



# Emerging Disruptors from the Global Pandemic

Whitepaper by Cisco and Jungle Ventures

jungle  
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# Foreword

COVID-19 has challenged us on social, political and economic dimensions, disrupting life as we knew it entirely. This has been a defining moment for the planet. What we do collectively to support the recovery of our economies and to reset inequities in social structures will be talked about in history books to come. Crises often create new opportunities, and discontinuity can also be the trigger for innovation, if we act responsibly.

At Cisco, we are seeing a collective agreement that running a good business goes beyond generating profits, and caring for customers and business partners while delivering solutions to our markets. It also carries the responsibility to think about the communities we operate in around the world and our role to help them thrive. We must create new pathways to economic prosperity that enable people and communities to break through barriers, spark new ideas, and ignite innovation. We need to build an inclusive future for all as we know that our world needs this now, more than ever.

A few industries like education, healthcare and supply chains are innovating to address the massive shocks to the system caused by the global pandemic. Cisco is proud to partner with Jungle Ventures to shine the spotlight on these industries and the innovation that has been triggered through these challenging times. We hope that if you read this and are playing a part in the digitization of these industries, you will reach out to us to tell us more.

**Naveen Menon**  
President,  
Cisco ASEAN

**Rajiv Menon**  
MD, Head of APAC and Japan,  
Cisco Investments and M&A



**"There are decades where nothing happens, and there are weeks where decades happen." – Vladimir Lenin**

This quote has often been mentioned in the last few months, as countries and economies have been tested thoroughly, triggering rapid responses and reactions. As the pre-eminent early and growth stage venture capital investor in Southeast Asia and India, we have been tracking the situation very closely. COVID-19 is first and foremost, a human tragedy for all. As investors, we are deeply concerned about the global health crisis that we are in today.

Yet at the same time, we are optimistic that the emerging technology sector in our region will come out of this stronger than ever, given that technology has potentially been the largest beneficiary of this crisis. We are seeing significant, undeniable changes in behavior, and tech adoption across sectors at levels never seen before.

COVID-19, in many ways, has exposed the areas in which countries and several industries were ill-prepared to face change. Fortunately, many startups have been at the forefront of this tectonic shift to fill the gaps and capture the new opportunities that have emerged. They have done this successfully through innovation and digitization. We are excited to partner with such inspired founders and bold thinkers who are looking to build long-lasting companies and solve these new, emerging, and very real problems.

This whitepaper is our collaboration with Cisco to highlight some of our views and learnings from a few industries and companies that we have seen respond to this crisis in an innovative manner. More than that, it is also a sincere call to action to all ecosystem participants to work collaboratively to drive positive change. We look forward to connecting with and working with you.

**Amit Anand**  
Co-founder and Managing Partner,  
Jungle Ventures

**Yash Sankrityayan**  
Principal,  
Jungle Ventures





## The Disruptive Event that is Transforming the World

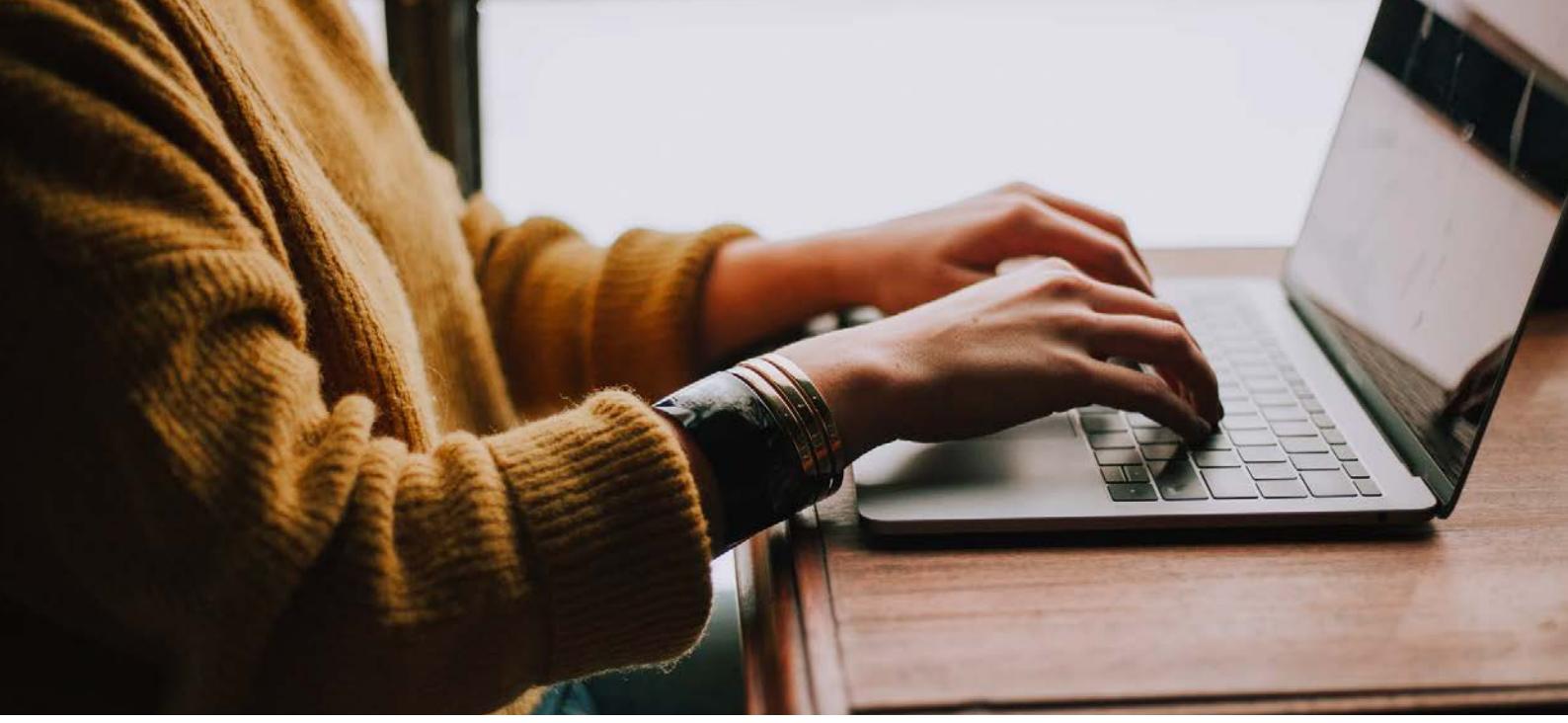
The world has experienced numerous unprecedented events that have permanently transformed economies and communities in the last few decades. From economic challenges like the dotcom bust and the 2008 Global Financial Crisis to health pandemics like SARS, H1N1 and Ebola, these events have caused massive economic setbacks across all major industries. While countries eventually recover from these events, most crises have caused large ripple effects which left lasting impacts across economic and social structures.

The novel coronavirus disease (COVID-19) is an event like no other. The resulting economic impact in ASEAN is significant. The region went from a projected real GDP growth rate of 5.3% in 2020 pre-COVID-19, to a contraction of -0.2% after the pandemic hit.<sup>1</sup> It will be a very long time before we understand COVID-19's full repercussions to the global economy and public health. Amidst this uncertainty however, the way we respond to the pandemic will serve as a litmus test for the resiliency and adaptability of governments, citizens, and enterprises in the long run.

Businesses for example, will transform their operating models to build resiliency and improve customer value propositions. These systemic shifts are already seen across three (3) sectors that are essential to the economy; **Education, Healthcare and Supply Chain & Logistics.**

This paper provides a deeper analysis on how businesses in these sectors have adopted technology quickly to minimize interruptions to their services. It also outlines successful disruptors that have emerged from this transformation, and what industry players can learn from their experiences.

<sup>1</sup> IMF and ADB May 2020



## A Lesson for Businesses: Surviving Now, Thriving Later

The permanent transformation from global events can be a catalyst for positive economic and healthcare reforms that can then empower businesses to pivot and succeed.

For example, the 2002-2003 SARS epidemic saw an accelerated shift from brick and mortar sales to e-commerce adoption in China. Alibaba extended its e-commerce market reach by launching Taobao in the same year. JD.com shifted its business model from offline to online, turning what could have been its demise into a successful transformation story.

Similarly, as the COVID-19 crisis subsided, businesses had to look beyond survival and stopgap measures and plan for new consumption behaviors and business requirements in a post-COVID-19 era.

