

From PowerHouse to PowerCentre

The Megatrends Shaping Asia's Economic
Leadership in a Post-Covid World

Part Three: The Digital Economy

Asia as a PowerCentre

A number of megatrends prevalent in Asia have increased in potency since the Covid pandemic. Three megatrends stand out as having the potential to put Asia at the helm of future global growth. In a three-part series, we examine each of these megatrends in detail and the investment opportunities that are expected to emerge or strengthen as a result.

- Changing Demographics
- Go Green
- The Digital Economy



Part Three: The Digital Economy

No other emerging trend has been as powerfully impacted by the Covid pandemic as the shift towards digitalisation. Whether it is home schooling, working from home, or e-commerce, Asia's digital acceleration is yielding unprecedented opportunities.

Content:

The Democratisation of Digital Services	3
Asians embrace digital	3
How did we get here?	6
So much for big tech companies. What about the rest?	7
Asia makes e-commerce history	8
Investment Implications	9
The digital consumer	9
Digital finance	10
Digital infrastructure	10
Artificial intelligence	11
Digital medicine	12

The Democratisation of Digital Services

The digital transformation that we are witnessing in society today is an investment megatrend that dates back to the 1990's dot-com boom. The boom turned into a bubble but its underlying ability to disrupt traditional business models was unstoppable. Today, the impact of the digital trend is so profound that it can be justifiably described as game-changing, and new digital business opportunities are expanding at a rate that many investors already find difficult to keep up with.

And yet, despite its already phenomenal growth, the last two years have marked a shift in the evolution of the world's digital readiness. In the pre-Covid era, it can be said that the focus was on innovation and invention, that is, the deepening of the digital economy. Covid-induced global lockdowns brought forth a different emphasis – the need to broaden the digital economy – to include previously unserved populations and hesitant sectors,

The scale of change, even in developed economies, has been significant. The 2021 European Commission's Digital Economy and Society Index (DESI) helps give some idea of this change. In just one year, connectivity in the form of access to Very High Capacity Networks (VHCNs) increased from 50 to 59 percent of households across EU member states. Within EU-based companies, over a quarter (26 percent) adopted cloud technologies in 2020, compared to just 16 percent in 2018.

