



Vynn Capital



THE HARD REBOOT: TECHNOLOGY POWERS MOBILITY



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We greatly appreciate team members of PATA and Vynn Capital who completed extensive work to explore questions, challenges and opportunities related to responsible tourism recovery during and after the COVID-19 pandemic.

FOREWORD

Quoting the English poet, Sir Philip Sidney – “Either I will find a way, or I will make one”. We have always believed that travel is one of the most resilient industries. We have seen in history that nothing has really stopped us from travelling, but what would happen is that the industry will always find a way to re-invent itself to enable mobility again.

One of the perks of being in or involved with the travel industry is the capacity to be optimistic, travelling is a key part of human lifestyle as it is not just about leisure but also about how trades could happen and all that would lead to better prosperity and livelihood. In fact, some of the most common inventions happened because of our need for travelling, such as cars, planes, and many other examples.

As a venture capital firm that has travel as one of our key industries, we believe that this is the best period of time for the industry to be creative and innovate. In the new world that we are transitioning into, we believe that industries will converge as the world now sees the great importance of travel and mobility. Our concept of “Travelution” means that in the future, the line between industries will be blurred and there will be less of a distinction between one another. What it means is that a travel company could turn into a logistics business or a construction company could become a healthcare business and technology will play the largest role in enabling this. Technology and innovation will also be the main enabler for mobility and travel by allowing a seamless travel journey. As such, this report was conceptualised premising on the prediction that travel will be back, albeit in a new form and more resilient.

The goal of this report is to combine the collective minds of the industry, to provide guidance and suggestions for the travel and tourism industry to accelerate recovery and build resiliency. We also would like to see how entrepreneurs and innovators could step up to help with the mission of enabling travel again. Investors also have a huge role to play as we believe that the greatest use of capital is to empower.

This report is a result of the contribution by many great partners that shared their insights and knowledge of the industry. As the key author of this report, Vynn Capital would like to express gratitude towards the wonderful support from the contributions of **Pacific Asia Travel Association (PATA), Tripadvisor, Travelio, Dropee and Agoda**. We believe that in times of crisis, it is not arms that make people stronger but it is the knowledge and capacity to share that makes us stronger as one.

Thank you.



Victor Chua
Managing Partner, Vynn Capital



FOREWORD

To expedite the recovery of the global travel and tourism industry, there is an urgent need to adopt new strategies and solutions to ensure the health and safety of travellers.

At the local, regional, and global levels, travel organisations recognise the importance of integrating technology to access robust, transparent, and actionable data for better coordination. Also, as destinations reopen and international travel resumes, a host of new questions are emerging about how to build sustainability within the travel and tourism industry while minimising risks.

Creating a system of global policies and legal frameworks is a key to the sustainable management of international travel. Destinations will need to advance the dialogue to promote the collaboration with an aim to:

- Ensure health agencies have broad information-gathering capabilities and follow specific statutes and restrictions;
- Adopt technology to support policies for possibilities of mandatory quarantine, isolation, testing, or reporting; and
- Seek solutions to ease travel restrictions with implementation and reliance on real-time updates via technology tools.

Alongside these prioritised actions, the global travel and tourism industry will also need significant investment in technology innovations to recover and contribute to economies at pre-pandemic levels. The obstacle, however, is the varying pace of adoption of new technology tools by destinations that demonstrates the global disparity in the sustainability of travel. Long-term investment in the transformation of the tourism business with technology will be essential to bridge the digital divide among travel destinations to build the resilience of the global travel and tourism industry.

PATA will work to support the awareness and adoption of leading travel technology solutions to support the industry recovery and its sustainable, responsible growth into the future.



Liz Ortiguera
Chief Executive Officer
Pacific Asia Travel Association





ABSTRACT

This paper aims to analyse and lay out solutions to simultaneously navigate COVID-19's impact and build a resilient travel and tourism industry in the post-COVID-19 world. The argument to prepare for viral threats is convincing. The global travel and tourism industry's contribution to GDP plunged by US\$4.5 trillion in 2020 due to the pandemic. Possible technology solutions to support travellers' journey are presented to protect the travel and tourism industry from the threats of COVID-19 waves and other virus outbreaks. An adjusted Travel Tourism Index (TTCI) will be projected in this report by revising the data from the TTCI 2019 report by World Economic Forum so that countries could deploy this as a benchmark to create a more competitive travel environment to enable mobility. Putting on the investor lens as Vynn Capital is a venture capital firm, we have identified a few growth areas that are noteworthy such as solutions for contactless travel, consumer tools for travel distribution, customer retention solutions for travel companies and more.