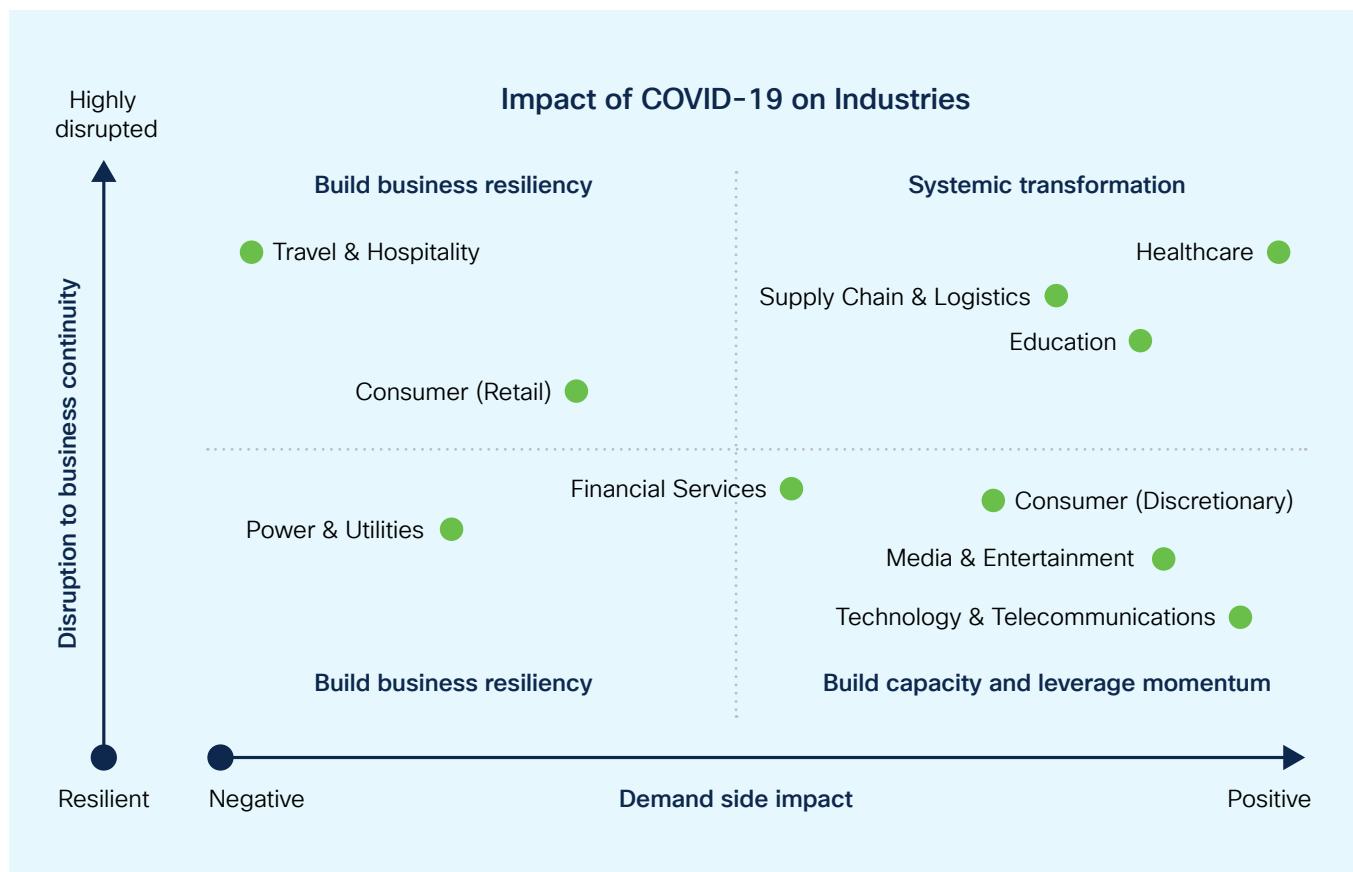
Digitization has played a pivotal role in this dynamic shift. Many ASEAN countries have made digital transformation a national priority over the last few years. As a result, the region has emerged as one of the fastest growing mobile-first economies in the world, with the development of a multitude of digital-native platforms spanning essential sectors.

This will become more significant in the future, as health authorities expect citizens to continue practicing social distancing and adopting remote working in the medium term. Such scenarios will create even greater opportunities for virtual learning, telehealth, and online shopping, underpinned by a combination of enabling infrastructure and digital technologies.

Businesses with their finger on the pulse will adopt digital technologies to not only create better internal processes but also introduce innovative solutions that cater to this new reality. This will put them ahead of the curve, empowering them to go from merely surviving to truly thriving in a post pandemic world.

## A Look at the Winners and Losers of the Shift

It is important to note that the pandemic will impact industries differently, depending on the magnitude of disruption towards demand and business continuity. With pre-COVID-19 assumptions rendered invalid, businesses will likely re-prioritize spending budgets and certain elements within their product or technology roadmaps to invest in the right infrastructure and capabilities.



\*The positions in the matrix are based on qualitative analyses and do not represent actual quantitative indicators

The consumer discretionary goods and financial services sectors which have been shifting towards digital-native business models over the past decade are adapting relatively better than others.

Demand in food delivery orders have gone up by 20-30% within a month. Online grocery store Redmart for example, experienced unprecedented demand during the pandemic in Singapore. Companies in these sectors should build capacity and leverage the momentum they experienced during COVID-19 to drive adoption of their online platforms and expand their digital offerings.

Sectors such as travel and luxury retail that experienced significant business losses should seek to build enterprise resiliency in the long term. These measures range from shifting to a dynamic cost structure, such as building a flexible IT infrastructure and workforce that can be resized as needed, to diversifying revenue streams by investing in adjacent or defensive businesses.

Despite being relatively slower to adopt technology in the past, sectors such as education, healthcare and supply chain will accelerate their technological implementation during the pandemic to function effectively. While these are dynamically different industries, they are essential services that cannot afford to be discontinued in times of crisis.

### Beyond the Impact: Long Term Drivers Shaping the New Normal

We have identified three (3) key drivers of mid to long-term positive momentum where B2B technology players can play a significant role in empowering businesses to embrace these seismic shifts and capture true value:



#### **Increased propensity to try and use online services in times of restricted physical availability**

Customers who were aware of online services but hesitant or skeptical of its efficacy will be more open to trying and eventually adopting these services during the pandemic due to their limited movement. Service providers can leverage this to grow from their early and niche adopter base to enjoying mass market penetration.



#### **Shifting from centralized to distributed and flexible operating environments**

The boundaries between living, working and learning environments will be blurred in the new normal. Organizations will need to address the operational complexity of managing remote and physical teams at the same time, achieve similar levels of productivity and collaboration, and ensure security in complex and dispersed environments.

For example, about 60% of Chief Information Officers (CIOs) have ramped up spending budgets by an average of 15%. This will scale work from home (WFH) initiatives to accommodate 70% of their employees, up from 20% before COVID-19. Companies expect the increased spending to persist in the long-term, even as employees return to work.<sup>2</sup>

<sup>2</sup>AlphaWise WFH Survey – Morgan Stanley Research June 2020



### Leveraging data and analytics for real-time visibility and insight-driven decisions

Business leaders are realizing the importance of having a unified, real-time data visibility that can inform their overall data strategy. As companies adopt off-the-shelf solutions that offer data transparency and visibility, large organizations with sufficient IT budgets are likely to build on this momentum and develop native capabilities to ingest and process data from heterogeneous sources in real time.

Examples of real-life use cases and success stories across education, healthcare and supply chain & logistics will be discussed in greater detail in the following sections.



# Education

## Disruption at All Levels

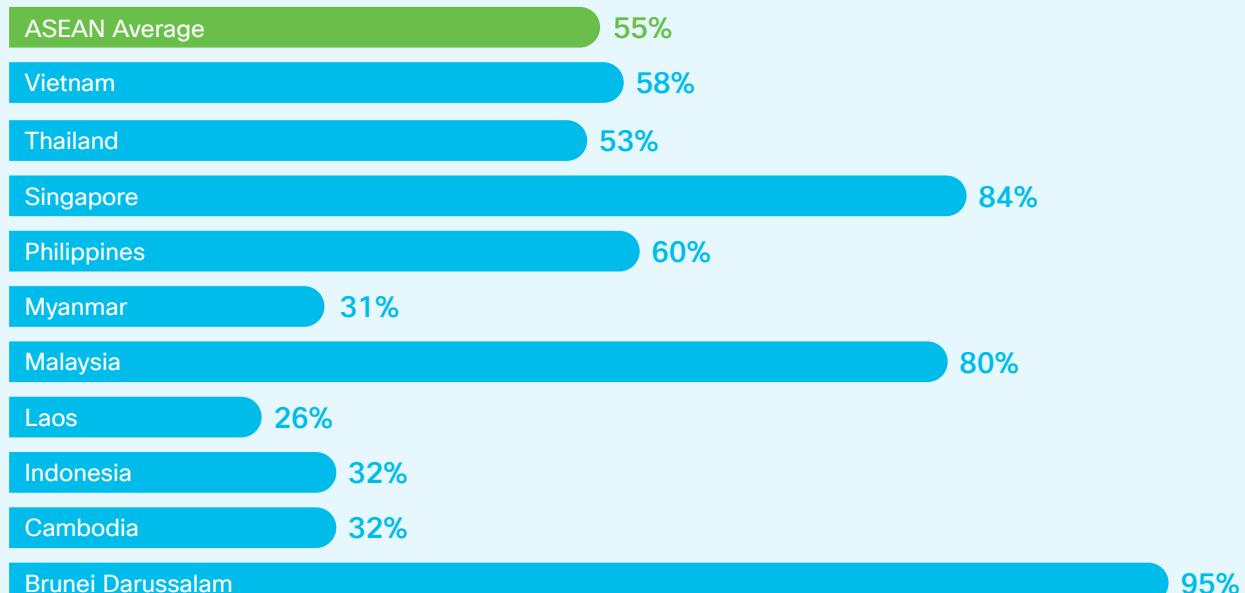
Governments around the world ordered the temporary closure of schools and academic institutions at the height of the spread of COVID-19. The severe short-term disruption was felt by a significant portion of the global population. According to figures released by UNESCO, at its peak, 1.5 billion students around the world were impacted by the crisis, with 160 million being in ASEAN, highlighting the magnitude of this disruption and the scale of the response.