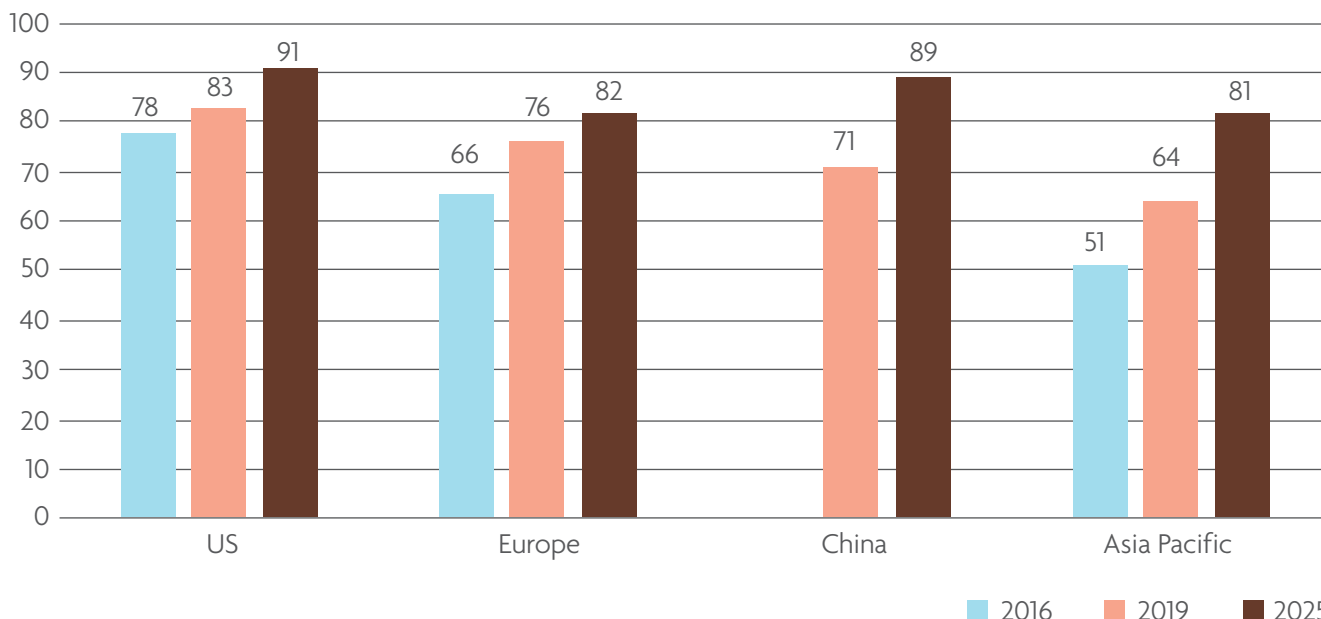


Asians embrace digital

But it is in the developing, high population economies that this “Covid effect” is particularly striking. Having kicked off the need for stay-at-home solutions, the drive for digital inclusion is now set to multiply exponentially. For example, smartphone adoption saw a jump everywhere in the world during the pandemic but will continue to accelerate aggressively in Southeast Asia over the next few years.

Figure 1: Asia Pacific set to be world's fast growing digital economy

Smartphone adoption by region, percent



Source: UNCTAD, Digital Economy Report 2021

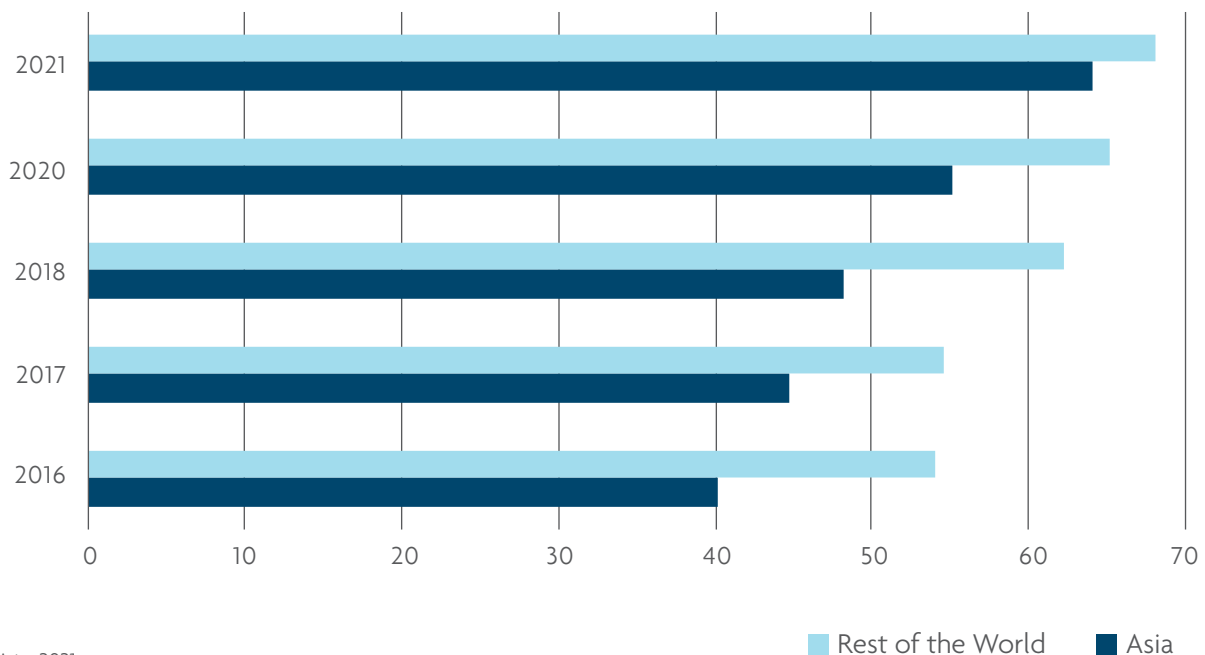
Similarly, Asia is fast catching up on the rest of the world in terms of its internet penetration. In a November 2021 report by Google, Temasek Holdings and Bain & Company, it is estimated that the internet economy across six Southeast Asian countries, currently worth over US\$170 billion, will double by 2025 and hit US\$1 trillion by 2030. The report suggests that 40 million Southeast Asians came online for the first time during the pandemic. This raised the number of internet users in the region to over 440 million last year, more than the entire US population.



This number is further dwarfed by the 854 million internet users in China, the largest population of internet users in the world. Experts say that this level of adoption can be attributed to the country's rapid economic development, but also the cultural inclination towards technology. Hard on China's heels is India, with an estimated 636 million users in 2021. India is set to show the fastest-growing penetration rates in Asia over the next few years given that over half of its population is still offline.

