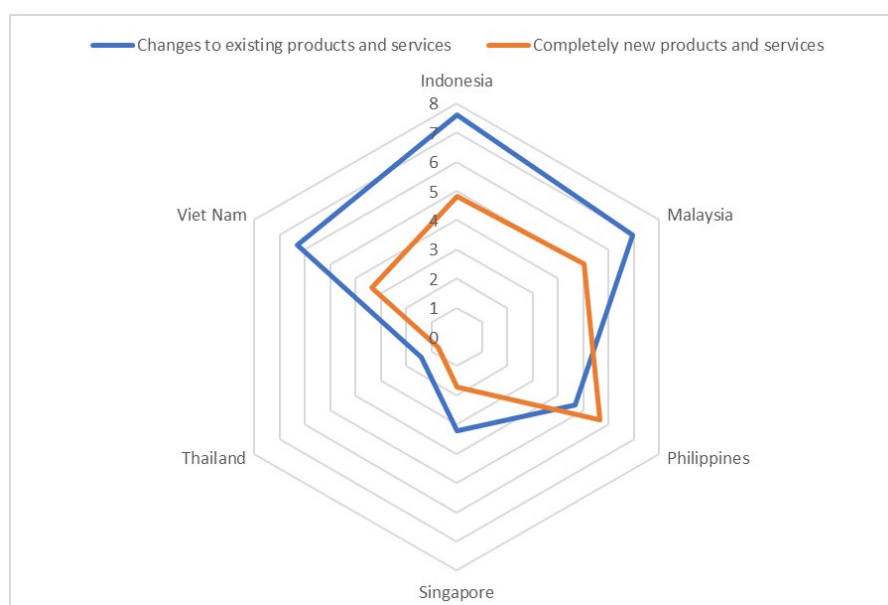


Source: Asian Development Bank.



Singapore start-ups experienced the highest degree of business model changes in the past 12 months with 54.9 compared to 50.7 for the ASEAN average (Figure 3). With COVID-19 disrupting the operations of almost every business worldwide, Singapore's start-ups responded to a range of COVID-19-related changes much more quickly than other ASEAN countries.

**Figure 4: Number of Products and Services Ideas in the Past 12 Months**

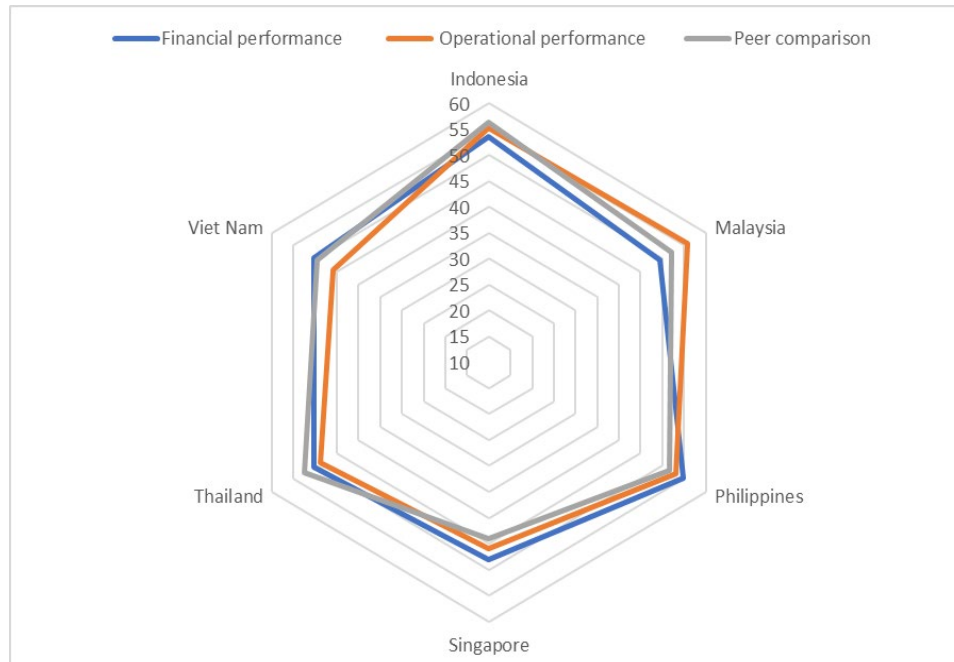


Source: Asian Development Bank.

Most Singapore start-ups deliver the same value proposition with a more digital flavor to cope with the COVID-19 impacts. It is important to note that the start-ups have adopted the business model change rather than changing existing products or services, or completely introducing the new product or services (Figure 4).