Homeschooling was a massive shock to parents and caregivers' productivity as well as students' social life and education. Teaching was quickly moved online, on an untested and unprecedented scale, making it challenging for teachers to adapt. The drastic shift was also seen in universities, technical and vocational colleges. Beyond that, tertiary institutions opted to shut down campuses, send students home, deliver instruction remotely where they could or accept a lost academic term where they couldn't.

## Realities of the Digital Divide

While distance and online learning are the necessary result of the shutdown, they also came with their own set of challenges. Despite its 350 million internet users, technology infrastructure and internet connectivity, the prerequisites to enabling distance learning were not equally accessible in different locations and communities within ASEAN. For example, while Brunei, Singapore and Malaysia enjoy high internet penetration rates of 94.9%, 88.4%, and 81.4% respectively, Cambodia, Laos, and Myanmar are still struggling to provide internet access to even 50% of their population<sup>3</sup>.

Percentage of individuals using the Internet in ASEAN in 2018



Even within the countries with higher internet connectivity, there is disparity between urban populations and underserved rural communities in terms of the ability to afford electronic devices to facilitate online learning. This is further compounded by students' inability to use some paid or licensed software outside of schools and university campuses.

Governments, education institutions and technology providers in ASEAN should start re-thinking their next steps for the future of teaching and learning to build a 'more inclusive and crisis-resilient education system in a post COVID-19 world'<sup>4</sup> (UNESCO).

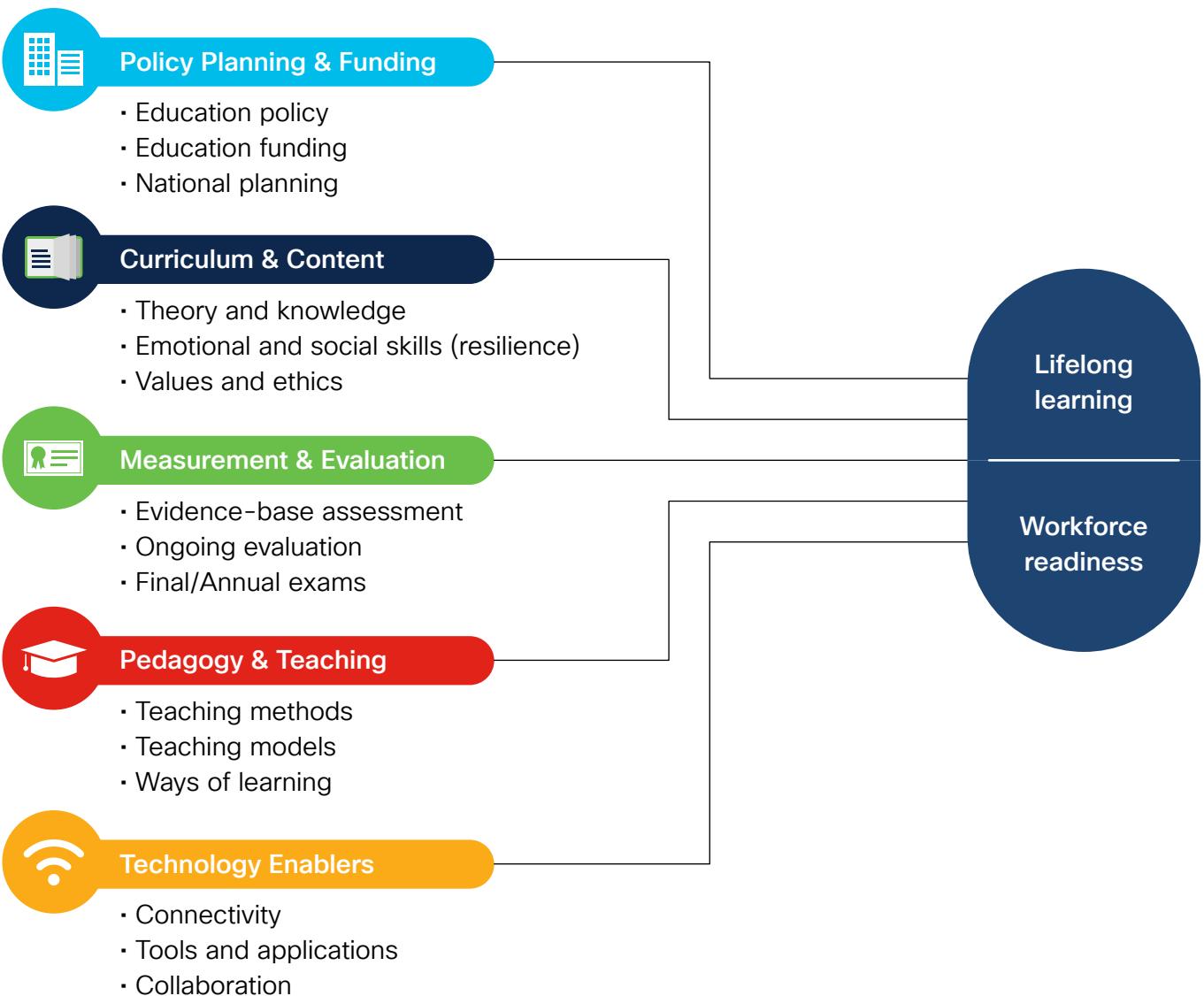
<sup>3</sup> Internet World Stats – Asia

<sup>4</sup> UNESCO: With one in five learners kept out of school, UNESCO mobilizes education ministers to face the COVID-19 crisis

## Re-thinking Our Approach to Teaching and Learning

Given that the overall shift in the education sector is imminent, it is timely to look at some specific medium to long term changes that will happen on five (5) core aspects of education. These will help produce lifelong learners and workforce ready citizens;

- Policy Planning & Funding
- Curriculum & Content
- Measurement & Evaluation
- Pedagogy & Teaching
- Technology Enablers



## Policy Planning & Funding

Governments in Southeast Asia must utilise a combination of policy directives and collaborative actions to ensure education remains accessible to all teachers and students. Engagement at the grassroots level with schools, vocational and higher education institutions, teachers, school district offices, community organizations, non-profits, service providers and technology players will be critical to success.

As a starting point, governments should develop a pedagogical action plan during a crisis. This can be done by working with major technology providers to ease the impact of school and university closures on education. Such efforts should be followed by education policies that create a roadmap on how technological tools will be used in education, and how students will gain access to them. States, provinces, school districts, and teachers will then be empowered to execute the rollout of this roadmap to online learning within the defined parameters.

Governments should also look towards infrastructure investments that will increase internet penetration, particularly in rural and underserved areas. This includes working with service providers to enable equitable access to basic connectivity in the long run. Long term infrastructure investments will need to be supported by robust and sustainable funding programmes to allocate devices to poor families or an affordable device subsidy that incentivizes middle income families to own at least one device to support online learning.

While there is no single response to how governments should manage such systemic disruptions, leaders and administrators in ASEAN can learn from global education policies and best practices. They should then apply these learnings in a fit-for-purpose manner based on the biggest challenges that students are facing.