CHAPTER I: INTRODUCTION



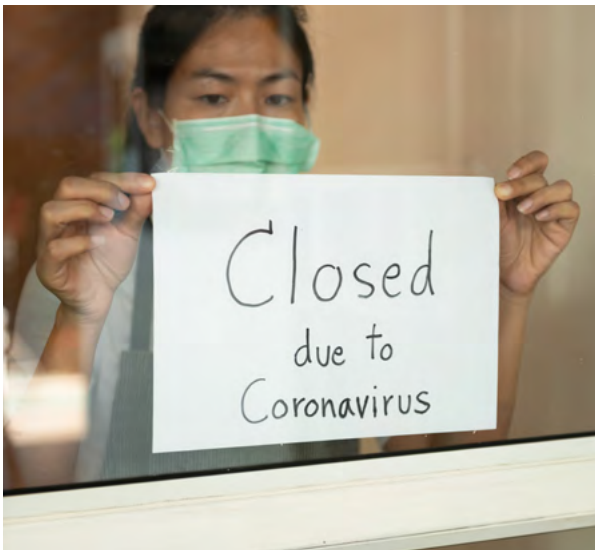
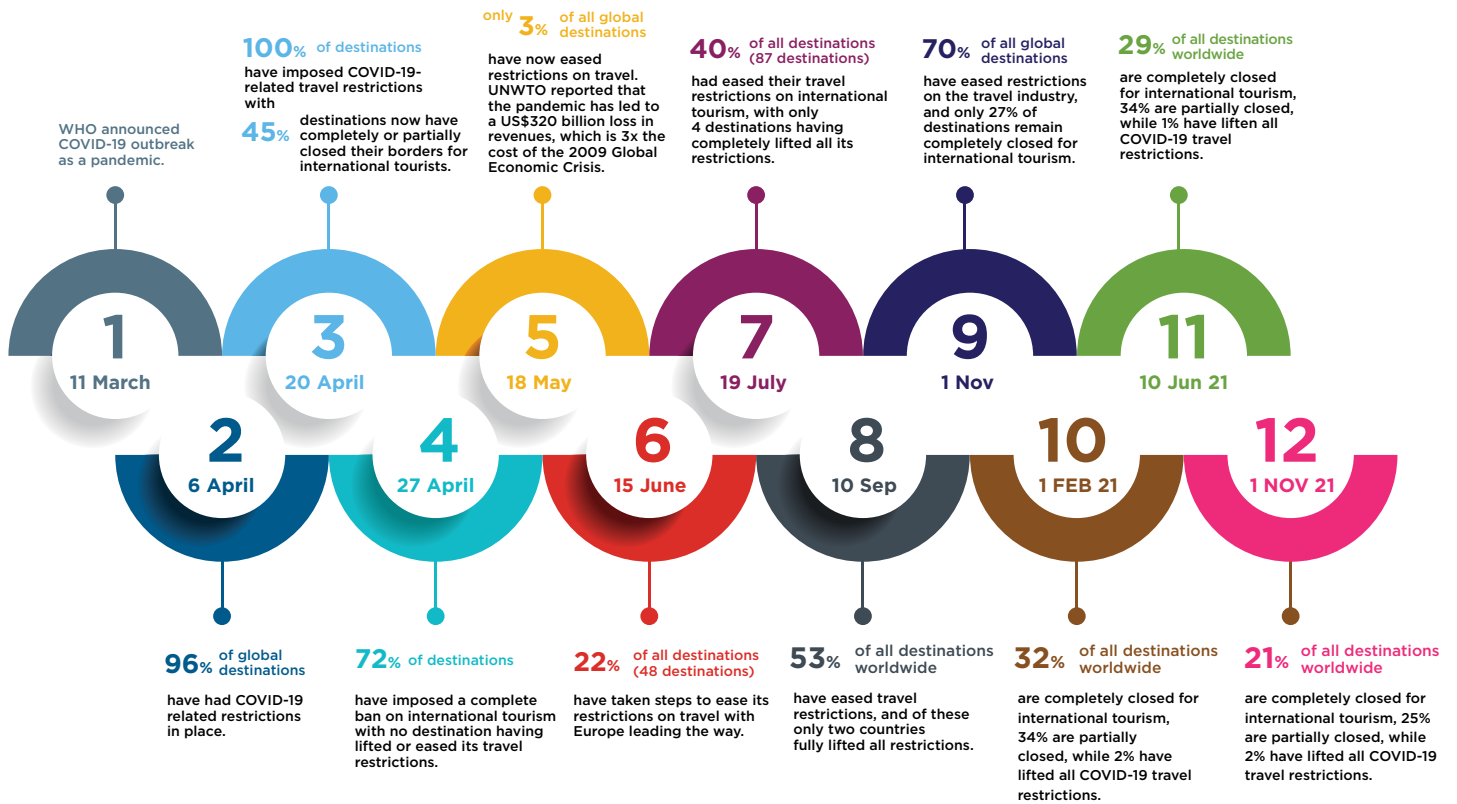
Unlike other industries, the travel and tourism (T&T) industry is a very broad industry which incorporates many other different sectors that play a role in enabling mobility or travellers' journey. It is a key industry for economic growth and many countries are highly dependent on the T&T industry as a major contributor to GDP, and these countries would be among those being hit hardest when faced with a pandemic that put global tourism into a halt.

T&T industry has exhibited positive growth, outpacing the growth rate of world real GDP since 2011. The world has seen a 4% increase in total international arrivals, and a value of approximately US\$2.9 trillion to GDP in 2019, according to the World Tourism Organisation (UNWTO) (2019) and Statista (2020). The T&T industry fostered approximately 10% yearly to the world GDP and generated at least 292 million jobs since 2016 according to the World Travel and tourism Council (2017).

However, in response to the COVID-19 pandemic, 100% of all worldwide destinations have introduced travel restrictions and travel bans starting from April 2020. Everyone has been forced to adjust to a new reality of mandated limits on travel and anti-pandemic restrictions. Cancellation of travel bookings was at its highest, and travel movements were reduced drastically due to lockdown policies implemented by the local governments. As of December 2021, over a year has passed since the introduction of worldwide travel restrictions, but the T&T industry is still being affected due to reoccurring outbreaks of COVID-19 worldwide.



FIGURE 1: TIMELINE OF GLOBAL TRAVEL RESTRICTION



According to **Figure 1**, as of November 1, 2021, two percent of all destinations worldwide have lifted all COVID-19 related restrictions (Source: UNWTO 11th Report on Travel Restrictions). Twenty-one percent of destinations remain totally restrictive of international travel. However, 85 destinations (39% of all destinations) have eased restrictions for fully COVID-19 vaccinated international tourists. Although countries continue to ease anti-pandemic restrictions, the travel industry faces various uncertainties, such as the reoccurrence of outbreaks and the reimposition of restrictions. A high level of uncertainty leads to many businesses either re-structuring to survive or closing, unable to mitigate risks.

CHAPTER II: PAST PANDEMICS: ECONOMIC SCALE AND TECHNOLOGICAL SOLUTIONS TO MITIGATE PAST PANDEMICS

PAST PANDEMICS



Various infections have emerged and re-emerged year after year to such an extent that it is hard to keep track of them all. As some infectious diseases spread over great distances and crossed borders, they transformed into pandemics and led to high worldwide death tolls and significant economic losses of up to 12% of global GDP. During each pandemic, technology played an essential role in mitigating the impacts of health crises and accelerating the recovery of the travel industry. Over 100 years ago, technology already helped prevent the spread of diseases and commence rebounds in travel and mobility.

SPANISH FLU (1918-1920)

Over 100 years ago, the world faced Spanish flu, which has been described as the first global pandemic to disrupt the rapid movement via the international transport system. About a third of the world's population was affected, with a total death toll of over 500 million. The pandemic led to the closure of public venues, altered or halted rail routes, and the need for worldwide quarantine measures. According to a report by McKibbin and Sidorenko (2006), the estimated economic loss from the Spanish flu amounted to 12.6% of global GDP in 1918. According to the World Health Organisation (WHO), many countries, including Australia and New Zealand, imposed quarantines for incoming ships amid Spanish flu. Radio communications played an important role, spreading the warnings and helping implement timely restrictions. For the general population, the phone served as the primary technology solution for communication amid the pandemic.

ASIAN FLU (1957-1958)

The Asian Flu pandemic broke out in 1957-1958. It is believed that the Asian Flu infected as many people as the Spanish Flu. However, mortality rates were lower due to advances in medicine. According to the World Health Organisation and Centers for Disease Control and Prevention, up to 1-4 million people died worldwide from the Asian Flu. As stated by the World Health Organisation, the global GDP declined by 3.5% during the pandemic. The stock index, an important indicator of economic health, recorded a sharp fall of 20% from July to October during the peak in the U.S. cases in 1957 (S&P Compustat). Technologies that had been adopted prior to the pandemic served as major tools to contain the spread of the pandemic and mitigate the impact of it. The World Health Organisation established a Global Influenza Surveillance Network (GISN) in 1952 to facilitate the monitoring of infections through a network of laboratories. Television and radio served as main sources for alerts of potential health threats amid outbreaks. For international travel, the newly-introduced toll-free number for booking air tickets reduced the time needed for reservation and was the first step to automating the booking process.