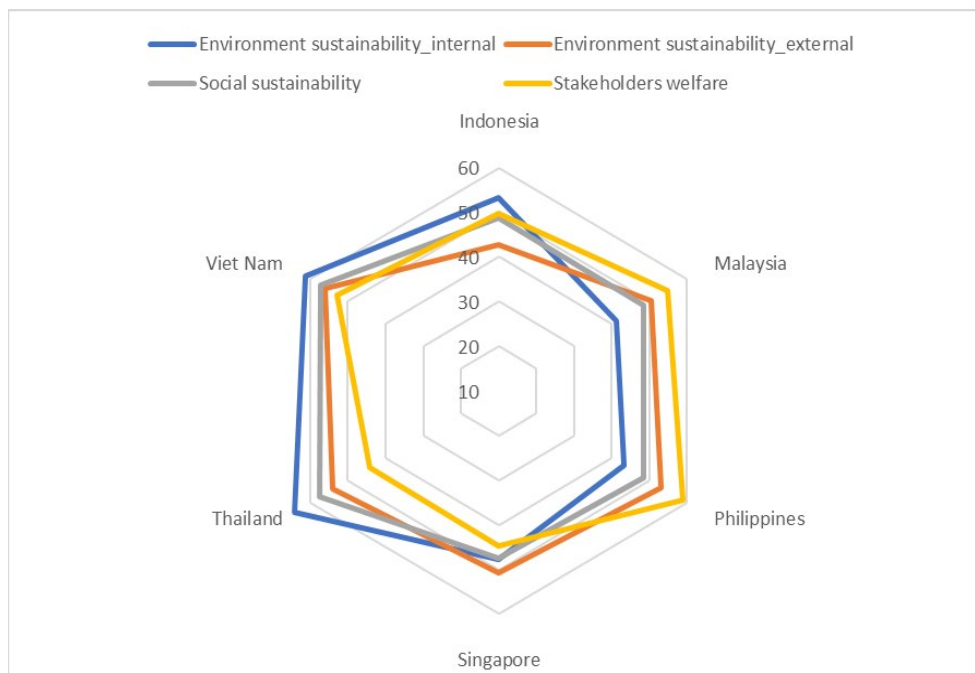
Performance-wise, Singapore start-ups are performing well financially, especially in maintaining and slightly improving the number of paying customers despite the COVID-19 impacts (Figure 5). However, in terms of peer comparison performance with the competitors, Singapore start-ups are not doing as well as how start-ups in other ASEAN countries perform, especially in terms of sales growth and profitability.

**Figure 5: Performance**



Source: Asian Development Bank.

**Figure 6: Sustainability**



Source: Asian Development Bank.

Singapore start-ups are doing excellent environmental sustainability considering sustainable development goals, especially with a superb system to ensure environment friendliness (Figure 6). Although only 26% of Singaporeans have heard of environmental, social, and corporate governance (ESG) development goals for sustainability, 46% of these people are aware of ESG investing (Fidelity International 2021). Singapore entrepreneurs are exceptional cases as they realize the importance of these aspects in the future sustainability at all levels from individuals, businesses, and nations. Moreover, Singapore start-ups understand that having ESG goals and missions as parts of business models helps attract investors who value positive impacts on the world, improve the business reputation, and attract capable talents. With such realization, their business models incorporate the considerations above, resulting in a high score in environmental sustainability.

On the other hand, Singapore start-ups are not doing as well in terms of welfare sustainability involving partners, suppliers, and employees, especially in terms of equal treatment for all employees. Singapore start-ups go beyond minimum legal requirements in treating all stakeholders fairly. However, these entrepreneurs and their companies are not yet widely recognized as great employers who treat all stakeholders well, partly explained by fewer efforts that they put into public relations and advertising in communicating what businesses do for these people.

#### **IV. FINANCIAL TECHNOLOGY**

Financial technology (fintech) involves integrating technology into financial services. The expansion of fintech was a technological response to the weaknesses of the traditional financial services industry. Over the years, the fintech industry has shifted to become more consumer-centric and has transformed how businesses operate.

Fintech services can be classified into 10 segments. Personal Finance is a tool to manage e bills and track personal or credit accounts. Payment & Billing is a payments processing, card developer, and subscription billing software tool. Lending fintech is a marketplace for lending, microlending, and alternative underwriting platforms. Insurtech is a fintech to sell insurance digitally, providing data analytics and software for insurers. Money Transfer and Remittance's position is as an international money transfer and tracking software. Blockchain companies leverage blockchain technologies for financial services, crypto-exchanges, and crypto-currencies. Capital Markets facilitate sales and trading, provide analysis, and create infrastructure for financial

institutions. Wealth Management fintech is an investment and wealth management platform offering analytics tools. Mortgage and Real Estate offers mortgage lending, digitization, and financing platforms for real estate transactions. Regtech assists with audit, risk, and regulatory compliance software (Deloitte 2021).

Singapore is a financial hub with unrivaled physical and digital infrastructure, a favorable ecosystem of investors, and friendly government regulations, allowing it to own a 52% market share in Southeast Asia and become the center of the burgeoning fintech industry. Having bagged funding of US\$861 million in 2019, Singapore is the fifth largest fintech market by funds in the Asia and Pacific region, and its fintech ecosystem's steady flow of funds shows that investors have confidence in the industry's future growth potential.

Singapore has taken the lead in Southeast Asia's fintech funding. Private sector funding has been necessary for the growth of Singapore's fintech ecosystem, with angel investors, venture capitalists, and private equity funds injecting capital. From 2015 to 2019, about 65% of the fintech funding in Southeast Asia was directed to businesses in Singapore, close to four times more than the funding received by the next largest market. Government-linked funds have played an important role in kickstarting the fintech ecosystem and supporting earlier stage start-ups. For instance, Temasek Holding injected US\$142 million into local venture capital funds in 2015, with US\$75 million allocated to its subsidiary Vertex Venture Holding and the remaining split across several local venture capital funds. In turn, these funds were able to provide between US\$1.5 million and US\$15 million to promising start-ups to help them scale their business operations. Validus Capital, NIUM, and Xfers are a few notable examples of fintechs that received funding via these venture capital funds and have continued to raise subsequent related financing. International venture capital firms have expanded their exposure to Singapore, and many foreign venture capital funds have established local teams in Singapore. These funds focus their capital pools for investment in Southeast Asia to access more opportunities in the region. On the one hand, fintechs recognize that Singapore has been a leader in its approach to regulation, particularly in Southeast Asia. On the other hand, Fintechs stressed that this would be a never-ending task and that regulation must be continuously reexamined to ensure a level playing field.