## Curriculum & Content

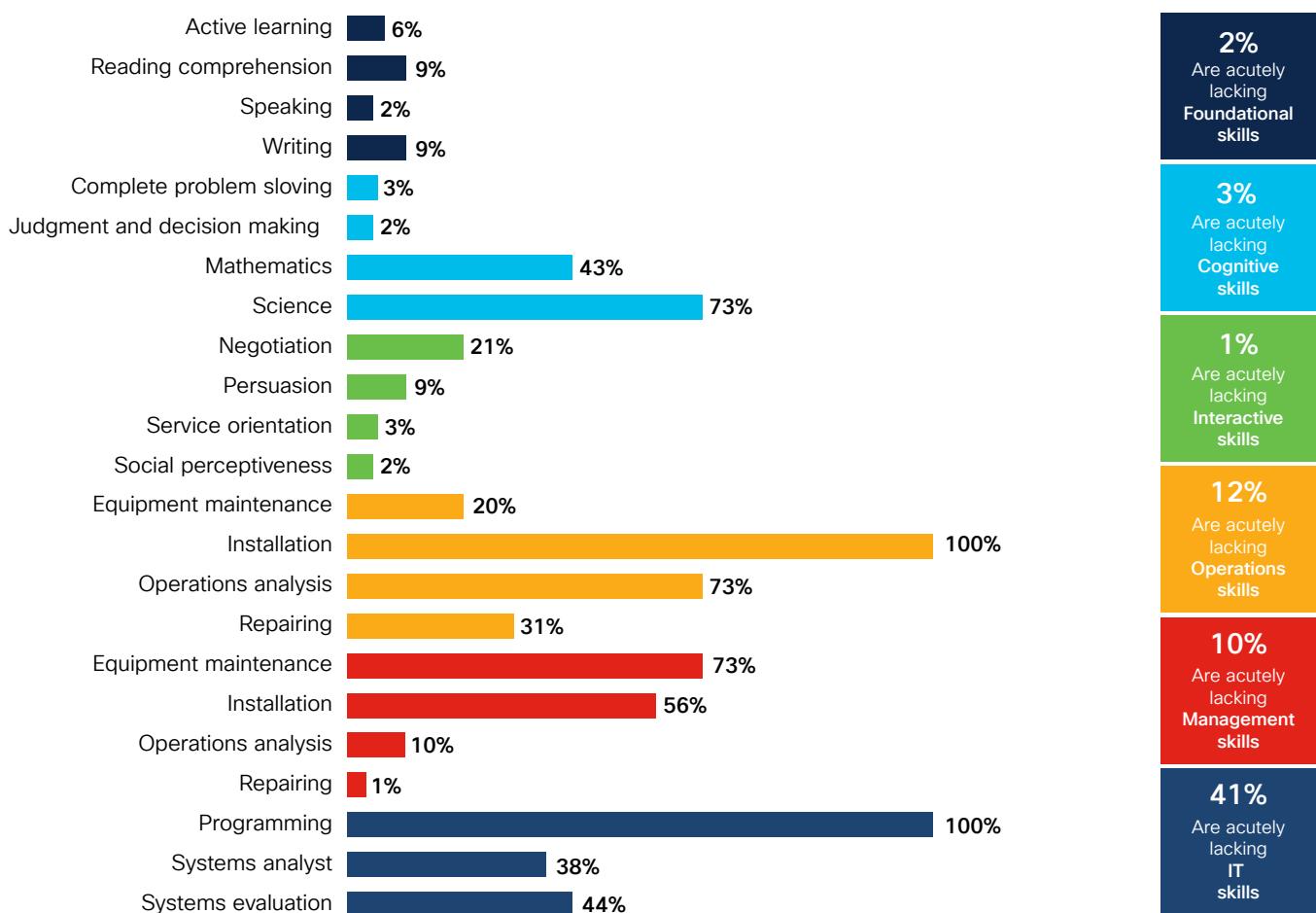
Virtual learning in the context of a pandemic is considered a temporary measure. However, as institutions look at education of the future, how we teach and learn should also be re-evaluated. The workforce of the future is going to require new skills and capabilities that are underpinned by a wide range of innovative digital technologies.

Schools, universities, as well as technical and vocational colleges should be preparing students for this future. e-learning is a powerful tool for tailoring curriculum to ensure that students have easier access to more kinds of courses that will meet the future demands of the economy.

## Acute skills shortfalls emerge in niche, technical areas

Incidence of large skills mismatches between redundant workers and vacancies, by skill, ASEAN aggregate

### Percentage of 'large' skills mismatches



Source: Oxford Economics, Cisco

It is extremely important to ensure that skills-building for students catch up with the rate of technological progress. Cisco's recent study found that 6.6 million jobs will become redundant by 2028 across the six largest ASEAN economies – Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam as a result of digital transformation. By 2028, these countries will require 28 million fewer workers to produce the same level of output as today<sup>5</sup>.

<sup>5</sup>Technology and the future of ASEAN jobs

While technology will displace workers from some jobs, it will also boost productivity growth, which in turn creates new demand for workers. To this end, the Cisco Networking Academy for example, offers customized, and tailor-made curriculum to universities and colleges. This has helped students develop industry relevant skills and knowledge for STEM occupations.

According to research, 32% of the overall skills gap by 2027 will be in skills that are inherently ‘human’, relating to interpersonal communication, perceptiveness and persuasiveness.<sup>6</sup> Any discussion on curriculum should also include theory and knowledge, emotional and social skills, as well as values and ethics. As we explore the new models of education, we should also look at how behavioral and social aspects of learning, real world applications of learning and character building can sit alongside traditional literacy, math, and science programmes.

### Measurement & Evaluation

The cancellation of exams globally has many students, parents and caregivers asking how we can fairly grade students’ performance without examination. The balance of power has shifted to the assessors who are tasked with developing a formula to calculate grades for each student. Some teachers have adapted by remotely proctoring exams or setting open book exams, whilst many have had to calculate scores based on the student’s performance throughout the year.

With regular exams being disrupted by COVID-19, educators need to consider whether there is a need to go back to the traditional model of assessment or is this a chance to challenge the fundamental structure of how we assess students’ aptitude and achievement against learning objectives. This environment has provided a unique opportunity to look at the next generation of assessment tools, ones that integrate social skills, values, and technical skills delivered through blended learning environments.

### Pedagogy & Teaching

Blended learning, which combines online learning with traditional face-to-face interaction has become increasingly popular in the last few years. With online learning adopted at an accelerated at a mass scale due to COVID-19, education experts now have an opportunity to re-evaluate how blended learning can become integrated into the mainstream in a post-COVID-19 education environment.

This approach is encouraging greater focus on the students while empowering them to take charge of their own learning experience. Going to a school in a physical sense is extremely important for children to improve cognitive and academic abilities while enhancing their social and communications skills.

<sup>6</sup> Cisco and Oxford Economics White Paper: The A.I. Paradox How Robots Will Make Work More Human



These models blend asynchronous (online learning conducted at different times and locations) and synchronous e-learning (online real time learning), giving students the opportunity to have live interaction with their teachers and time for supported independent work.

One of the most popular blended learning techniques is the flipped classroom, where students watch pre-recorded videos at home, then come to school to do their homework armed with questions and background knowledge. This enables them to participate more effectively in a collaborative form of learning with their teachers and peers regardless of where they are. According to Educause, the flipped classroom enables active learning, where the time in class is repurposed into a workshop where students can raise questions about the content of the lecture they have watched.

This changes the nature of the interactions in the classroom and when executed well allows for deeper analysis of the content. However, it does require greater responsibility on the student to embrace this approach. Blended learning models also put pressure on teachers to be able to manage a multi-dimensional classroom. Therefore, new tools and adequate training for teachers across the span of their roles must be adopted.

In addition, Technical and Vocational Education and Training (TVET), which has garnered more traction in ASEAN as a way to reskill, upskill and gain new employment opportunities, has also been significantly affected due to the hands-on nature of its courses. An opportunity exists here to adapt and re-design some of these courses to deliver virtual ‘work placements’ and one-on-one physical learning while teaching tangible skills and competencies.

### **Technology Enablers**

Navigating an online environment for the first time, re-designing delivery and content and becoming familiar with multiple tools is daunting for any professional. Add 30+ students into this scenario and it can become complex. Solutions and systems that provide secure, easy-to-use tools that limit task switching while engaging students, are required, to drive sustainable online learning.

Collaboration tools that are intuitive and provide high functionality for both the teacher and student are not only key to addressing current needs, but also important in providing a seamless transition into sustainable blended learning models for the long term.

Academic institutions need to look at a platform-based approach to blended learning. This requires the ability to merge various tools and learning management systems (LMS) with secure collaboration software and virtual meeting spaces that are agile and scalable in the coming years.

The experience with COVID-19 and virtual learning at scale should be the catalysts for governments and academic institutions to invest strategically in core digital infrastructure that support these models. This will require a comprehensive approach to 'Ed tech' that balances business continuity and immediate educational gaps while investing into innovative solutions that support robust and sustainable education transformation.

## Determining Success Factors

The key success factors in this segment will be determined by the following:



### Engagement

Keeping teachers at the core of the online and traditional classrooms



### Adaptability

Agility and evolution to weather the next unpredictable event that also enable seamless movements between offline and online as well as across various SLS and LMS



### Scalability

Growth and expansion for future sustainability



### Security

Identifying and preventing cyberattacks as an end-to-end priority



### Usability

Superior user experience that improves on traditional teaching environments



### Accessibility

Ease of use, as well as free or low barriers to entry



### Customizability

Bespoke content such as homework that addresses the individual needs of each child in the classroom

## Leading Disruptors

While many have yet to venture fully into a blended learning and virtual learning experience, some key disruptors have already emerged. These disruptors are likely to gain further prominence in the coming years.