HONG KONG FLU (1968-1969)

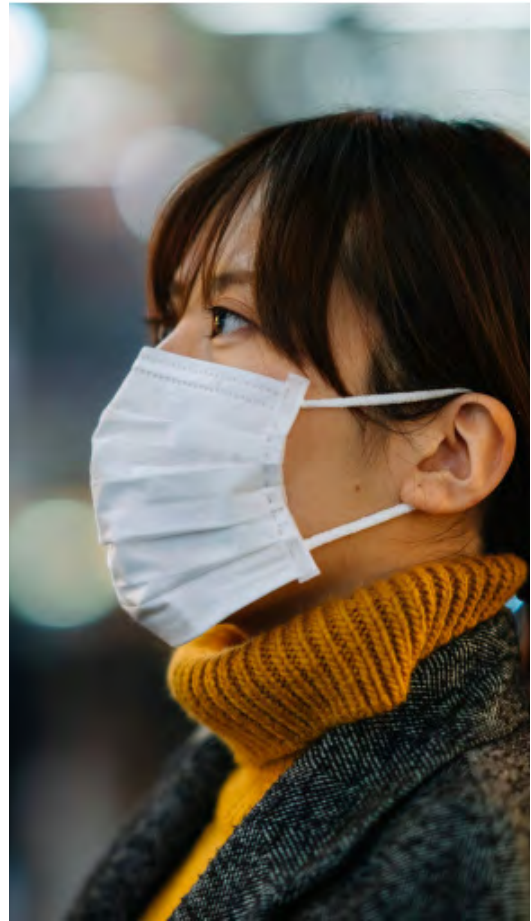
Hong Kong Flu was first reported in July 1968. Over the next six months, the disease claimed more than one million lives as it spread to Vietnam, Singapore, India, the Philippines, and on to Australia, Africa, South America, and Europe. According to World Health Organisation, the global GDP declined by 0.4% over the course of the pandemic. The period of the Hong Kong Flu saw significant developments in the concept of surveillance. In a report on ‘*National and Global Surveillance of Communicable Diseases*’ by the Twenty-First World Health Assembly in 1968, surveillance was defined as “the systematic collection and use of epidemiologic information for the planning, implementation, and assessment of disease control.” The concept of surveillance was broadened to encompass not only the detection of diseases but tracing disease in a population through actionable data. Among the latest technologies which played an important role in restarting the travel and tourism industry during the crises was the SABRE automated system for airlines in the United States, which took over essential booking functions four years prior to the Hong Kong Flu pandemic. The new reservation system allowed real-time processing of bookings and automatically stored passenger information in its memory. SABRE provided efficiencies in the distribution of airline products by reducing phone interactions and digitising a handful of the previously required manual work for reservation processing.

SARS (2002-2004)

SARS was the first pandemic of the 21st century. The SARS pandemic severely impacted the travel and tourism industry over 2003: international arrivals fell by 1.2% globally, with the most significant drop of 41% recorded in East Asia between the 1st and 21st April 2003. China, Hong Kong SAR, Vietnam, and Singapore were the destinations with the highest economic losses during SARS. Just in Hong Kong SAR, at least 50,000 jobs were put at risk, outbound and inbound tourism declined by 80% year-over-year, and over six hotels went on sale in 2003. In the same year, Asia Pacific carriers lost US\$6 billion in revenue and eight percent of their passenger traffic, according to the International Air Transport Association. New technology played a key role in containing SARS. International Airport Society for Infectious Diseases established ProMED for recording and alerting outbreaks. Starting with Beijing International Airport, infrared temperature scanners have been installed for both inbound and outbound passengers. The introduction of OTAs, travel recommendation platforms, and implementation of electronic visa issuance without paper forms, which took place before and in the same period as the SARS pandemic, sped up pre-trip preparation. Other latest technology solutions at that time, such as online check-ins and biometric passports, accelerated passengers’ movement and supported the restart of travel.

H1N1 (2009)

In April of 2009, the novel H1N1 virus emerged. It was first recorded in the United States and later spread worldwide. According to the US Centers for Disease Control and Prevention (CDC), the H1N1 pandemic caused 150,000-575,000 deaths worldwide. The travel and tourism industry was among the most affected sectors amid the H1N1 pandemic. According to the UNWTO World Tourism Barometer, international tourist arrivals plunged by 880 million or four percent year-over-year in 2009 due to the uncertainty around the novel virus. The H1N1 pandemic stimulated key improvements in diagnostic technology. According to the CDC, in the wake of the 2009 pandemic, numerous analyses had resulted in significant leaps in gene sequencing technology. The developments in gene sequencing technology allowed laboratories to identify genes of all influenza particles in one single specimen, where previous technologies revealed only the genes of a predominant influenza virus. The technology provided more actionable data on potential mutations of the virus. Another considerable improvement in influenza diagnostics in 2009 was the widespread adoption of “real-time Reverse Transcription-Polymerase Chain Reaction” (rRT-PCR) tests. As stated by CDC, compared to other laboratory techniques, rRT-PCR tests produced more reliable results on the type and sub-type of the virus in a shorter time. The introduced developments have allowed better clinical management of patients with suspected virus cases since 2009.