Figure 2: Asia Pacific's Internet usage is approaching the global average

Internet penetration rate in Asia vs rest of the world, percent, 2016 - 2021



Source: Statista, 2021

Internet and smartphone penetration rates have major implications for the “democratisation” of e-commerce, social media and other digital services. It is important to note that digital adoption does not only advance the information technology industry. There are profound transformations taking place within many sectors including logistics, finance and payments, travel, media, manufacturing and healthcare; plus knock-on effects across the entire economic spectrum, including potential improvements in productivity, operational efficiencies, user experiences, and risk management.

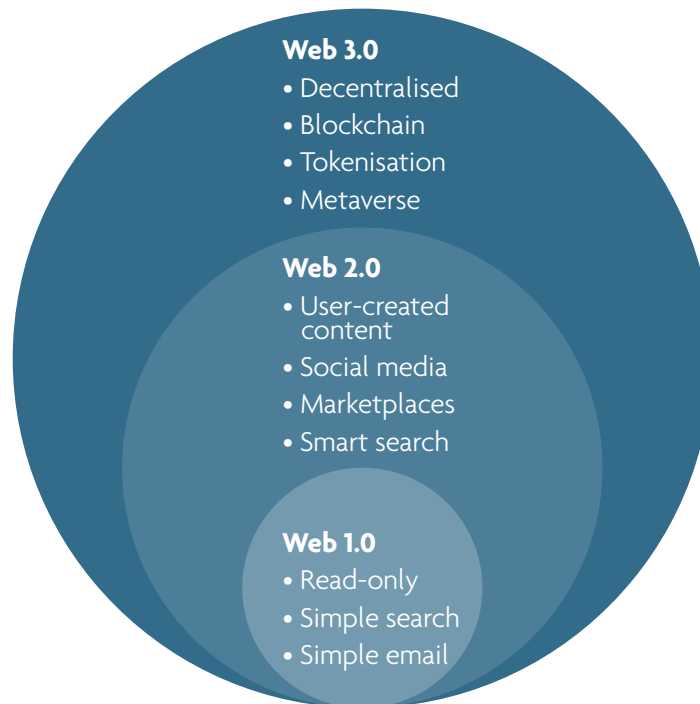
Growth opportunities arising from the digital economy are therefore correspondingly large and difficult to decipher. In an effort to make sense of what this economy represents in the current age, it is useful to look at its evolution and its role in our everyday lives. As each of these technological paradigms have reshaped the way we live, work and play, so have the leaders of these paradigms evolved from Ask.com to Amazon.com, with future leaders possibly only a few years away.



How did we get here?

It is sometimes easy to forget that the digital revolution is only 30 years old, and is the outcome of a phenomenal coming together of computer hardware and software. Dennis Khoo, in his book, *Driving Digital Transformation*, notes that a fundamental driver of digital transformation is the astronomical increase in processing power seen over the past 30 years. Indeed, as predicted by Gordon E. Moore, the co-founder of Intel Corporation, processing power is doubling every two years. It is this power, coupled with the ubiquity of the internet, that Khoo says have enabled companies to achieve the reach and scale they require to turn digital transformation into profits.

Indeed, at the same time that computer processor technology was ramping up, internet-based applications were also fast evolving.



The first version of the internet, Web 1.0, prevalent from 1990 – 2000, was also known as the “read-only” web because it was used for passively consuming information made available by content providers. Websites contained static content with minimal functionality for back-and-forth interaction, but nevertheless gave rise to a large number of search engines, including Lycos and Netscape in 1994, and Yahoo, Internet Explorer and AltaVista in 1995. Despite these limitations, it would be wrong to assume that this was a period of slow growth. From the first website in 1991, there were close to 1.8 billion by 1997.

A mere decade after the invention of the World Wide Web sees the start of Web 2.0 - the “social” web, marked by new functionalities for communication, connectivity and convenience. The first large retailers started to take the internet seriously towards the end of the 1990s, and marketplaces like Amazon Marketplace and Alibaba were launched during this time. In 2000, online advertising via the Google search engine took off, bringing e-commerce into the homes of ordinary consumers.