### Future Right Skills Network

#### Driving Career-Readiness for Indian Youths in the Digital Economy

The consortium (comprising Accenture, Cisco and Quest Alliance) was established in partnership with the Directorate General of Training (DGT) of the Ministry of Skill Development and Entrepreneurship (MSDE) in India, to empower youths with digital skills. This is aimed at ensuring that they are digitally fluent and well-equipped to enter the workforce.

The in-classroom program will deliver more than 240 hours of digital literacy skills to over 1.5 million youths who are enrolled at various industrial training institutes (ITIs) in India. These include creative problem-solving using data, cultivation of a growth mindset with analytics and the ability to identify and plan career journeys in technologically relevant fields. The online module is also optimized for mobile phones to enable on-the-go self-learning, whereas the toolkit includes train the trainer resources. The programme prepares students to continuously learn, upskill and re-skill, making it sustainable for the long term.

#### Future Right Skills Network

##### Year Established:

2019

##### Aim:

To empower 1.5 million youths

##### Market:

India

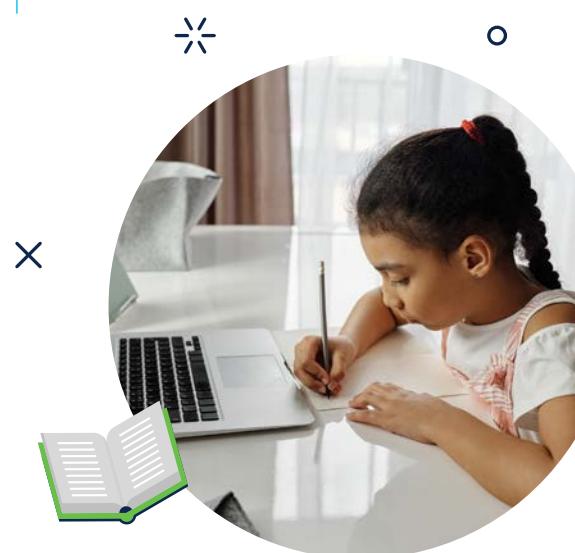
##### Key Products/Solutions:

Re-skilling/upskilling for digital literacy and fluency

##### Website:

<https://www.questalliance.net/news/quest-accenture-cisco-consortium-to-empower-1-5-million-youth-in-itis>

Source: News, Public Disclosures & Secondary Research



## Jarimatika Foundation

### Upskilling Housewives to Shape Indonesia's Next Generation

The foundation was started by Septi Peni Wulandari (Septi), to tap into the potential of housewives in shaping the minds and skills of the next generation of Indonesian kids. A housewife herself, Septi realizes that while mothers are often the first educators in their families, the majority have limited knowledge and skills in child development.

Therefore, she developed a comprehensive education programme called the Jarimatika method, that enables mothers to teach their young children at home. Over four years, she refined the methodology with books and more training sessions. These are divided into Jarimatika for Kids, Jarimatika for Mothers and Jarimatika for Corporate. Today, the Jarimatika Foundation has over 15,000 individuals who are actively involved in the programme.

The foundation also recently created a formal training and internship programme. Twenty additional trainers have graduated, who will go on to teach the Jarimatika methods to more families, thus generating additional income and augmenting the traditional role of housewives in their families. During COVID-19, Septi also organized a self-isolation campaign and created a space for women to share at-home and family activity ideas.

## Involvio

### Developing the World's Most Advanced Student Experience Platform

Involvio empowers academic institutions to leverage the power of mobile and big data to improve student engagement and retention. To do this, it developed the world's most advanced student experience platform, which includes a highly personalized branded student app, robust attendance tracking capabilities, and a suite of administrative dashboards and analytics.

## Jarimatika Foundation

**Year Established:**  
2005

**Number of Impacted Housewives:**  
>15,000

**Market:**  
Southeast Asia

**Key Products/Solutions:**  
Education system and learning methods for counting and reading

**Website:**  
<https://septipw.wixsite.com/jarimatika-indonesia/about>

Source: News, Public Disclosures & Secondary Research

## Involvio

**Year Established:**  
2011

**Number of Employees:**  
25+

**Market:**  
Global

**Key Products/Solutions:**  
Platform for learning institutions to provide online learning experience

**Website:**  
<https://www.involvio.com>

Source: News, Public Disclosures & Secondary Research

In the wake of the COVID-19 pandemic, Involvio quickly launched 'Remote Campus', its flagship solution to help schools transition students to 100% online learning. Remote Campus kept students connected and engaged despite not being in the traditional campus environment.

## DQ Institute (DQI)

### Empowering 1 Billion Youths and Workers Around the World with Digital Skills

The DQ Institute sets global standards for digital empowerment and safety. The DQ (digital intelligence) framework has been recognized as the global standard for digital literacy, skills and readiness, endorsed by the Coalition for Digital Intelligence (CDI) in association with the World Economic Forum comprised of OECD, IEEE Standards Association, and others. It also works with cross-sector international and local organizations.

These include ITU, G20 Civil Society, as well as 100 other partnering companies and NGOs to promote and coordinate global efforts of digital skills education/trainings. The DQ Lab Pte Ltd in Singapore, serves as the innovation and commercialization hub of the DQ Institute.

The programmes are defined, measured and certified by the institute's digital intelligence standards. DQ also provides the global benchmarking tools of the DQ standards through real time data evaluation, visualization and high-level research that empower individuals and organizations to be digitally safe and competent.

Its flagship programme, DQ World, is a world-leading digital citizenship education and assessment for primary school children, used by over 1 million children across 80 countries. Its assessment tool and global databank are also linked to the Child Online Safety Index (COSI) – the world's first real-time index for nations to monitor their child online safety and digital citizenship efforts.

## DQ Institute (DQI)

**Year Established:**  
2018

**Market:**  
Global

**Sector:**  
Nonprofit

**Key Products/Solutions:**  
Setting global standards for digital intelligence education, outreach, and policies.

**Website:**  
<https://www.dqinstitute.org/>

Source: News, Public Disclosures & Secondary Research



# Healthcare

## Increasing Burden to the Healthcare System

Southeast Asia's rapid economic development has led to growing prosperity and increased life expectancy. This, combined with improvements in education and income levels has led to a greater number of the population expecting affordable and high-quality healthcare. As a result, most Southeast Asian governments have had to increase domestic healthcare spending significantly to meet these needs.



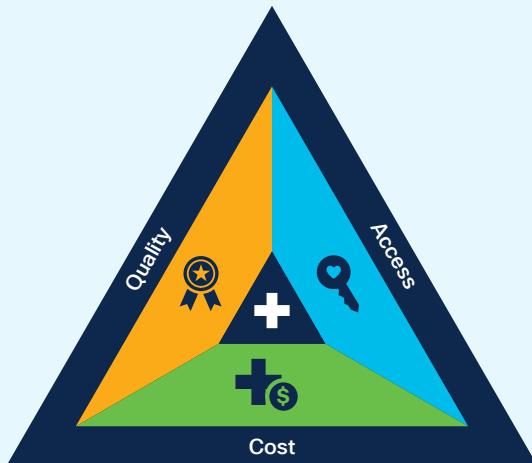
Healthcare expenditures are rising across ASEAN. Per capita spend increased by **2x** between **2006** and **2016**



**4.1%**  
Average current health expenditure in ASEAN is **4.1%** of GDP

Despite increased spending, the region's healthcare systems have been contending with a growing number of issues over the last few decades. These issues became prominent in the wake of the COVID-19 pandemic and affected the rate of response to the disease.

Providers were not prepared to conduct secure, virtual clinician-to-clinician and patient-to-clinician consultations at scale. Governments did not have access to accurate health data, and struggled to direct necessary personnel, services, equipment, and socio-economic support where needed. Furthermore, social determinants of health have reduced the effectiveness of some of the digital services deployed.



The Iron Triangle of Healthcare

### Complexities of Balancing Cost, Access, and Quality

The difficulty of achieving high quality, affordable and accessible care for all people is illustrated by the 'iron triangle' of healthcare. The iron triangle conveys the natural constraints of each healthcare system in trying to simultaneously improve the three pillars of access to care, cost of care, and quality of care.

Countries typically prioritize two of the pillars based on their resources and economic development stage. An increasing number of emerging economies in the region are striving to provide affordable universal healthcare but are still struggling with issues of quality of care and the speed of delivery.

Compounding this is the historically cautious approach healthcare providers and governments take when deploying new digital technologies, which can hamper innovation and transformation.

No doubt, COVID-19 has forced governments and healthcare providers to grapple with the realities of expediting the rollout of digital technologies to facilitate procurement of medical equipment, contact tracing, disease testing and vaccine development. It is worth noting that healthcare professionals and industry players will continue to adopt and use digital technologies well after the world has won its fight against the coronavirus. Public and private healthcare facilities will need to adapt while governments enact policies to support the same.

This has the potential to shape a new normal in healthcare where technology-enabled primary and preventative care delivery models will emerge as game-changers in the long term.