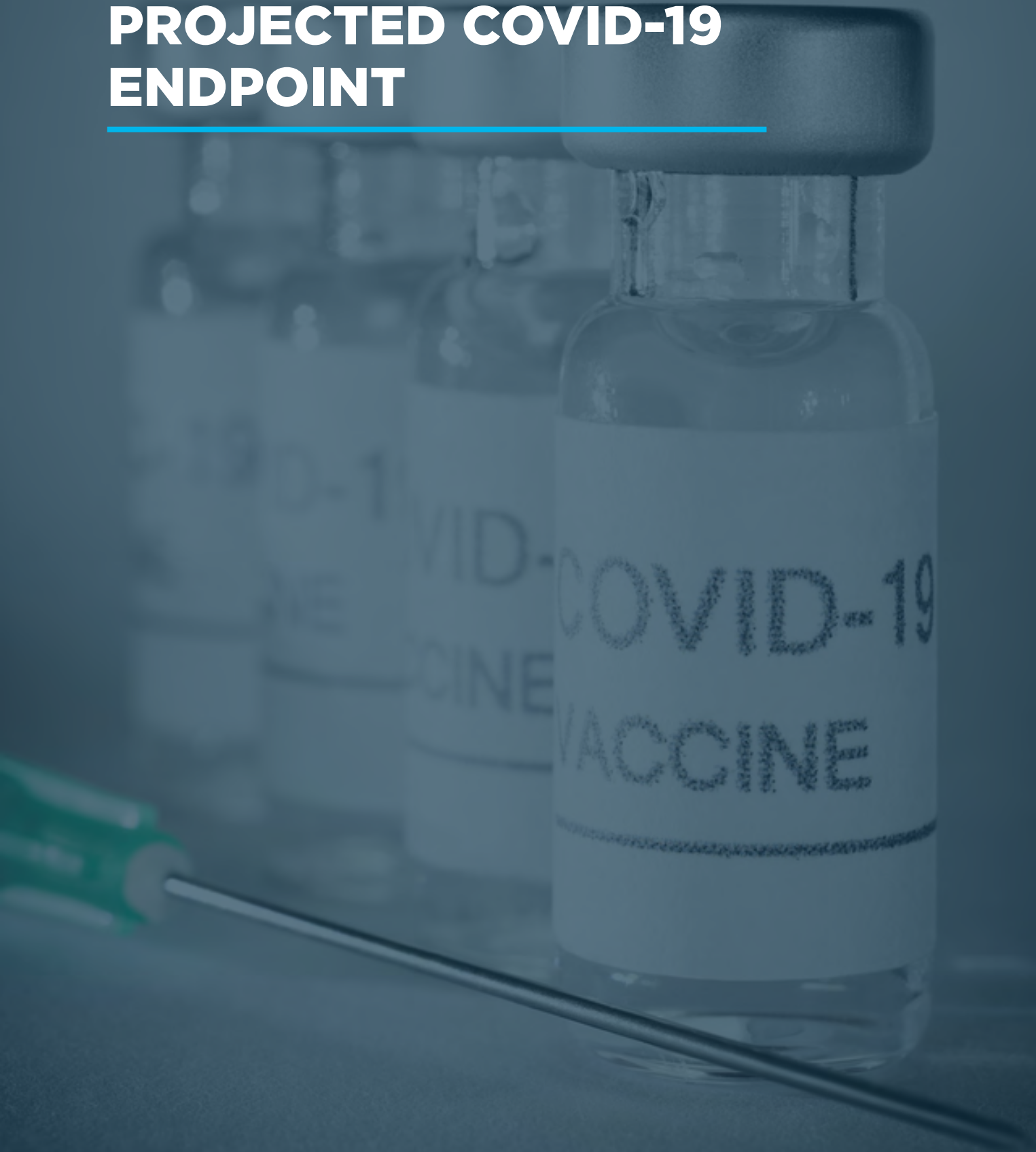
MERS (2015)

South Korea was one of the countries severely impacted by Middle East respiratory syndrome (MERS). The MERS pandemic led to devastating results with a total of 186 confirmed cases and a fatality rate of 20.97%. According to a study by Joo et al. (2019), the economic loss in South Korea’s tourism revenue from the MERS outbreak is estimated at US\$2.6 billion during the six months of the outbreak in 2015. In addition, the MERS crisis resulted in 2.1 million fewer non-citizen visitors, which represented about 16% of the total number of non-citizen arrivals in the corresponding year. To mitigate the MERS outbreak, South Korea implemented a system of contact tracing, testing, and quarantine that was supported by mobile solutions and data analytics. Extensive digital surveillance through GPS coordinates, credit card transactions, and CCTV camera footage was deployed in fighting MERS. The details were then gathered into a centralised data collection platform to trace contacts and impose quarantine measures. The aggressive tracking allowed the country to curtail the cases within the first six months.

TABLE 1: TIMELINE OF T&T TECHNOLOGY INNOVATIONS AND PANDEMICS

		Spanish Flu 1918-1920		Asian Flu 1957-1958		Hong Kong Flu 1968-1969		SARS 2002-2004		H1N1 2009		MERS 2012, 2015	
Travel Journey Stage		1890s	1900-1910s	1920s	1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2010s
Searching				Electric television	Color television						TripAdvisor launched for travel recommendations and reviews		VR technology
Booking							Sheraton automated reservation system Toll-free number	SABRE automated reservation system for airlines	SABRE automated reservation system available for travel agencies		Mobile phones available to place orders Book through OTAs Compare prices on meta-search platforms		Book via mobile booking apps
Pre-Trip											Issue of electronic visas without paper forms	RT-PCR Tests Check safety measures (ProMED)	
Getting There	Disinfectant spray	Mass production of cars			Rise of commercial aviation				Modern airport airline security		Biometric passports Online check-ins	Check-in via bar-coded boarding pass Thermal scanner	RT-PCR Tests
Travel Destination	Disinfectant spray												Contact tracing
During Trip	Disinfectant Spray In-room hotel phones for orders	Electricity becomes widely available in hotels	Stay informed via in-room radios		Television introduced into hotel rooms	Direct dial telephone service Diners Club Card - first hotel credit card			Diners Club - first charge card used in China Debit card introduced	Mass use of mobile phones			Guest room key-less entry Digital payment platforms
Post-Trip									Frequent-flyer programme using mileage tracking introduced		Share experiences via social networks Customer relationship management via social media networks		Health monitoring via healthcare platforms