The fintech community in Singapore has increased in the last 5 years, with exponential growth in the number of fintechs and people employed. The adoption of fintech by traditional financial institutions has also grown, as they have sought the means to innovate and transform, and fintech funding has risen steadily to fuel this growth. Moreover, the concentration of fintechs in Singapore

and the diversity in their business models demonstrate that Singapore is an attractive fintech center. In 2020, several fintech companies in Singapore had developed an outstanding performance and presence.

- (i) GrabInvest, a new core business vertical under Grab Financial Group, currently offers financial services across Southeast Asia in payments (GrabPay), rewards (GrabRewards), lending (GrabFinance), and insurance (GrabInsure) to micro entrepreneurs, small business owners, driver-partners, and users across Southeast Asia. GrabInvest aims to offer cash management and portfolio-based financial solutions to its users, driver-partners, and merchant-partners, with Singapore as the first market to start. For wealth tech, Grab has acquired Bento, a Robo-advisory fintech, and rebranded it as GrabInvest with products launched on the Grab app.
- (ii) For Insurtech, SingLife, a homegrown insurer, merged with Aviva Singapore at a combined value of S\$3.2 billion. The deal marks one of the largest insurance sectors in Southeast Asia and Singapore. The agreement intends to bring Singlife's mobile-first savings and protection solutions to Aviva's S\$1.5 million strong customer base, while offering a deeper product range and advisory capabilities.
- (iii) For Remittance, Thunes, a business-to-business (B2B) cross-border payment network, has raised US\$60 million in a series B funding round. Thune's network connects mobile wallet providers, banks, technology companies, and money transfer operators, enabling cross-border payments to and from emerging economies. Thunes connects payment players in more than 100 countries. The capital raised will accelerate its product offerings and expansion in Africa, Asia, and Latin America.
- (iv) For Personal Finance, MAS and the Smart Nation and Digital Government Group launched the Singapore Financial Data Exchange, which claims to be the world's first public digital infrastructure to use a national digital identity and centrally managed online consent system to enable individuals to access, through applications, their financial information held across different government agencies and financial institutions.

Fintechs in Singapore stressed the importance of accessing financial services to conduct their business by opening the financial services infrastructure. An example of further enabling access

to financial services is FAST and PayNow. In September 2018, MAS announced the policy decision to allow access to FAST and PayNow for nonbank financial institutions. Starting February 2021, nonbank financial transactions that are licensed as major payment institutions will be able to benefit from this access. The direct connection will allow users to make real-time fund transfers between their bank accounts and e-wallets, making e-payment adoption more straightforward for businesses and individuals. Fintechs recognize that establishing common standards is highly desired to harmonize, yet significantly challenging to achieve. Practical proposals take the form of establishing forums for fintech regulation under the ASEAN umbrella with Singapore taking the lead in developing standards to regulate various initiatives, such as data privacy, and then sharing its rationale and approach with other regulators to provide them support in developing their standards (Wyman 2020).

In 2021, Singapore demonstrated resilience among the pandemic, while overall fintech funding in Asia was delayed. Despite an initial financing decline, Singapore's fintech investments rebounded, with investors recognizing the opportunities existing in Southeast Asia. This support for fintechs in Singapore stands differently from other markets in the region, where many fintechs, especially early-stage businesses, have struggled to cope with the impacts of the pandemic. The pandemic has highlighted the importance of digitalization and digital transformation in financial sectors. Shopping, banking, and doing financial transactions accelerate fintech companies in Asia to flourish. The diversity of fintechs and their business models in Singapore has broadened significantly. In fact, in some subsectors of the economy, the pandemic has positively affected business performance, particularly for businesses not exposed to credit risks, such as those involved in the facilitation of payments, wealth management, and insurance. The initial advent of fintechs was to address unmet needs in the market and solve customers' pain points. During the first fintech wave, most entrepreneurial activity and funding were centered on facilitating payments and lending to improve financial inclusion in the Southeast Asian region. As the payments and lending space matures, new subsectors are emerging. New entrants to the fintech sector have shifted gears and are exploring white spaces in wealth management, capital markets, InsurTech, RegTech, and data analytics.

There are three major global trends of fintech. First, cryptocurrency will be a focus for investors in 2021. Seeing an upsurge of activities in the blockchain, the trend is expected to persist. The rising trend has expanded across the crypto ecosystem, from cryptocurrencies and trading platforms to non-fungible tokens. The cryptocurrency space expects a broader group of investors to participate. Second, cybersecurity is likely to gain a more significant presence. With the

increase in digital transactions and the following increase in cyberattacks, Cybersecurity is essential for investors, especially corporates. Third, B2B services will gain attention among fintech subsectors. For example, banking-as-a-service will be more attractive. It is expected to see integrated fintech gain power as companies aim to utilize financial technology with other aspects of their companies (KPMG 2021).

Asian economies appear more open to adopting innovations like e-wallets than several European economies. Several surveys and research have shown that the Asian fintech ecosystem was proliferating. More ASEAN fintech firms have participated in digital payments, digital lending, and capital crowdfunding more than six times from 2012 to 2019. Most fintech solutions in Asia are focused on lending and payments, according to Cambridge Centre for Alternative Finance at Cambridge Judge Business School, the Asian Development Bank Institute (ADB), and Fintech Space. In the past, payment systems have developed dramatically at the peak of mobile application payment tools, digital wallets, and QR code-based payment.

Moreover, adoption is likely to increase toward broader integration of payment systems, including cross-border networks. Central banks in Asia are attempting to digitize their countries' payment systems. To demonstrate, the National Bank of Cambodia's Bakong Project anticipates an all-in-one mobile payment and banking application that changes the picture of traditional mobile payment and banking by combining e-wallets, mobile payments, online banking, and financial applications within one interface for any bank account. Further, several countries in the region are investigating the possible introduction of central bank digital currencies.