## Delivering a Transformative Healthcare System

### Breaking the Barriers Between Cost, Quality and Access

The current generation of digital natives comprising both, patients and healthcare workers, have already incorporated digital technology into their personal lives. They also expect the same seamless experience from healthcare organizations.

As a result, public and private sector health organizations across the region are accelerating plans to deploy integrated healthcare delivery systems and digital health technologies. This is also partly driven by the fact that social distancing and isolation has prompted the increased adoption of technologies among patients, healthcare professionals, administrators, and policymakers.

This broader adoption will help break the barriers between the iron tringle pillars of cost, quality, and access, allowing healthcare organizations and governments to improve on all three pillars simultaneously. The greatest impact will be in primary and preventative care, which will enhance outcomes while improving the experience of patients and healthcare professionals.

**Digital health records are the most beneficial digital health technology for improving patient care over the next 5 years**



Source: Philips Future Health Index 2020

### Making eHealth Solutions the Norm

**Telehealth**, which utilizes a wide range of information and communication technologies, is considered the most basic element of a functioning eHealth system. Greater adoption can empower patients and healthcare providers to experience healthcare services virtually or outside of traditional healthcare facilities.



The adoption of **virtual care** to deliver care through patient and provider apps, as well as mobile and smart medical devices, will also pave the way for a more accessible healthcare system. Clinicians can monitor patients and assess intervention effectiveness much more closely in near real-time, instead of waiting for patients to come in for physical consultations. This is timely, given the growing use of smart devices in ASEAN, coupled with the broadening coverage of telecommunications services across the region.

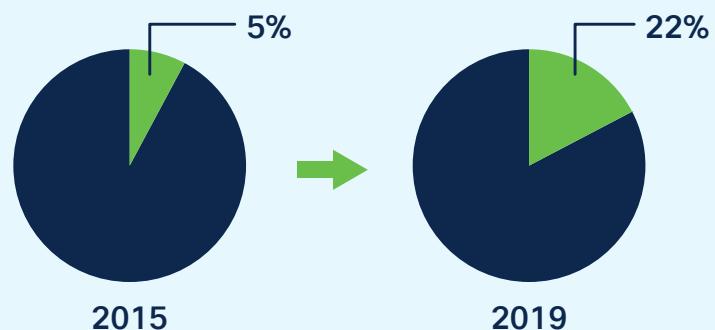
Before governments and healthcare providers can deploy all of the above however, they will need to invest in foundational ICT infrastructure and deploy the right digital technologies and applications. Such investments will create increased connectivity and improve the industry's ability to analyze vast amounts of data, leading to greater innovations across a broader spectrum of healthcare services.

Have you used video visits  
to see patients before?

● Yes

● No

65% of patients  
are interested in having a  
virtual visit with a physician





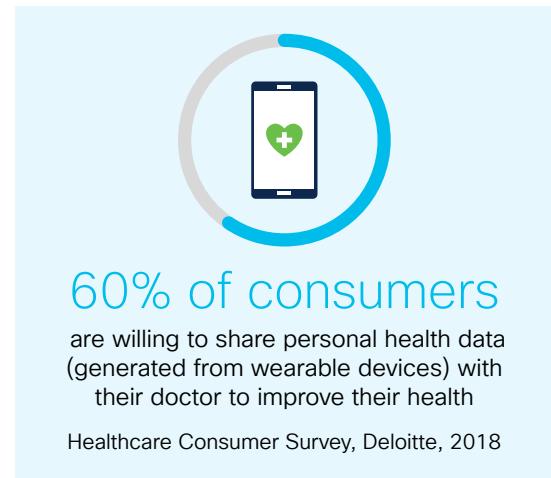
### Innovative Solutions for Greater Remote Access and Effectiveness of Care

Other digital technologies and applications, such as health applications, remote patient monitoring devices, wearables, and sensors are increasingly moving healthcare systems to patient-centric and community-based care. Tracking and notification extend the reach of quality healthcare to the patient and the community. Comprehensive population databases of patients, health services and biomarkers lead to enormous innovations in data analytics for clinical decision-making.

Similarly, these comprehensive high-quality databases have not only allowed for continuous and accurate patient follow-ups but are also being harnessed to improve the effectiveness of care. For example, digital therapeutics, integrated with sensor and chip technologies, is a fast-growing segment of the health technology landscape. These remote health management systems are important to not only track a patient's health condition better, but also move health systems towards becoming more closely patient-centered, integrated, and community-based.

### Streamlining Data Collection

Addressing the gaps in the public sector data ecosystem and enabling greater interoperability amongst various digital healthcare systems can help in the delivery of health services to wider range of communities while enabling the deployment of targeted assistance to vulnerable communities. Such interoperability will provide policymakers with the comprehensive picture of demographic data, risk factors, and community needs.



## Determining Success Factors

The key success factors in this segment will be determined by the following:



**Frictionless Digital Experience** – Helping patients and medical personnel enjoy similar levels of digital engagement as they do in other industries



**Patient Empowerment through Data** – Allowing patients to track their health and take charge of their medical data i.e. Digital Health Record (DHR)



**Value Delivery** – Digital business models and solutions that innovate to address the limitations of traditional value chains



**Interoperability and Open Architectures** – ‘Open’ digital solutions that do not require complex integration or customization that can be adopted across the care continuum



**Early Detection in the Epidemic Cycle** – Proactive preventive and wellness care that speed up detection, isolation, and treatment



**Platform and Services Integration** – Technology partnerships that utilize new sources of data to rapidly scale healthcare service and create a network and multiplier effect



**Security** – Prioritizing the safety, security, privacy, and protection of patient and medical data across all platforms and devices

## Leading Disruptors

Agility and innovation are two important advantages for disruptors entering the healthcare market. Healthcare startups that are agile and capable of delivering rapid outcomes for the governments and health authorities will be at the forefront of innovation post COVID-19.

The shift to digital technologies forced by the pandemic can also represent a turning point for legacy healthcare organizations that are willing to invest in new digital technologies and transform their business models.

## Homage

### Providing Affordable Home Care

Singapore startup Homage, is leveraging the rising demand for preventive care amidst a growing ageing population in the country by introducing personalized, expert yet affordable care at home. Its services include geriatric care, chronic care, recovery from injuries and more.

The company's success in Singapore has encouraged them to expand across Southeast Asia in the future.

## Jana Care

### Point of Care Diagnostics and Digital Coaching Programmes

Founded in 2011, Jana Care is a medical technology company that develops point-of-care diagnostics and digital coaching programmes for the screening and management of chronic diseases. Its novel CE marked diagnostic platform, Aina, enables testing of HbA1c, Blood Glucose, Lipid Profile and Hemoglobin using fingerstick blood samples. It also has new tests for NT-proBNP and Serum Creatinine in development.

The company has also developed the Habits Programme, a digital coaching programme for patients with diabetes and congestive heart failure, in collaboration with leading academic medical centers globally.

Jana Care is headquartered in Boston, USA, and has established an ISO 13485 certified production facility in Bangalore, India.

## Homage

**Year Established:**  
2016

**Number of Employees:**  
125

**Total Funding:**  
USD14.2 million

**Market:**  
Singapore, Indonesia

**Key Products/Solutions:**  
Connecting care professionals  
to adults and seniors

**Website:**  
<https://www.homage.sg>

Source: News, Public Disclosures &  
Secondary Research

## Jana Care

**Year Established:**  
2011

**Number of Employees:**  
51

**Total Funding:**  
USD10 million

**Market:**  
US, Singapore, India

**Key Products/Solutions:**  
POC Diagnostics & Digital  
Coaching

**Website:**  
<https://www.janacare.com>

Source: News, Public Disclosures &  
Secondary Research



## Supply Chain & Logistics

### Upending Supply Chain as We Know It

Countries and companies around the world have had to grapple with their heavy reliance and high concentration of supply chains in China. When critical imports from China were delayed at the height of the pandemic, it created a major supply chain disruption across the globe.

Furthermore, the resulting lockdowns across countries highlight how ongoing overhead expenses and high rental charges no longer make sense in the face of starkly reduced consumer demands. Retail and distribution-related industries faced a difficult choice between maintaining their expenses with hopes of regaining market share or moving towards lower fixed cost bases to reduce unnecessary overheads. This was also highly dependent on how long the pandemic was set to last.

The lack of supply chain visibility and network mapping was also a highly noticeable problem throughout the pandemic. Companies often have an inadequate level of granular clarity on the critical capacities and capabilities of stakeholders in their supply chain.

This was also not accessible in a real-time and digital format. Such data was sourced and updated manually, which meant that decision-making in times like these could take weeks instead of days. Without a full supply chain network map presented in a unified format, decisions were mostly made based on intuition, conversations, and other qualitative factors.

## Driving Digital Transformation in Supply Chain Management

### Re-evaluating the Geographical Structure of Traditional Supply Chains

Data and flexible supply chain models have become more important in the last decade thanks to increasing regional and global competition. Today, there has been an even greater disruption in the supply and demand cycle. This has created new opportunities across the value chain as economies react to current restrictions by re-balancing the flow of goods.