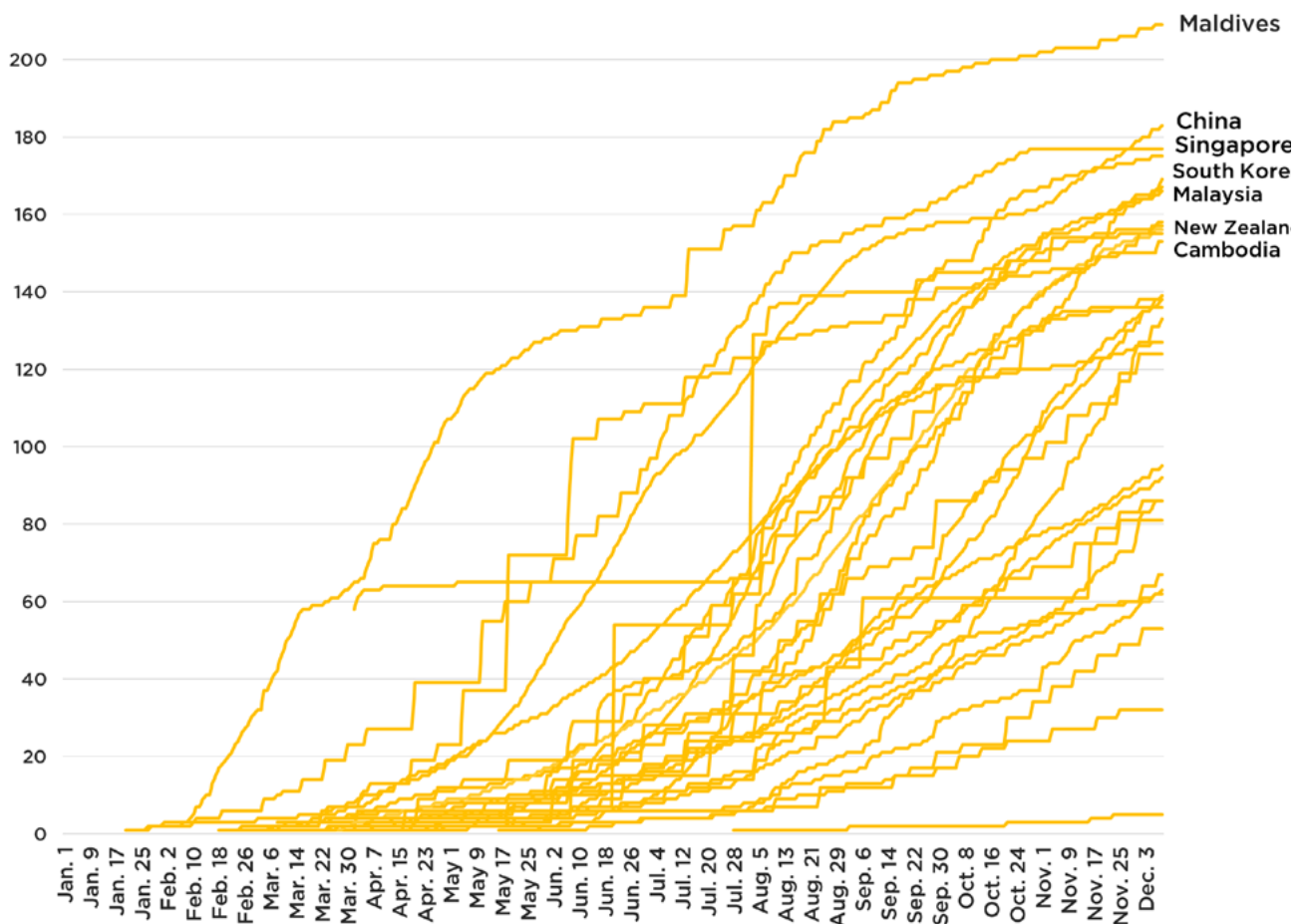
CHAPTER III: PRESENT: ECONOMIC SCALE AND PROJECTED COVID-19 ENDPOINT



ECONOMIC SCALE

The travel and tourism industry has been one of the most affected during the COVID-19 pandemic. According to UNWTO Travel Barometer, the economic loss in the total export revenues from tourism plunged by 63% year-on-year to US\$1.1 trillion in 2020, a figure which is 11 times greater than the loss during the global economic crisis of 2009. The annual decline in tourist arrivals due to the COVID-19 pandemic amounted to 70-75%. As a result, the share of tourism in global exports of goods dropped from seven percent in 2019 to three percent in 2020. Consequently, the COVID-19 pandemic has put at risk from 100 to 120 million direct tourism jobs, with a significant number represented by small and medium-sized enterprises.

FIGURE 2: NUMBER OF VACCINE DOSES ADMINISTERED PER 100 PEOPLE IN APAC, AS OF DECEMBER 8, 2021



Source: Bloomberg COVID-19 Vaccine Tracker | Note: APAC stands for Asia Pacific.

PROJECTED COVID-19 ENDPOINT

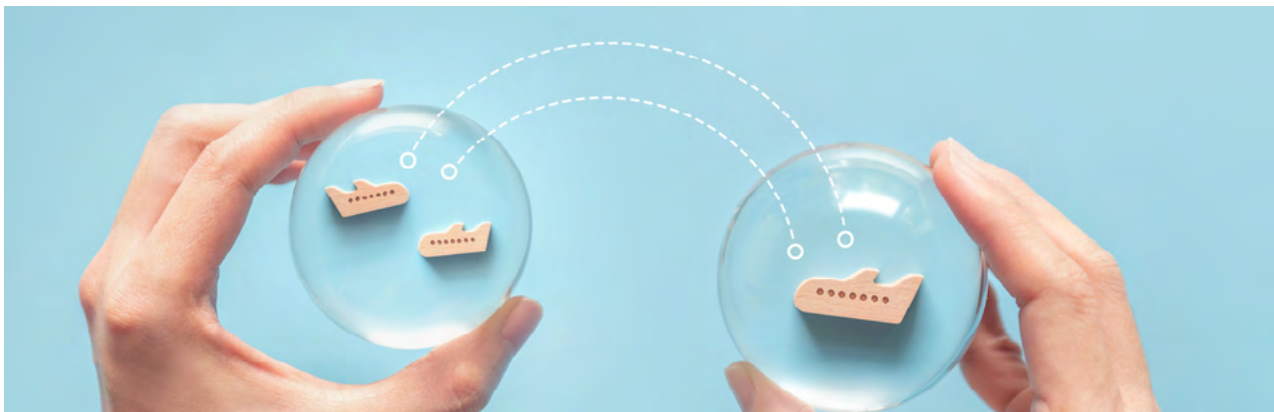
The outlook for the gradual containment of the COVID-19 is positive. As of December 8, 2021, more than 8.35 billion vaccine doses were administered in 184 countries. In total, 108 doses of vaccine were administered for every 100 people worldwide. According to the Bloomberg Vaccine Tracker, vaccination rates in the countries with the highest income are 10 times faster than in countries with the lowest income.

While vaccination programmes are expected to restart tourism gradually, the uncertainty remains high due to logistical challenges to deliver vaccines worldwide. A handful of low- and middle-income countries are in the back of the queue for vaccine supplies. For example, in the Asia Pacific region, only 53, 81, and 86 vaccine doses per 100 people were administered in Myanmar, Laos, and Philippines, respectively, as of December 8, 2021. At the same time, the highest vaccination rates in the region were recorded in the Maldives (209 doses per 100 people), China (183 doses per 100 people), and Singapore (177 doses per 100 people). On a global scale, slow vaccination rates present such potential setbacks as the emergence of new variants that pose a risk to the efficacy of vaccination programmes. However, increasing manufacturing capacity with the approval of new vaccines and added capacity from existing drugmakers are expected to accelerate global vaccination rates.

In line with the increase in vaccination, the gradual improvement of international travel is likely to continue in the first half of 2022. Large pent-up demand also contribute to the restart in travel. However, the recovery will be dependent on the evolution of the pandemic and the consequent requirements and limitations to international tourism.

CASE STUDY: HOW WILL BUSINESS TRAVELLERS EVOLVE?

According to the World Travel and tourism Council, business travellers accounted for one fourth of the global tourism market share. Although many business meetings are switching to virtual options during the pandemic, the larger part of the business community still prefer to meet in-person for that handshake. Business travellers are less distance-sensitive, price-sensitive and health-related risk sensitive, as long as there are existing business opportunities. However, the cost of business trips have increased due to additional COVID-19 health-related policy costs, pushing corporations to re-evaluate the fundamentals of travel. If needed, business travellers are more likely to combine multiple meetings into one trip due to the increase in the cost of travel.