With the four digital banking licenses granted by MAS and the strong growth in investments in 2019, a shift in investment trends targets the commercial banking space as new banks with digital banking enter the industry.

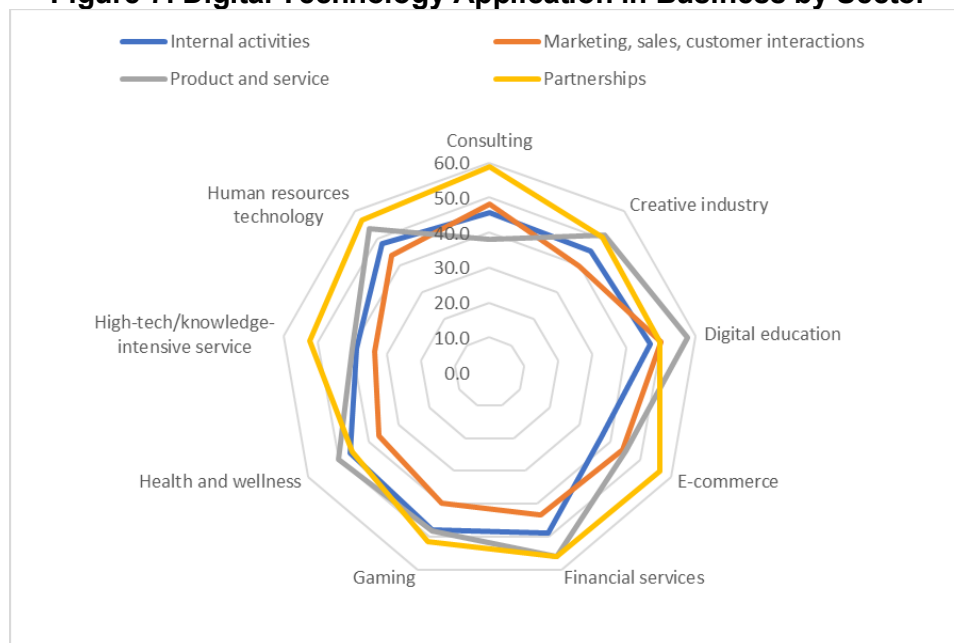
In the Southeast Asia landscape of fintech, the COVID-19 pandemic has significantly speeded Southeast Asia to change to a cashless society, with exceptional expansion in the number of e-payment transactions and a substantial decrease in cash withdrawals and deposits. Banking, digital payments, and loan-financing services significantly propelled the economic wheel forward throughout the lockdown. Since most fintech firms are start-ups, their agility to pivot their technology to provide specialized services as customers needed them will reinforce the industry.

## V. ANALYSIS OF SECTOR DATA AGAINST THE OTHER SECTORS

Singapore is known worldwide for being the leader in fintech. Thus, looking at the industry compared to other Singapore industries will provide valuable insights into the Singapore fintech ecosystem.

Fintech start-ups mainly apply digital technologies to their products and services, and cooperate with their partners (Figure 7). They focus their digital technology application less on marketing, sales, and customer interactions.

**Figure 7: Digital Technology Application in Business by Sector**

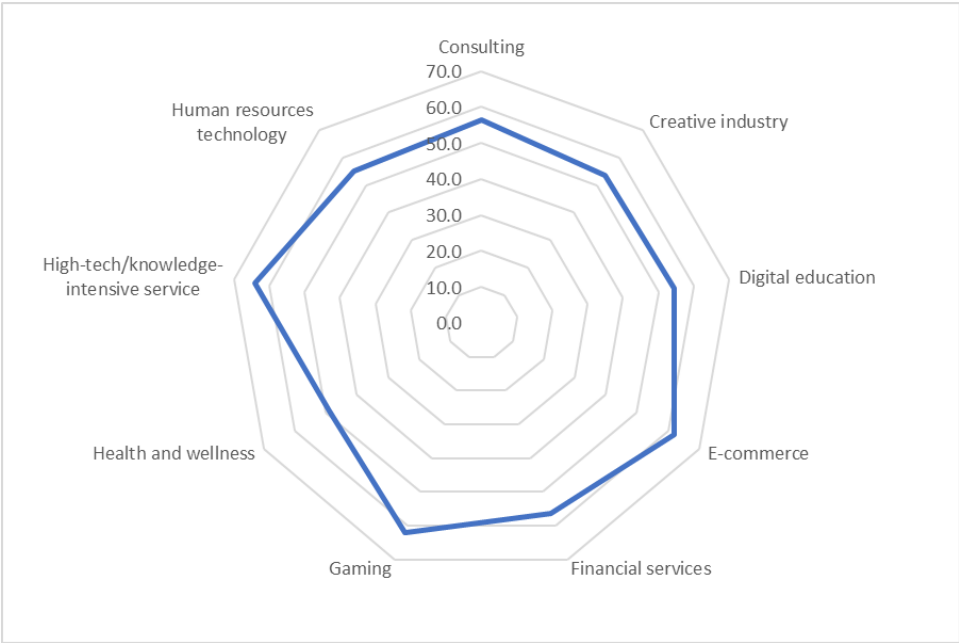


Source: Interview results.

For the past 12 months, fintech start-ups experienced relatively the same degree of business changes as other industries (Figure 8). Although only a small number of fintech start-ups entirely developed and launched new products and services, the main focus of such changes is on modifying the current developments and services (Figure 9). Fintech start-ups have sufficient digital capabilities and assets to quickly change their products and services to cope with the COVID-19 pandemic and its adverse market impacts.