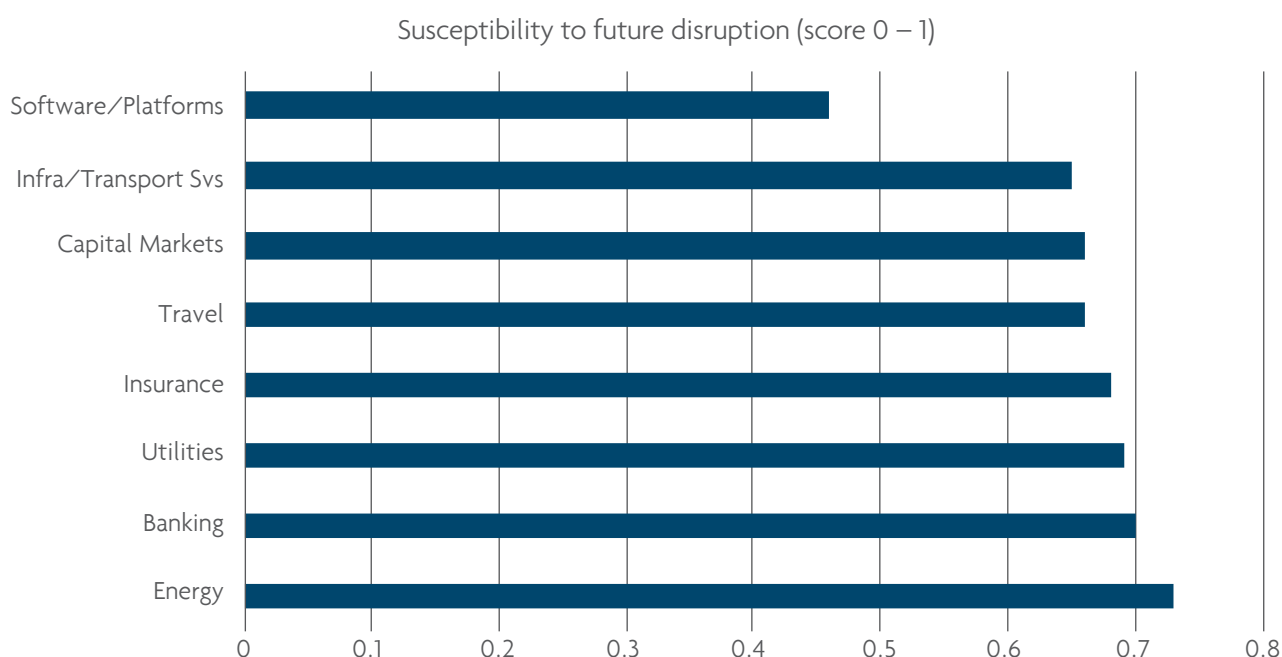
Web 3.0, described as the next internet revolution, is premised on the concept of a “decentralised” web. In the wake of concerns about data security, privacy and the amassing of personal data by the big social media platforms, Web 3.0 leverages blockchain technology to deliver a different approach to connectivity – one that is peer-to-peer rather centrally controlled. By using a distributed ledger, users can continue to have a digital record of their internet activities, but enjoy greater transparency, common accessibility and increased security. Blockchain is the technology behind cryptocurrencies and NFTs (non-fungible tokens), and like Web 2.0, is taking time to find its way into people’s everyday lives. This is where the Metaverse comes in. Going forward, big tech companies are promising virtual worlds where people can interact with each other, shop for clothes or buy a house, all without the need for a centralised marketplace or payment platform.

So much for big tech companies. What about the rest?

Ever since Google and Amazon first demonstrated the power of converting traditional advertising and retailing business models into digital-first paradigms, every industry has faced digital disruption to a greater or lesser extent. As Khoo details in his book, and also Accenture in their report, *Disruption Need Not Be an Enigma*, the potential threat and opportunities posed by digital disruption differs across industries. There are two interrelated forces at play – the ability for incumbents to successfully and financially adapt to digital business models, and the competition from disruptors ie venture-capital funded startups who are “native” to such models.

This in turn is driven by a variety of factors, including an industry’s rate of innovation, structural incumbent advantages and weaknesses, existing barriers to entry, and availability of new sources of value. Based on a composite index measuring 20 different industry sectors by current level of disruption and susceptibility to future disruption, Accenture’s index tells us that as of 2018, energy, banking and utilities were the top three most susceptible industries. However, software and platforms aside, the variance across industries is relatively small.