TRAVEL BUBBLE, CORRIDOR OR BLOC

The International Civil Aviation Organisation's (ICAO) Council Aviation Recovery Task Force (CART), together with International Air Transport Association (IATA), laid out a groundwork where countries could safely enable cross-border travelling in the current circumstances with the Take-off guidance. The guidance establishes public health procedures such as physical distancing, compulsory face masks, routine sanitation, health screening, and contact tracing. The establishment of coordinated restrictions allows an increasing number of destinations to open up to international tourism. The coordinated response among countries has already allowed the easing of entry restrictions for tourists in several European countries, as well as other international travel routes. In addition, travel bubbles, such as the Singapore-Malaysia travel bubble launched on November 29, 2021, are among the latest developments for the reopening of international tourism. The Singapore-Malaysia travel bubble allows quarantine-free visits, provided that a passenger stayed in the country of departure for at least 14 days. Another bubble, the Hong Kong SAR-Singapore travel bubble, was initially planned to be launched in November 2020 before mass vaccinations but was postponed following a rise in cases in Hong Kong SAR, and the plan was later cancelled after the second attempt in May 2021 as a result of rising infections in Singapore.

CASE STUDY: INEFFECTIVE DISTRIBUTION OF VACCINATIONS

According to the Children's Hospital of Philadelphia (2020), more than 3 million people die from vaccine-preventable diseases each year, where the majority of them are concentrated in poor countries. In the previous influenza outbreaks, WHO and the United Nations (UN) had shown efforts in securing developing countries with vaccinations; however, inequitable access to vaccines still remains an issue. Besides issuing bonds to raise funds from the Organisation for Economic Co-operation and Development (OECD) to purchase vaccinations, several solutions were proposed below to tackle this issue.

CONTROVERSIES OF ACCESSING TO VACCINES IN THE DEVELOPING COUNTRIES:



- Developed countries have the resources to bring up vaccines to safeguard their populations.
- Pledges from developed nations to donate partial vaccines to developing countries were not reinforced until the country itself had excess vaccine supplies.

TACKLING INEFFECTIVE VACCINE DISTRIBUTIONS:



- Blockchain-enabled Critical Resources Logistic
- Leveraging on its security and transparency protocols, working towards a more efficient supply chain of vaccination and other critical resources is essentially critical to ensure equitable distribution across countries. StaTwig, an Indian-based startup, was founded on the purpose of tracking and strengthening the delivery of vaccines in developing nations, by tracking the journey of vaccines, including recording temperature, humidity, and locations to decrease wastage of critical resources.

CASE STUDY: ADAPTING TO SURVIVE



Since the COVID-19 has struck, many startups need to be nimble and adjust to tide through the global economic slowdown. A handful of startups are re-examining their business models and considering pivoting more services to be less immune to external crises.

One of such startups is Indonesia's Travelio, founded in 2015, which operates an online rental marketplace that connects property owners and developers to potential tenants. Although the tourism industry was among the most negatively affected industries during the pandemic-caused turmoil, Travelio demonstrated high resilience in the wake of the crisis. The company maintained an occupancy rate that was two times higher than the national average. Travelio, which previously operated a short-term model, introduced a long-term stay model. Long-term rental solutions thrived amid the pandemic as more people were looking for suitable long-term rentals to facilitate working from home. In response to the changing habits and safety standards, Indonesia's startup also assessed the needs of its consumer base to identify additional revenue streams or raise confidence in the health and safety of its users. Travelio added disinfection services to its offerings after the demand for professional sanitisation surged for the prevention of the virus. Before tenant move-ins Travelio now carries out disinfection and provides hand sanitisers in each unit. Along with disinfection, Travelio thoroughly follows recommended preventive measures, such as conducting regular body temperature checks of its staff and providing protective face coverings and sanitary gloves. Travelio also launched TravelioMart to provide convenience for its tenants to purchase groceries online. With TravelioMart, users can order home essentials and a wide variety of

fresh foods, including fruits, vegetables, and meats, via Travelio's platform or the WhatsApp application. Travelio's aim is to provide quality foods at affordable prices that are competitive with traditional markets. This focus has been the main factor in the growing popularity of TravelioMart, aside from the growth of online shopping since the start of the pandemic.

Among other Indonesian startups that actively integrate new solutions to reduce the impacts of the crisis is Pomona. Established in 2016, Pomona is an omnichannel marketing and sales solutions provider that enables brands to offer cashback incentives to Indonesian consumers and directly works with FMCG (Fast Moving Consumer Goods) companies to provide them with tools to understand their customers and launch their marketing and advertising campaign effectively. As the COVID-19 pandemic has accelerated the growth of e-commerce and incentivised many small businesses to open online stores, Pomona chose to expand its service to cover the rising demand. Pomona has launched ZeeUs, enabling local micro-entrepreneurs and brands in the FMCG industry to distribute their products. In Indonesia, there are hundreds of thousands of MSMEs (Micro, Small & Medium Enterprises) that are competing for the existing market against bigger players. Pomona's ZeeUs aims to provide them with tools to capture the existing consumer market and has already contributed to the success of brands such as Mr P, Pik Keripik, Goola, Nibz.

As supply chains were disrupted during the pandemic, a Malaysian-born startup Dropee sought solutions to mitigate the effects of COVID-19 on food and agriculture sales channels. Launched in 2016, Dropee is a B2B e-procurement platform specialising in FMCG and retail segments. Its platform connects suppliers to small- and medium-sized enterprises (SMEs) in real time to streamline procurement processes and facilitate bulk purchases. With a vision to use technology to serve farmers and fishers and solve their challenges during the pandemic, Dropee partnered with Malaysia's Ministry of Agriculture to facilitate the efficient distribution of food staples, like vegetables, rice, meat, and fish. The Malaysian startup launched a special section in its marketplace, named LokalKita, to connect farmers and fishers with wholesalers, retailers, and individuals. Dropee's aim is to eventually help get greater exposure to all 90,000 farmers and fishers.