Japan for example is already leading the way by encouraging its homegrown companies to move production back to the country or even to any other country within the region in order to reduce its previous reliance on China.

Following Japan's lead, countries and companies around the world will likely look at the following:

- i) greater production or fulfilment capacity closer to their home countries or key demand centres.
- ii) more diversified manufacturing and sourcing base while retaining cost advantages outside of China; and
- iii) real time access to the full supply chain (whether spread across China or otherwise), so that risk assessments are much more accurate and could take place with minimal response times.

It is likely for companies to shift towards lower cost destinations such as Southeast Asia, South America, and Eastern Europe. Southeast Asia is a particularly strategic location thanks to its geopolitical position, diverse workforce, relatively lower labour costs, proven ability as off shoring and outsourcing hubs, as well as its strong and dynamic trade relationships across Asia Pacific.

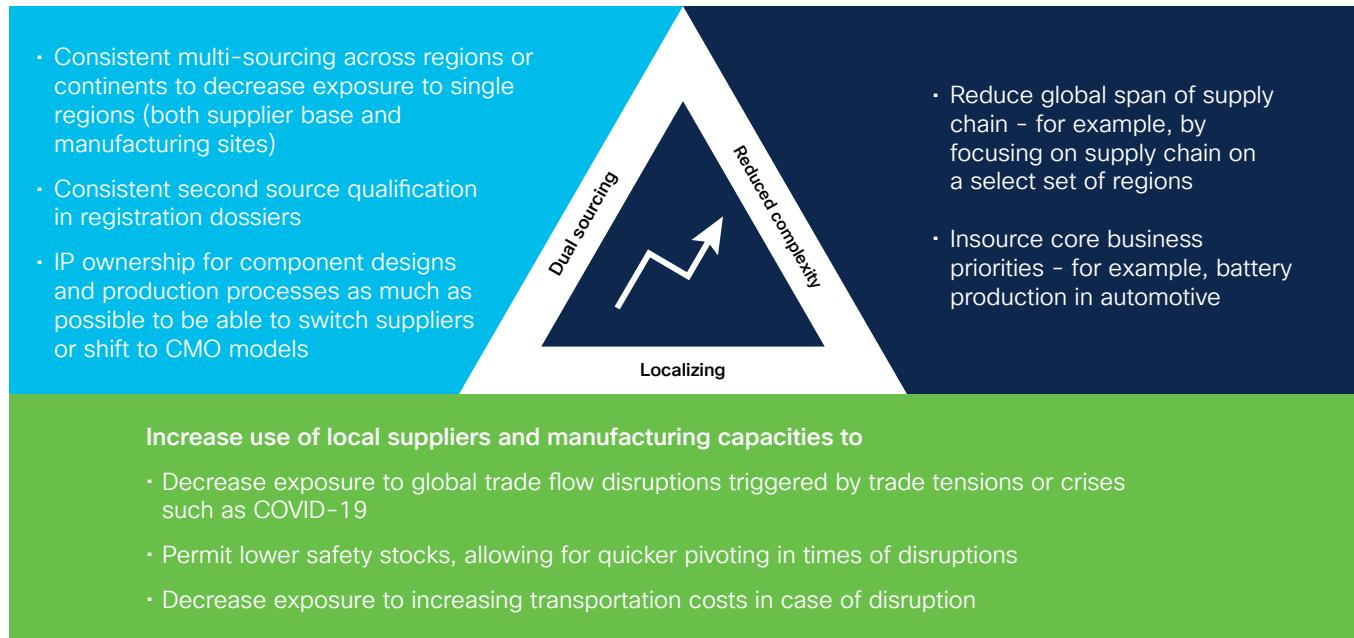
However, the above reactive shifts and responses will be accompanied by important and inter-connected decisions that needs to be made company wide. This is highlighted in the summary below from Kearney's survey of 400 senior operations and supply chain C-suite executives in partnership with the World Economic Forum<sup>7</sup>.

The actual geographical structure of the supply chain will transform alongside this shift in focus. In manufacturing-heavy industries, this will create multiple and distributed manufacturing and assembly plants, with providers requiring a more diversified network of transportation and warehouse partners.

In sectors such as retail and distribution of produced goods, this will result in a possible shift towards hub-and-spoke structures, moving away from large and consolidated fulfilment and retail hubs.

<sup>7</sup> Kearney: Building resilience in manufacturing and supply chains

## Key Changes to the Supply Chain Set Up



## Learning from the Cisco Approach to the COVID-19 Disruption

COVID-19 caused significant and unprecedented impact across all global supply chains. Cisco was able to respond favorably due to its robust systems and processes. This can be something that most organizations can learn from.

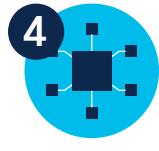
1. Cisco has well-established processes to coordinate its efforts. These include its Global Business Resiliency (GBR) and Supply Chain Incident Management (SCIM).
2. Cisco's global, distributed, and agile supply chain covers manufacturing facilities and partners located in various countries around the world. The company took a wide range of reactive measures to mitigate the short-term impact from the pandemic such as:
  - i) identifying alternate manufacturing sites to move production to,
  - ii) creating new capacity in new locations, and
  - iii) collaborating with sub-tier suppliers to optimize production capacity
3. Cisco's Customer Experience organization maintains a global network of 24-hour Technical Assistance Centers (TACs) designed to assist customers in identifying alternative solutions alongside providing remote support.
4. There was an unprecedented increase in WebEx usage from their enterprise customers as most workers were working remotely. Realizing this, Cisco worked in real-time to upscale their capabilities and infrastructure to minimize issues with service degradation<sup>8</sup>.

<sup>8</sup>Cisco: Supply Chain Business Continuity

## Data, The New Currency for Supply Chain Models

While crisis control will never be fully automated, comprehensive supply chain visibility with real-time precise data will become a key theme in the future. This can be in the form of vendor aggregators, marketplaces, specialized software deployments, IoT installations or a mix of all of these solutions.

McKinsey, in their recent paper, summarized the four (4) areas of new and increased technology investment which will help organizations have better access to data and tools to drive better supply chain planning<sup>9</sup>:

- 1 New Data Sources**  
  
Integrate additional sources of data into supply-chain management to accelerate supply-chain response time
  - Actual supply-chain status (e.g., demand, inventory, shipment)
  - Promotional data, demand-variation data
  - Social-media data
- 2 Automation**  
  
Deploy digital solutions to automate end-to-end supply chain for better productivity and risk mitigation
  - Robotics (e.g., warehouse automation, industrial robots)
  - Process automation (e.g., electronic data interchange, “no touch” planning)
- 3 New Algorithms**  
  
Apply new algorithms driven by in-memory computing and cloud processing power to improve accuracy and transparency
  - Interactive, real-time planning
  - Improved accuracy in demand forecasts
- 4 Ubiquitous Access**  
  
Establish multiple secured data interfaces to stay connected with real-time supply-chain status remotely
  - Web and cloud applications
  - Mobile applications
  - Secured remote access

<sup>9</sup>McKinsey: Coronavirus and technology supply chains: How to restart and rebuild



### Driving Comprehensive Supply Chain Visibility

Supply chain visibility as a space and application area has existed for a while, but the levels of implementation vary widely across countries and regions. The COVID-19 outbreak created ripple effects across the global economy and cemented the importance of supply chain visibility.

Enterprises and SMEs should have an accurate sense of their supply chain status, redundancies built in, margin of safety, availability of inventories, status of distributed production and assembly facilities, as well as costs and lead time attributable to each facility and supplier. This will enable them to make the most optimal decision in uncertain times such as shocks to trade, cross border sourcing, currency fluctuations, travel restrictions, and more.

Technologies in this space have traditionally been dominated by large enterprise software providers. Recently however, a number of startups and smaller companies have emerged to create new and innovative solutions on supply chain visibility and its adjacent areas. These include Anaplan, LlamaSoft, Kinaxis, as well as software suites with broader capabilities like Blue Yonder (formerly JDA Software) and more.

These specialist, supply chain-focused companies are expected to focus on mid to large enterprises. This will greatly contribute to the digital technology adoption among SMEs that are part of the enterprise value chain.



## Determining Success Factors

Building the right business and strategic workflows will help utilize the above areas and create success stories in supply chain and logistics management. Winners in this segment will be driven by these success factors.



**Rapid Digital Adoption** – Companies invest in solutions that offer comprehensive visibility across the value chain, including suppliers and service providers



**Customer Software Usage** – Businesses develop capabilities to help customers adopt software and internet-based solutions that are necessary to process vast amounts of data for faster and better decisions



**Management and Board-level Alignment** – Companies engage in supply chain diversification and executing it in a cost effective and least disruptive manner once the production and demand return



**New Products and Services Bundles** – Companies develop solutions that address the needs of local market customers that may include taxation formats and currencies

## Leading Disruptors

Some of the key technology players changing the logistics market are those offering digital procurement solutions through a valuable and seamless combination of software and service. This will become more important as countries start seeing a bigger impetus towards digital procurement solutions.