**Figure 8: Business Changes by Sector**



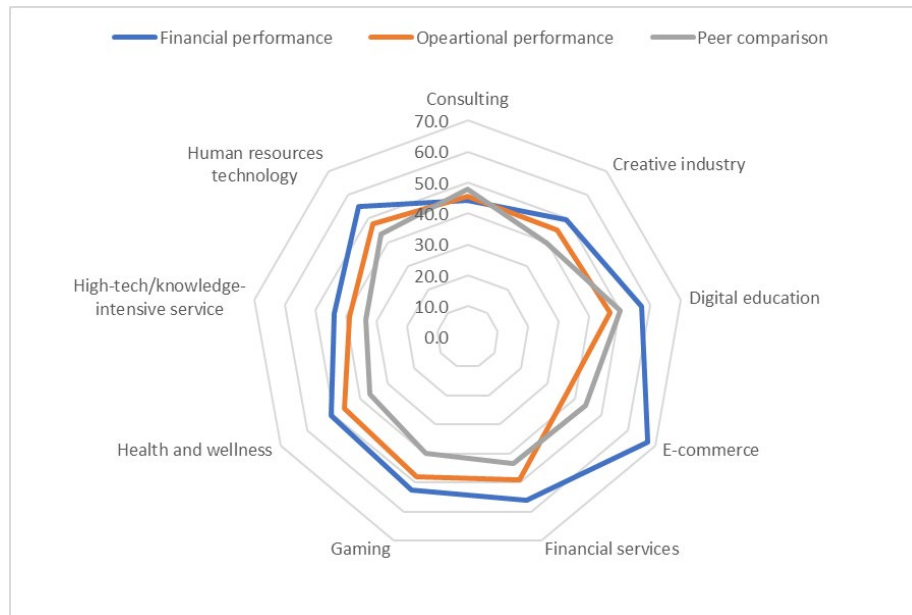
Source: Interview results.

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



Source: Interview results.

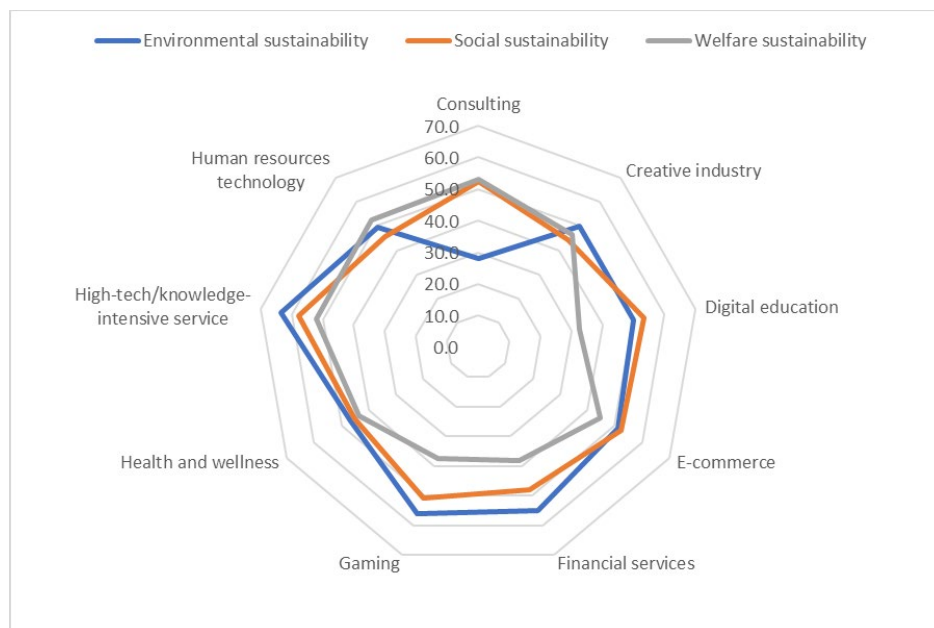
**Figure 10: Performance by Sector**



Source: Interview results.

In terms of performance (Figure 10), fintech start-ups have performed relatively well financially compared to other industries. The prompt response to the COVID-19 pandemic by changing their business models and modifying their products and services contributed to their quick recovery and crisis resiliency.

**Figure 11: Sustainability by Sector**



Source: Interview results..

Fintech start-ups are best at environmental sustainability and not as good at welfare sustainability (Figure 11). This means these entrepreneurs have incorporated environmental considerations into their business models. In environmental sustainability, fintech start-ups are doing better than other sectors. Considering the lower score on welfare sustainability, this relates to fintech start-ups' fair treatment of stakeholders. Complying with the minimum legal requirements is not enough. Being recognized for treating stakeholders fairly is another crucial aspect that Singapore fintech must consider implementing in the future.

## **VI. CASE VIGNETTES OF INNOVATIVE DIGITAL BUSINESS MODELS**

### **A. AiDA Technologies**

AiDA Technologies is a provider of artificial intelligence and machine learning solutions for the financial services sector. AiDA aims to serve the leading tier 1 insurance companies and banks with customer-centric. AiDA is well-known for its two strong fundamentals. The multi-award-winning, proprietary machine learning technology and an in-house team of PhD-level data scientists who are experienced working with real-world insurance and banking problems across the Asia and Pacific region.

Fintech has put pressure on the financial services sector. Product-centric strategies, including in-branch experiences and advertising, are no longer enough as an industry is rapidly evolving. As competition continues to intensify, there is a need for a new customer-centric approach. Traditional banks and insurance companies have a unique advantage that new entrants do not have: the rich and comprehensive data. AiDA foresees the opportunity to step in and make sense of the unexploited data. AiDA allows the bank and insurance companies to utilize substantial data; the bank and insurance companies can lower costs, boost productivity, and increase market share and profitability. AiDA positions itself as a solution to the challenges posed by the disruptors.