Figure 3: All major industries are facing digital disruption



Source: Accenture report: Disruption need not be an enigma, 2018

In Asia, the Covid-19 pandemic served as a wake-up call to companies to speed up their adoption of disruptive technologies. The International Finance Corporation (IFC), part of the World Bank Group, notes that most businesses advanced their technology usage in response to Covid lockdowns, but at markedly different scales depending on countries’ levels of income.

Focus areas also differed with middle-income countries like China and India making significant progress in digital health and educational services, while businesses in lower-income countries launched new e-commerce, digital financial and digital payment services.

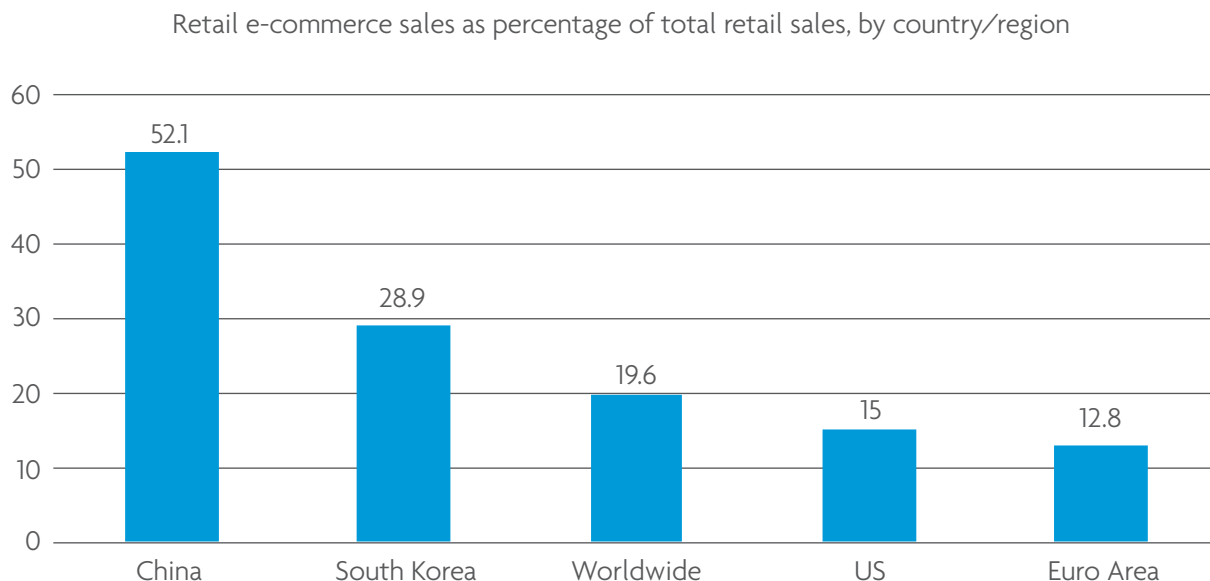
The IFC report concluded that an acceleration in the digitalisation of business operations is primarily driven by responses to financial shocks such as increased cost of operations and reduced access to international capital. Their research suggests that emerging market companies in a post-pandemic world will demonstrate a stronger momentum towards contactless systems, digitally-based local logistics support systems, and digital B2B marketplaces supporting the diversification of international supply chains.

Asia makes e-commerce history

But experts agree that the low-hanging fruit of Asia’s digital economy is e-commerce. Growing at an average of 25 percent per annum, the region leads global e-commerce growth, and represents the lion’s share - over 60 percent - of total global e-commerce spending estimated at US\$4.92 trillion.

The pandemic helped to further intensify this growth and gave rise to a global historic first. It was reported in 2021 that amid tight lockdowns, China’s e-commerce volumes as a share of its total retail sales looked on track to cross the 50 percent benchmark, the first country ever to do so. A major contributor to this growth is what is termed “social commerce”, that is, WeChat’s ability to combine shopping and social networking into a single platform.

Figure 4: China’s e-commerce share of retail sales is well ahead of other countries



Source: eMarketer, 2021

Over in Southeast Asia, according to the ASEAN Studies Centre, ASEAN e-commerce year-on-year revenue of US\$11 billion between 2018 and 2019, jumped to US\$17 billion between 2019 and 2020. This step-up was generated by both the number of people joining the online shopping revolution for the first time, and the larger volume of purchases per shopper.