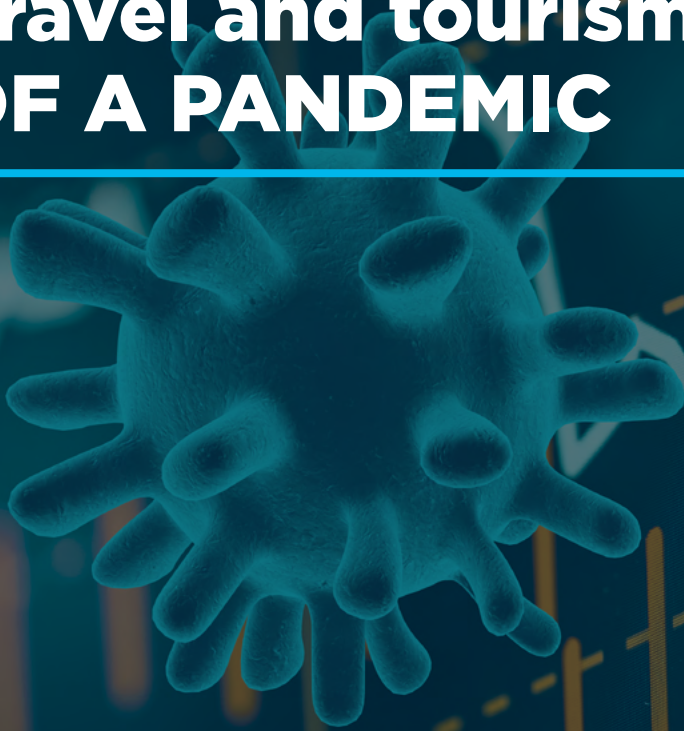
Another startup that has provided digital solutions to boost the farming industry during the health crisis is Epost Malaysia. Founded in 2018, Epost Malaysia is an e-commerce logistics platform that connects companies with online and offline distributors to sell their products in markets otherwise inaccessible with traditional logistics operators. Epost launched the CSR programme to educate and help farmers take advantage of a significant increase in e-commerce in order to boost efficiencies in distributing their produce. In particular, Epost's CSR initiative has provided infrastructure to market vegetable products for farmers from Kundasang Valley, a strategic center in Sabah that connects rural and urban areas. The programme has encouraged many farmers to leverage available e-commerce tools, and more specifically, e-commerce logistics.

Southeast Asia's super-app Grab also expanded its services amid the pandemic by optimising its driver network. Grab was initially a ride-hailing app and later forayed into multiple consumer segments, including hotel booking, ticket purchasing, financial services, etc. Given the ongoing concerns about the pandemic, many consumers became habituated to online delivery. Grab leveraged the change in habits as an opportunity and pivoted its core business services to provide online delivery services for merchants.

The Indonesian super-app unicorn GoJek, which also started operating as a ride-hailing app, drew from the same consumer trend as Grab to work around pandemic hurdles. GoJek is the first Indonesia's unicorn and offers a wide variety of services from ride-hailing to digital payments. As the pandemic prompted the surge in online shopping for essentials, GoJek has focused on evolving its ride-hailing business model into a delivery-based platform.

It is clear that pandemic introduces some immense opportunities for startups to tackle, and some changes may even become a legacy of this health crisis. The experience of these adaptive startups demonstrates that innovative approaches to new challenges and changes in consumer habits are the best solutions to survive through the pandemic.

CHAPTER IV: POTENTIAL Travel and tourism LOSSES OF A PANDEMIC



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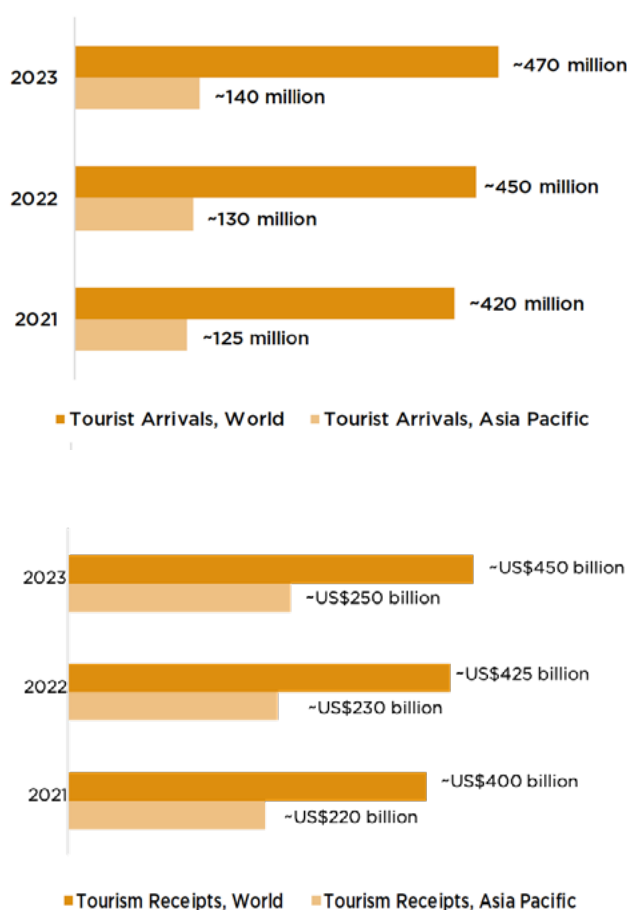
POTENTIAL TRAVEL AND TOURISM LOSSES OF A PANDEMIC

The arguments on building a resilient travel and tourism industry with technology are compelling. The COVID-19 pandemic led to the largest decrease in tourism revenues in history. The crisis impacted businesses of all sizes worldwide, putting millions of jobs at risk, especially in countries where tourism represents the major share of the economy. Vynn Capital calculated possible economic losses of a pandemic if no technological solutions will be implemented to enable international tourism. According to one of the Vynn Capital projections, in the pessimist event of a recurring large-scale pandemic and consequent prolonged restrictions without technological solutions to restart international travel in one of the years between 2021-2023, the annual losses of the travel and tourism industry may reach up to US\$400-450 billion in tourism receipts and 420-470 million in tourist arrivals worldwide. Following the same approach, the possible losses for the Asia Pacific are estimated at US\$220-250 billion in tourism receipts and 125-140 million in tourist arrivals. The calculations are based on the tourism losses from the recorded severe infectious virus outbreaks which occurred from 1997 to 2020. As the model accounts for rarer losses, it accommodates more severe outcomes.

No statistical model may predict the exact losses that may occur from pandemic outbreaks due to a number of various limitations — the focus and limitations of our model probably edge up the economic risks of the potential pandemic outbreak. However, our estimate represents a convincing reason for building a more resilient travel and tourism industry.

As demonstrated during the past pandemics and ongoing COVID-19 pandemic, the utilisation of technology serves as an effective tool to improve the efficiency of government-imposed measures. Further integration of technology solutions will alert more infectious virus threats and safeguard activity of more travel and tourism segments. Active adoption of technological solutions across the tourism industry has the potential to provide greater resilience.