Ultimately, AiDA seeks to supercharge the financial services sector with its four robust pillars.

- (i) **Accelerate process.** AiDA solutions accelerate repetitive and error-prone claims and loan processes and expedite agent performance.
- (ii) **Identify revenue potential.** With predictive analytics, up-sell opportunities are identified, acquisitions are increased, and long-term loyalty is achieved

- (iii) **Drive cost reductions.** By detecting changing behaviors, AiDA facilitates mitigating the increasing costs. With predictive analytics, suspicious activity can be anticipated, and proactive action can be executed.
- (iv) **Anticipate evolving risk.** Potential suspicious activity can be identified, fraud can be detected, policies at risk of surrendering can be noticed, and increasing Asset under management can be anticipated.

AiDA utilizes artificial intelligence and machine learning in all facets of the financial service ecosystem, consisting of two major customer groups: banks and insurers.

For the banks, product-centric strategies like smooth in-branch experiences, strong brand building, and advertising are no longer sufficient for the banking sector. Customer-centric strategies are still critical, but fragmented and tiresome lending approval processes ruin the ability to anticipate customer needs. However, AiDA sees that the most priceless asset of the bank is unused data. AiDA unlocks the vault and leverages the vast amount of customer data that banks have access to tailor their customer experiences fully. AiDA provides three major products for the banks: AiDA Smart Risk, AiDA Smart Lending, and AiDA Smart Engagement. AiDA Smart Risk is a high-precision solution that offers unparalleled outlier detection capabilities. To accelerate the tiresome loan process, AiDA Smart Lending utilizes artificial intelligence and machine learning to bring data sources to build a clearer risk profile picture. Last, to up-sell, AiDA Smart Engagement uses the customer data to discover their needs and identify up-sell opportunities.

There are several gaps for the insurers to fill in this landscape. First, policy underwriting is long and tedious, and claims take weeks to process. Second, customers demand fast, consistent, and trusted turnarounds, and insurers must balance this against managing risk profiles. Moreover, finding, recruiting, and retaining high-performing insurance agents is critical for success. Consequently, AiDA intends to power insurance companies with its four major products: AiDA Smart Claims, AiDA Smart Agency, AiDA Smart Risk, and AiDA Smart Underwriting. Since 87% of policyholders believe the claims and experience impact their decision to remain with insurers, AiDA Smart Claims aims to reduce leakages and accurately process claims in minutes. Since insurance agent has a significant role in the operation, AiDA Smart Agency is a high-precision tool that supports agent recruitment, detects fraud, and tracks agent performance effectively. AiDA Smart Risk takes a significant role in managing risk, one of the most considerable costs of insurance operation. Last, AiDA Smart Underwriting significantly improves underwriting quality, increases the acceptance rate, and accelerates approval.

## **B. Opal Payment**

Opal is a leading regulated payment end-to-end provider with business solutions. Opal has proven to be a success with an end-to-end provider service. Opal's goal is to support the local small and medium-sized enterprises by providing "one unified account for all payment and loans." Opal adopts the "same for less" or "more for less" value proposition to offer a lower-cost alternative to support these target customers with comparable or even higher quality.

The transaction is unavoidable when you operate a business. Transaction costs and foreign exchange rates, which occur every time during a foreign transaction, are significant problems for all small and medium-sized enterprises worldwide. In addition, when the company is taking out a loan, it requires an extended credit checking and verification process, which can take up to 2 weeks or more. This is where Opal foresees the opportunity to step in and make a change in the financial industry. By providing one unified account for all payments and loans, the company could offer a service that simplifies cross-border payments to maximize cost-saving. When customers enjoy the benefit of the payment solution, Opal accumulates the transaction data and can utilize a substantial amount of data to determine the credit line for customers. When a customer prefers to take a loan, the company can use the credit line to determine the amount of credit right away.

Opal provides solutions to three business segments: cross-border money transfer, financial solutions, and multi-currency accounts.

Opal prioritizes speed and safety for cross-border money transfers while keeping the price at a low cost for customers. The highly competitive exchange rate with a low fixed fee from Opal is estimated to be 40% cheaper than conventional banking methods, which becomes cost-saving for customers' business. In addition, Opal can transfer money to more than 100 countries worldwide.

For financial solutions, Opal provides a swift approval process with favorable terms and flexibility for customers. Opal has different solutions, including microloans, business term loans, revolving credit facilities, and invoice financing. These options allow the company to choose the most suitable package for the customers. In addition, Opal is powered by funding societies to provide the best financial solution to make it easy to maintain positive business cash flow, which allows the business to focus on other essential tasks such as product development and productive jobs.

Opal provides an account that allows customers to receive, pay, and hold multiple currencies for multiple-currency accounts. The business may deposit and withdraw cash in different currencies with multiple-currency accounts. The companies can decide to keep the money they want for any duration or save on a better exchange rate. In addition, this also allows the business to make a payment to suppliers in the currency that they require to avoid unnecessary conversion fees. These functions enable flexibility and convenience in a single account.

### **C. Payboy**

Payboy is an intuitive and easy-to-use human resources management system on the market. As a fully updated and compliant human resources management system, Payboy simplifies the tedious stuff so that the company can entirely focus on other important core of its businesses. Payboy has succeeded with a payroll solution that satisfies companies and employees. Moreover, a testimonial from Vanitee, Surge Group, and Highsparks uses Payboy's service, confirming its seamless software execution. Payboy's mission is to minimize discrepancies and maximize employee satisfaction. Because the tedious process of human resources management can be simplified, Payboy is not reluctant to step in and improve it.