A Facebook survey suggests that up to 70 percent of Southeast Asians aged 15-years and above now shop online. While there are still a number of key policy initiatives required, the appetite and cultural acceptance of e-commerce is firmly in place. And there remains plenty of headroom, with ASEAN online retail sales thought to currently account for less than 10 percent of total retail spending.

Investment Implications

The digital economy has grown over the past three decades into a multi-headed monster, and it can be difficult to cut through the noise in order to uncover suitable investment opportunities. This is especially the case as, even among “digital-native” companies, these can range from small start-ups to the almighty FAANG (Facebook, now part of Meta Platforms. Amazon, Apple, Netflix, Google, now part of Alphabet) group of mega-cap stocks.

However, there are **five key themes** that UOBAM analysts focus on, and that we think are of particular interest to investors:

1. Digital Consumer
2. Digital Finance
3. Digital Infrastructure
4. Artificial Intelligence
5. Digital Medicine

1. The digital consumer

It is clear that consumers around the world adopted a more digital lifestyle during the pandemic. However, within developed economies, recent surveys suggest that some of the digital habits adopted during Covid lockdowns will not necessarily persist into the post-pandemic period and a degree of behaviour “normalisation” can be expected. The industries most likely to be affected by this are those that were the biggest beneficiaries of lockdown conditions, such as streaming entertainment and home deliveries.

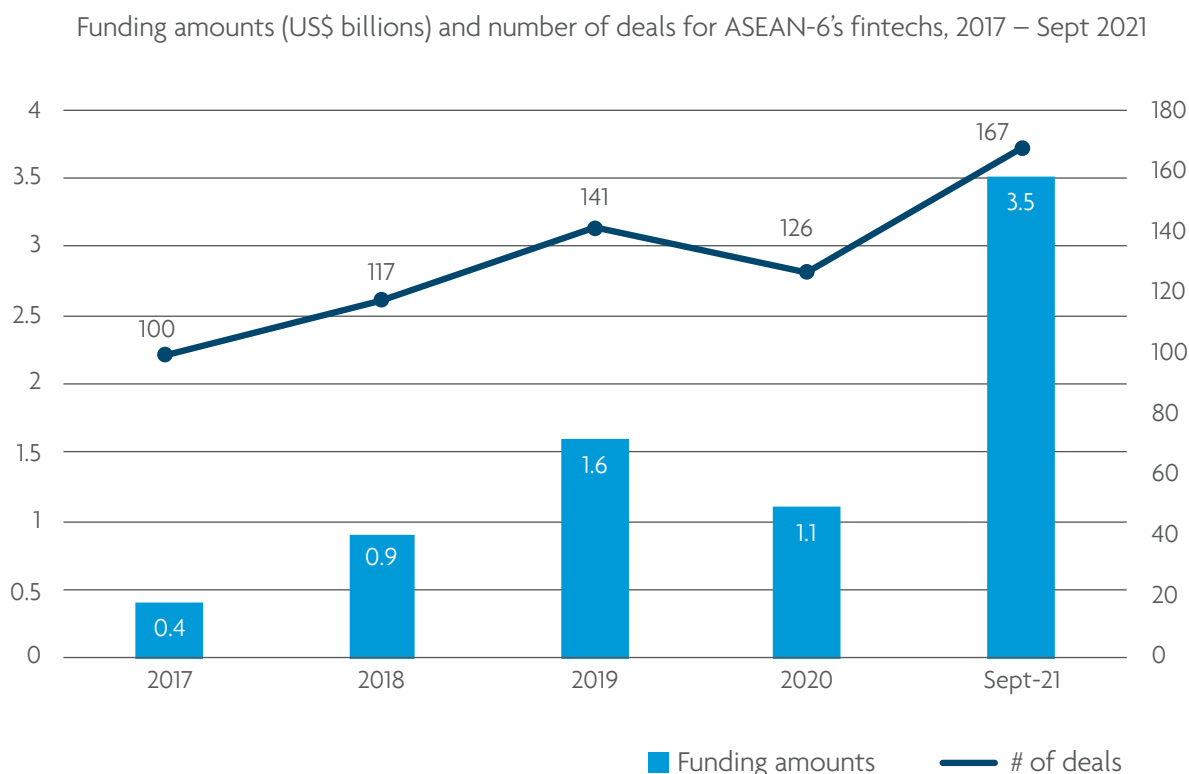
On the other hand, some sectors were able to introduce improvements in convenience, accessibility and efficiency that will be hard to roll back. This digital stickiness is thought to be particularly prevalent in primary healthcare and education, where the experience of previously unattainable reach (for businesses) and access (for consumers) is likely to have both sides clamouring for more. In both these cases, it is the ability to seamlessly integrate the physical world (e.g. classroom lessons) with the digital world (e.g. online lessons) that appears to have the greatest potential for growth. These factors are further multiplied in regions like Asia given their large urban, and dispersed rural, populations.