### Moglix

#### Changing the Game for Procurement

Moglix is a dedicated digital procurement platform for the manufacturing industry. Starting out servicing businesses within India and Southeast Asia, the disruptor is now growing rapidly across Asia.

A key component of its success is its novel procurement software and fulfilment solution. It is designed for emerging Asian countries where companies are hesitant to deploy complex and expensive software before seeing its value to their bottom line.

Moglix enables manufacturing companies and their key sourcing partners to digitize the entire procurement workflow with its software suite. It also consolidates the fulfilment services that get products from the supplier to the customer.

This has resulted in various benefits such as:

- uniform data and capacity visibility across stakeholders.
- analytics and intelligence availability in sourcing across parameters such as cost, SLAs, reliability, quality, operating history, payment terms, and more.
- single service provider who deals with numerous vendors across sub-categories, thus significantly simplifying ordering, billing, payment, and reconciliation.
- ability to diversify supply chain stakeholders across geographies via national and regional deployments on a standard operating interface that can recommend and transact with numerous vendors without increased complexity and overhead cost.

#### Moglix

**Year Established:**  
2014

**Number of Employees:**  
500+

**Total Funding:**  
USD100 million

**Market:**  
South Asia, South East Asia

**Key Products/Solutions:**  
Digital MRO Procurement platform

**Website:**  
[www.moglix.com](http://www.moglix.com)

Source: News, Public Disclosures & Secondary Research

## Waresix

### Curated Marketplace for Logistics de-risking Fulfilment & Distribution

Companies like Waresix are transforming the industry by providing a curated marketplace for logistics and warehousing services. Waresix is the market leader in Indonesia specializing in intercity freight transportation and warehousing.

It provides a digital marketplace of available trucks and warehousing space which customers of all sizes can use to fulfil their supply chain needs. As a tech-enabled aggregator, Waresix has substantial visibility of available trucks and warehouses across geographic corridors in Indonesia. This is especially important since it works with thousands of truckers and hundreds of customers – something no individual customer or transportation company would have otherwise, no matter their size.

As Waresix also operates as an independent marketplace, service providers are not averse to sharing real-time availability and pricing of their offerings on the platform for efficient matching – something they would never do with customers or brokers. As a result, customers of all sizes can now use Waresix's platform to plan and execute their fulfilment in a digitized and standardized manner and at the most competitive rates. Customers can also access a much larger network than they would otherwise, giving them an added advantage.

As it continues to grow its suite of services over time, Waresix is planning to add SME transportation companies to its portfolio, extending services like GPS tracking and fleet management; access to financing and insurance; working with capital management and more.

This will lead to the digitization of one of the more fragmented industries in the economy.

## Waresix

**Year Established:**  
2017

**Number of Employees:**  
100+

**Total Funding:**  
USD27 million

**Market:**  
Indonesia

**Key Products/Solutions:**  
Digital marketplace for available trucks and warehouses

**Website:**  
<https://www.waresix.com>

Source: News, Public Disclosures & Secondary Research



## New Imperative for Startups, Governments and Enterprises

### **Startups**

Changes in the global economy and the emergence of disruptors have demonstrated the need for startups to transform to adapt to and capitalize on the new growth momentum. There is a need for founders to keenly study the ongoing market response to COVID-19 across countries and industries. These will feed into the design of their new systems and processes moving forward. It will also give businesses a good sense of where the biggest gaps in their current ecosystem lie. As a result, they will be able to differentiate between immediate cyclical responses to unpredictable events versus more structural shifts for the long term.

Businesses should look at a first-principles approach to visualizing what the value chain in their domain will look like in the next five to ten years as they build and modify new solutions to suit these changes. This should be followed by framing a clear Unique Selling Point (USP) of their offerings and how these have performed in the last few months. Companies that can demonstrate lesser adverse impact to customers or show a faster recovery curve, will fare better in gaining greater trust and credibility among potential customers and industry players moving forward. This will also help boost perception of the quality of their products in the future.

Fundraising is going to be difficult in the immediate aftermath of a global pandemic. This will be the case for both debt and equity investors. Therefore, startups should focus on existing investors and stakeholders, optimizing the speed and certainty of funding as opposed to the quantum of financing or those with the most beneficial terms.

Startups should also take advantage of the current situation to build a team and establish processes that allow employees to be remote-work ready at any time. This will not only prevent them from experiencing any future shocks, but also help organizations to be more efficient in communications and collaborations. Additionally, they will also be primed for what will be structural changes to how and where we work.

## Governments and Policymakers

Governments and policymakers in ASEAN need to determine how their respective countries can capitalize on opportunities to modernize the primary sectors i.e. education, healthcare, and supply chain & logistics. These could involve the evaluation of the disruptors mentioned in this paper and thereafter scaling them or creating a startup ecosystem that can grow innovative offerings along similar lines.

To do this effectively, governments need to consider the current state of education, healthcare, and supply chains in their respective countries and address areas that can deliver the largest impact in the shortest possible time. This should then be phased over multiple years.

## Enterprises

Enterprises in ASEAN that are looking to capitalize on and support this digital disruption need to work with their ecosystem partners to enhance offerings from such disruptors. Co-innovation is critical in enhancing the overall value of their existing portfolio. This could involve customizing their collaborative solutions with these disruptors to provide increase value. In addition, they can fund new startup accelerators in the region to speed up local innovation, as well as sponsor local hackathons to address gaps and improve local offerings within these sectors. Various enterprise consortia should also come together as think-tanks that can provide suitable public-private partnership (PPP) options for governments in the region. This can be the catalyst for innovation and positive change.





## What You Can Do Next and How We Can Help

### Our Thoughts on Areas Which Are Still Underserved or Ripe for Transformation



#### **Building a More Resilient Education System**

Governments and society need to come together to build our more resilient post-COVID-19 education system with technology. This can be done through innovative models to get devices to students, and ways to get students in rural and remote locations connected. Beyond that, governments need to adopt education technology that is centered on maximizing the experiences of students and teachers. Most importantly, this shift opens a pivot point for educators and administrators to approach education technology in a truly innovative and scaled manner rather than rigidly maintaining their pre-COVID19 approaches and strategies.



#### **Transforming Testing and Assessment in Education**

While much has been and is being done in digital education from a content creation and delivery perspective – the way to test and assess students has not changed much. We feel that this is a very exciting new growth area given the fact that as the delivery formats and curriculum changes, assessments will need to follow suit. This will help to accurately gauge gap areas and how best to fill them using new formats. It can also push the demand for more automated or AI/ML enabled solutions across learning delivery models and assessment.



### Frictionless Experience Online and Offline in Healthcare

As we have seen in the last year, healthcare awareness across the population needs to improve rapidly. This can best be achieved by digital methods. However, important steps like diagnostics and consultations of complex cases still require a physical touch point. Therefore, it becomes very important to have access to platforms that tie online and offline interfaces together for information, discovery, booking, medical data storage and access. These should also include the ability to design care and recovery programmes across digital interfaces, medical facilities and home environments.



### SME-focused Supply-Chain Transformation

Most startups and advisory service providers have traditionally focused on mid to large enterprises because they have more consolidated scale. This also makes commercial sense as a client. However, the bulk of economic contribution in emerging Asian countries come from micro and small enterprises. These M/SMEs are behind on awareness but are very agile and quick to move once they find good solutions. This is because, decision-making is quite simple, and there are very few legacy systems getting in the way of transformation. The fact that they also have many of their needs served in an ad-hoc manner means that serving them leads to massive opportunities to cross-sell and up-sell in the future, potentially leading to greater outcomes.



### Cybersecurity and Critical Response Solutions

One big learning for most organizations in recent times has been how quickly they have had to adapt to a new way of operating. However, the number of organizations which feel they have done this in a satisfactory way are very few. Even if there was prior planning, the number of vulnerable endpoints can multiply substantially. This is compounded by the fact that the level of awareness and adoption in emerging Asian countries is not as high as expected. Cybercriminals are taking advantage of this transitional response state of organizations with increased attacks. Therefore, we believe that there is still much to be done from a cybersecurity adoption perspective for enterprises and SMEs.



### Are you a startup or enterprise implementing these approaches?

The approaches covered in the previous section are evolving, given the dynamism of the times we live in. While we have seen some early progress by the approaches above and by companies that are filling the gaps in the market, we believe that there is still room for more improvement if not transformation.

Given the fact that the bulk of the economy is still offline and run by large enterprises and SMEs – technology startups will have to have more than just a disruption mindset. In fact, they need to adopt a collaborative approach to make the most impact while also capturing maximum value.

We are keen to hear from and explore how we can partner with you as you embark on your transformation journey.

Most of the companies mentioned in this paper are part of the Jungle Ventures portfolio or Cisco network. We have built significant experience and capabilities in these areas and we would love to work with you to do the same.

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