Currently, manually handling human resources matters such as payrolls, and attendance taking can be very time-consuming and prone to errors for every company. This problem is intensified because most companies require payroll to be generated every month. As a result, Payboy sees this improvement gap to be filled. To improve the human resources system for its customer, Payboy offer seven business features: payroll processing, leaves management, claims management, employee portal, time attendance, shift scheduling, and appraisal.

Payboy provides advanced payroll software that offers the flexibility to configure a wide range of pay items for all types of workers, from full-timers to interns. It generates a functional payslip with last-minute adjustments, or pays items that vary from month to month. Moreover, the payroll software handles all tax calculations to make payslips effortless. Last, this feature is compatible with software such as Xero and QuickBooks to ensure effortless transfer of information, both internally and externally.

For the e-leave system, Payboy makes applying for leaves a fuss-free experience via the web portal or mobile application. With the e-leave system, the spreadsheets and paperwork become

unnecessary, and employees can check their leave balance and plan for their time off instantly. Moreover, the leave calendar is linked with a business calendar to make it easier to keep track.

The e-claims system allows employees to submit claims for their expenses simultaneously using the web portal or mobile apps. Payboy's claims management system will take up lost receipts or paper-based reimbursements. Most importantly, the refund enables human resources to approve and disburse on the same day.

Human resources software can provide every employee with an individual employee portal and access their records and details. This feature integrates new employees into the company within 5 minutes. Then, it assimilates information from the organization's hierarchy. The entire workforce will be updated on all changes, ensuring that no one is left behind.

Payboy's time tracking system allows the company to monitor employees' hours consistently. The advanced calculation engine computes worked hours and overtime, integrating directly into payroll for accurate payslips on every cycle. In addition, the Device Agnostic E-Time Sheet let employee submit their timesheet electronically and save the difficulty of data entry. Employees can clock in and out through the Payboy mobile app, web portal, facial recognition device, or any third party digital tracking hardware.

E-scheduling ensures that part-timers of the company are ready for every planned day. Traditionally, waiting for employees' responses to making endless changes is inevitable, and shift scheduling can be frustrating. Thus, e-scheduling offers various features to cope with the problem.

The appraisal system is positioned as a significant role in supercharging employee performance. Since the company has a different benchmark for improvement, the system offers a customizable appraisal form. Moreover, flexible appraisal routes and real-time performance management ensure that employees' performance is evaluated entirely and simultaneously.

#### **D. Skilio**

Skilio is an artificial intelligence-powered digital soft skills portfolio for students to showcase their competencies, insight, leadership, teamwork, and communication skills in a creditable way. It is a LinkedIn for students' soft skills development. Skilio enables students to measure, record, and track their soft skills development from their daily school life. Skilio's goal is to define and develop the student's soft skills, which will lead to human resources development such as career guidance

and project-based learning. For career guidance, the platform will empower students with technical tools to show their non-academic skills and capabilities and personalized career support that identifies them from the data. A milestone-based check-in for project-based learning motivates student progress and post-program review to support curriculum development.

Among modern organizations, soft skills are highly valued as an essential part of human resources as it shows one's ability to work with others. Many organizations are looking for individuals that blend both soft and hard skills. However, it is challenging to record, track, and develop soft skills because the traditional education system focuses mainly on academic grades and developing hard skills. Skilio believes that creating a soft skill portfolio that documents and tracks an individual's demonstration of soft skills can help gain awareness of human qualities to enhance strength further and improve weakness to develop valuable human assets.

Skilio provides several benefits, including measuring, recording, and creating a digital portfolio of soft skills. The process is done by collecting evidence of soft skills demonstration when individuals participate in school activities during their education journey. Then, algorithms will use natural language processing to detect soft skills competencies from the qualitative input. After the algorithm detects and processes the data, the platform organizes it and presents it in a report expressing its core soft skill competencies. The showcase can be used when individuals apply for a job or go for an interview. The business model is operated mainly under the business-to-business-to-consumer (B2B2C) model and expands toward the business-to-consumer (B2C) model. The main target user group is those aged between 15 years old and 24 years old. The COVID-19 pandemic has had a significant impact on the education industry. Many educators and organizations shifted their focus and resources toward digital learning and digital tools. Skilio sees this as an opportunity to expand its business. The company will experiment more with B2C business and mobile applications. Further, it has the end goal of growing toward the international market.

## **E. Lexagle**

With a mission to solve one of the business managers' perplexing mysteries of 'where are all my contracts?' and 'why are there no common tech platforms for lawyers?', Lexagle is the first artificial intelligence-driven contract life cycle management platform in Singapore. The platform aims to resolve the pain of managing the life cycle of contracts, from the contracts' drafting to the storage and retrieval of past agreements, which can be a ticking time bomb if not correctly handled.



Businesses tend to overlook this fact, as they often view it as nonrevenue-generating activity and are unwilling to invest further in a better contract management system. Lexagle provides a centralized repository for contract management, allowing businesses to mitigate future chaos in locating past contracts. Lexagle provides auto-generated templates and digital signatures, managing key dates stated within contract clauses and reminding firms of their contractual obligations to reduce the cost of damages or lost opportunities from cancelled contracts. Today, Lexagle digitizes the entire contracting process from start to finish, simplifying the whole contract life cycle management process.

There has been a rise in the demand for contract life cycle management (CLM) to identify loopholes from past contracts, reduce organization penalties from noncompliant practices, and streamline decision-making processes involving the cross-referencing of past agreements. In addition, CLM can help organizations easily collaborate with other firms to expand their consumer bases. Consequently, the demand for CLM software in both public and private sectors, in industries ranging from financial services, and health care to manufacturing, remains high.