2. Digital finance

This term is used to describe innovations within the financial services sector, also known as fintech. These are the technologies aimed at facilitating both improvements to traditional financial services, as well as new forms of financial services not offered by incumbents. The former typically encompasses new digital versions of banking, payment, trading and money transfer services that were previously branch, shop or ATM-based. Meanwhile, advances in the digital space have brought to the world new-age financial instruments such as cryptocurrencies as well as industry-disruptive services such as peer-to-peer lending and equity crowd funding.

Fintech enjoys high venture capital interest and Covid has only intensified this further. CB Insights reported that venture capitalists invested US\$91.5 billion into fintech companies in 2021, double the total last year and accounting for a fifth of total global venture capital funding.

Figure 5: Southeast Asian fintechs received record private funding in 2021



Source: Tracxn, UOB, PwC Singapore, Singapore Fintech Association, as at 30 Sept 2021

Funds directed at fintechs in Asia Pacific reached a record US\$15.7 billion, of which Southeast Asian fintechs raised US\$3.5 billion, with a large proportion going to late-stage start-ups. According to a report by United Overseas Bank (UOB), PwC and Singapore Fintech Association (SFA), the top three ASEAN fintech hubs were Singapore, Indonesia and Vietnam and here, firms offering digital payments and cryptocurrencies saw the liveliest VC activity.

3. Digital infrastructure

One trend that our analysts find important opportunities, but we think is still underappreciated by the average investor is in the realm of digital infrastructure. A fitting description of digital infrastructure is the collection of back-end tools, platforms and systems that support the ability of a country, city or organisation to digitally transform. These are not necessarily obvious to the digital consumer, but are fundamental to enabling the digital functionalities that make up the user experience.

Included in this sector are communications infrastructure such as communication cables, fixed and cellular networks, data centres and storage, data processing, cloud computing, data security software and APIs (application programming interface). While in some cases, this involves significant capital expenditure, in others (such as cloud computing), there is now the potential to level the playing field between large and small companies via a pay-as-you-use model.

It is also interesting to note that, according to some experts, today's Covid-induced digital acceleration is "a rising tide that lifts all boats". Higher demand for digital services will naturally filter through into a greater willingness of corporations and governments to invest in digital infrastructure. The growing demand for data security and increasing deployment of 5G technologies also establishes contrasting pressures for data to be housed locally, while at the same time, to be even more accessible globally. The advent of more "hybrid" approaches opens up the potential for joint ventures between traditional and digital infrastructure operators, and the unlocking of even more investment funds.

4. Artificial intelligence

While seemingly in the realm of science fiction, artificial intelligence (AI) and machine learning (ML) have evolved to become commonplace technologies supporting many digital businesses. Once thought of primarily as a way for robots to mimic the capabilities of the human mind, AI and ML are in fact the terms now used to describe how big data can be effectively leveraged to automate a wide range of tasks, or predict behaviours and events. Virtual assistants (like Alexa and Siri) and self-driving cars are the best known examples of AI in action, but the technology is actually far more ubiquitous and present in facial recognition, credit scoring, dynamic pricing, detection of tumours, and much more.

Looking forward into 2022 and beyond, AI has the potential for ever-wider implementation across aspects of our everyday lives and day-to-day business operations. But the technology is still in its infancy, and opens the door to revolutionary opportunities that are yet to be imagined and discovered. Coupled with the rise of AI is the rise of AI-powered physical devices, generally referred to as the Internet-of-Things (IoT). These devices, whether installed in a home, office or factory, allow for data to be captured, analysed and the results implemented, only for the whole cycle to start again.

As with other digital technologies, Asia is the playground for AI to be tried and tested, given its large population and rising middle class. The AI market in Asia is estimated by Analytics Insight to be worth US\$43.7 billion in 2023, and growing at around 13 percent per annum.