Lexagle is a one-stop solution for legal contract life cycle management, with the various stages of a contract's life cycle translated into features within the platform. Lexagle rises above its competitors by emphasizing user experience to create stickiness with its users. Its dashboards and workspaces are aesthetically pleasing yet functional. Lexagle also provides different user experiences and interfaces for different types of users, from business and legal users to senior management. This differentiation is a unique approach to software design since most software treats all its users in the same way for efficiency reasons.

Lexagle deviates from this tried-and-tested formula because it acknowledges that a contract involves multiple stakeholders in a company, each with differing requirements. From the in-house counsel trying to track policy compliance and consistency with past contracts to the business teams who want to get a quicker "yes" and, finally, senior management who want a better overview of their contracting ecosystem. Lexagle provides a differing user experience to ensure that the individual requirements of the various stakeholders are addressed properly rather than offering a one-size-fits-all model. Improving human productivity, driving user adoption, and lowering technical barriers for users are critical considerations in the platform's design.

Lexagle also rises above its competitors by being the first artificial intelligence-driven CLM platform, covering a contract's life cycle from creation (i.e., templates) to reviewing/auditing,

storing, and signing. The platform replaces multiple competing products as a single platform, making contract management more convenient and accessible. The artificial intelligence-enabled platform uses natural language processing and artificial intelligence algorithms to perform contract summarization through keyword scanning, but does not advise on legal matters. Lexagle's artificial intelligence features set it apart from its competitors. It provides data analytics, describes all ongoing contracts, and presents a transparent overview within the Chief Executive Office view module.

Lexagle's core features provide an end-to-end service for its users, with contract templates, digital signatures, scheduling, and notifications. Users can create contracts through the platform with its inbuilt contract template library, and have clear access to all ongoing warranties within the company. Lexagle's artificial intelligence-enabled contract summarization makes it easier for users to understand what each contract is about, helping them save precious time. Further, Lexagle can remind users of upcoming legal obligations with scheduling and notifications. Lexagle has created a platform that is easy to integrate into customers' existing legacy systems, making it easier to onboard new customers and collaborate with them. The company also has an enterprise option for customers, giving them the ability to add customized features per their requests and helping to personalize the platform to meet their specific needs. The platform also has an inbuilt chat feature to communicate easily with all relevant parties and smoother contract management.

## **VII. RECOMMENDATIONS FOR POLICY AND PRACTICE**

Singapore is well-rounded in terms of the digital entrepreneurship ecosystem. Singapore has set the country's development towards a globally competitive economy by positioning the country as having a business-friendly and globally integrated environment. Singapore has been embracing technology as a critical driver of the country's economy and society through various initiatives and supports. Singapore has the best digital framework conditions for entrepreneurship globally for stand-up, start-up, and scale-up entrepreneurs. Singapore's digital framework conditions for all three entrepreneurial stages far exceed both global average and regional ASEAN, setting the maximum boundaries for general and systematic framework conditions for other ASEAN members. Singapore is particularly strong in cultural and informal institutions, human capital, and finance. These three strengths reflect the constant development to achieve Smart Nation and the clear national vision and mission toward Smart Nation. With strengths come weaknesses, and Singapore has one distinct challenge: market conditions. On the supply side, the government and

organizations have put remarkable efforts into supporting the development of the local entrepreneurial ecosystem. However, with neighboring countries, such as Malaysia and Indonesia, having their start-up ecosystems, Singapore faces an increasing challenge in terms of market power in the regional market. Such a troubling challenge reflects in the AIDES market condition pillar.

Singapore has unified supportive efforts in the entrepreneurial ecosystem under various initiatives and programs to allow start-ups to discover and access all available supports. When it comes to the application of digital technologies, Singapore start-ups coordinate resources, share data and ideas, and create new services in collaboration with partners. Thus, Singapore has the highest application of digital technologies in business in the partnership aspect. However, the weakest aspect is marketing, sales, and customer interactions resulting in the lowest application of digital technologies among ASEAN members. This aspect reflects the engagement and interaction with the customers through digital channels and social media, the ability of the customers to order and/or pay online for the products and services, and the monitoring of online ratings and reviews. Among these facets, Singapore start-ups put the least effort into monitoring online ratings and reviews and operating their customer communities.

In contrast, most efforts are 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. There is an area that Singapore can improve on, market conditions involving marketing, sales, and customer interactions. Singapore start-ups can focus on improving the communication from one-way to two-way to interact more with their customers. It is undeniable that customers are important for selling products and services. Thus, communicating with the customers will only help improve the products and services offered and manage their expectations. More importantly, customers are the most significant source of gauging the changing behaviors, needs, and trends. Running their customer communities will boost customer advocacy and create loyal customer relationships. With these improvements, Singapore start-ups will gain one of the most important brand assets: sustainable and healthy customer relationships. With the world evolving towards companies merging and acquiring other firms mainly for their direct customer bases and relationships, Singapore start-ups must improve on this aspect inevitably.

In terms of Singapore start-ups' contribution to the Sustainable Development Goals, entrepreneurs can improve welfare sustainability relating to partners, suppliers, employees, and

other stakeholders. Currently, Singapore entrepreneurs have already gone beyond the minimum legal requirements in the treatment of the stakeholders. However, Singapore start-ups can improve on fair treatment for all employees and on being recognized, giving employees opportunities and channels to voice their opinions and concerns, giving credit to employees when they do well, having a safe working environment, showing genuine concerns for employees' mental and physical health, and ensuring that employees have a healthy work-life balance. Moreover, start-ups should make accommodative efforts in providing necessities for disabled employees in the work environment. The benefits of having fair treatment for all employees and being recognized as fair employers positively affect employee turnover and financial performance.

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