Asian firms are not just watching from the sidelines. In fact, major AI innovations being led by China, India, Japan, Australia and South Korea. China has taken the global lead in terms of annual R&D spending, reaching US\$275 billion in 2018 (vs the US's US\$131 billion), more than 2 percent of the country's GDP. Much of this is thought to involve AI, given the potential for real economic benefits. ASEAN nations are relatively new to the block, but AI is capable of adding US\$1 trillion to the region's GDP by 2030 if properly implemented, according to an EDBI and Kearney assessment.



5. Digital Medicine



We end this report by considering the field of digital medicine because it represents a confluence of Asia's digitalisation, demographic and ESG megatrends. Digital health refers to a broad multi-disciplinary concept that sits at the intersection of digital technologies and healthcare services, of which digital medicine is considered a subsector. A relatively new discipline, digital medicine applies to the specific use of digital hardware and software to support the practice of medicine, including the treatment and prevention of diseases and the promotion of improved health outcomes for individuals and communities.

The focus within digital medicine is evidence, and this is achieved based on information gathered from medical trials and other clinical methods that have the benefit of regulatory oversight. This evidence can then be put to use to develop drugs, devices and other medical products. Within Asia, health challenges are posed by the uneven distribution of wealth and low incomes, shortage of healthcare facilities in rural areas, chronic diseases such as diabetes, hypertension and obesity, and a rapidly aging population.

The growth of digital medicine in Asia offers the opportunity for such challenges to be met by solutions such as healthcare analytics, said to be worth US\$2.15 billion in 2021. This uses patient data and AI technologies to undertake predictive modelling of infectious outbreaks, or to improve diagnostics by detecting abnormalities before the full onset of an illness.

Another area of digital medicine is digital surgery. This is an evolution of robotic surgery and is based on the concept of "training" surgical robots based on past procedures, thereby supporting surgeons in their decision-making and problem solving, enabling real-time data sharing and facilitating advanced imaging and visualisation.

Finally, breakthroughs in the availability of huge computing power mean that we are witnessing major advancements in the ability to sequence and code DNA. Called next-generation sequencing, these technologies offer a better understanding of the human genome. They have particular resonance in Asia as local biomedical companies deepen their efforts to build up genomic information of under-studied Asian populations. In 2019, Singapore-based A*STAR announced the establishment of the world's largest whole-genome sequencing (WGS) analysis of Asian populations, and particularly of Malay and Indian populations. It is expected that this will lead to more accurate diagnosis and treatment of Asian-specific genetic diseases.

Investing in the digital economy is not for the fainthearted. The long-term transformation aspects offered or adopted by digital companies have meant a greater, but not unquestioning, tolerance for cash flows and profits being pushed out far into the future. This has caused these stocks to show high levels of price volatility. Those open to growth investing are reminded that, as with the other megatrends detailed in our earlier two reports, they will need a great deal of patience and a long time horizon.

Important notice and disclaimers

This document is for general information only. It does not constitute an offer or solicitation to deal in units in the Fund (“Units”) or investment advice or recommendation and was prepared without regard to the specific objectives, financial situation or needs of any particular person who may receive it. The information is based on certain assumptions, information and conditions available as at the date of this document and may be subject to change at any time without notice. No representation or promise as to the performance of the Fund or the return on your investment is made. **Past performance of the Fund or UOB Asset Management Ltd (“UOBAM”) and any past performance, prediction, projection or forecast of the economic trends or securities market are not necessarily indicative of the future or likely performance of the Fund or UOBAM.** The value of Units and the income from them, if any, may fall as well as rise. Investments in Units involve risks, including the possible loss of the principal amount invested, and are not obligations of, deposits in, or guaranteed or insured by United Overseas Bank Limited (“UOB”), UOBAM, or any of their subsidiary, associate or affiliate (“UOB Group”) or distributors of the Fund. The Fund may use or invest in financial derivative instruments and you should be aware of the risks associated with investments in financial derivative instruments which are described in the Fund's prospectus. The UOB Group may have interests in the Units and may also perform or seek to perform brokering and other investment or securities-related services for the Fund. Investors should read the Fund's prospectus, which is available and may be obtained from UOBAM or any of its appointed agents or distributors, before investing. **You may wish to seek advice from a financial adviser before making a commitment to invest in any Units, and in the event that you choose not to do so, you should consider carefully whether the Fund is suitable for you. Applications for Units must be made on the application forms accompanying the Fund's prospectus.**

This advertisement has not been reviewed by the Monetary Authority of Singapore.

UOB Asset Management Ltd Co. Reg. No. 198600120Z



RIGHT BY YOU