FIGURE 3: POTENTIAL LOSSES OF A PANDEMIC IN 2021-2023*



*Calculations are based on T&T losses from severe virus outbreaks recorded in 1997-2020

Source: Vynn Capital

WARNING: RECURRENCE OF COVID-19

According to the Chair of the World Health Organisation's Strategic and Technical Advisory Group for Infectious Hazards, Professor David Heymann, the COVID-19 pandemic is expected to become endemic, despite the rollout of effective vaccines. COVID-19 could also mutate in similar ways as influenza and emerge as a seasonal disease in countries with temperate climates. The scale of the COVID-19 pandemic has demonstrated how crucial it is for governments to communicate consistently and transparently to prevent contradictory messaging as the lack of clear communication and harmonised safety protocols could sow confusion and trust among all affected stakeholders and negatively reflect on the country's ability in suppressing the virus. Governments and local authorities should prepare a pre-crisis management plan to mitigate risk and decrease economic losses.



Stakeholders in the hospitality sector, tour operators, and small- to medium-sized tourism enterprises should ensure that COVID-19 safety protocols, including handling of cancellations and re-bookings, are introduced. The guest experience should be prioritised and simplified to ensure customer satisfaction, despite the implementation of strict safety protocols.

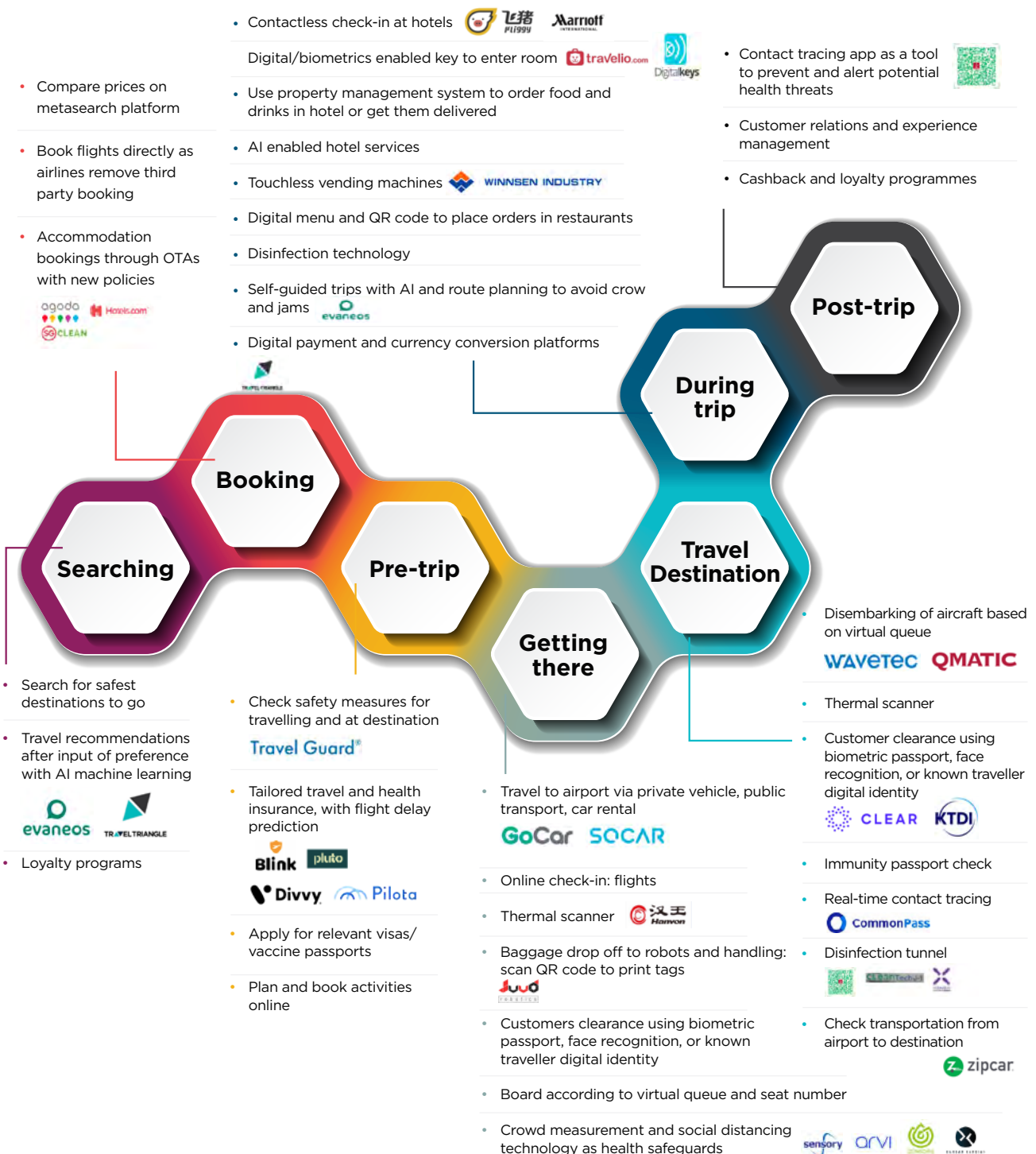
Besides implementing safety and health protocols by providing up-to-date staff training, disinfecting, and improving air conditioning systems by reducing air circulation, aviation operators should also opt for contactless technologies to reduce contact, starting from contactless check-in, retail, and smart solutions restrooms, F&B services, and boarding. Furthermore, aviation operators should take the initiative in a joint discussion with relevant government authorities to authorise travel.

CHAPTER V: BUILDING RESILIENCE WITH TECHNOLOGY

In this chapter, we will attempt to provide technological solutions for building resilience in the T&T industry. Digital technologies, such as real-time contact tracing, contactless solutions, healthcare, and insurance technology, and many more, are able to provide the infrastructure needed for preventing and mitigating infectious outbreaks. We present a framework for a seamless journey that will help the T&T industry scale down potential economic losses during the COVID-19 pandemic and in the post-pandemic world.

Emerging technologies transformed the travel and tourism businesses in the last three decades, as the internet became available to the masses and a wide variety of booking and informational e-platforms and other digital solutions emerged. Before the pandemic, solutions such as contact tracing, contactless technologies, insurtech, etc., were already deployed. However, although some technologies had been previously utilised in the T&T industry, the COVID-19 brought significant attention to the importance of such technologies that could prevent, alert and help mitigate infectious diseases. This section explores some technologies that provide greater resilience in the T&T industry and are already considered permanent fixtures in some geographies. We propose a seamless framework for travellers' journeys that would combine previously used consumer technologies, such as OTAs and vehicle booking platforms, with technology tools to prevent and mitigate potential health threats and, therefore, to build greater resilience in the T&T industry.

FIGURE 4: SEAMLESS FRAMEWORK FOR TRAVELLERS' JOURNEYS



DETAILED TECHNOLOGICAL SOLUTIONS

REAL-TIME CONTACT TRACING

Effective contact tracing could allow authorities to trace the suspected patient's moving history in the previous 14 days with ease. Bluezone, a mobile application developed by BKAV, Vietnam's leading cybersecurity firm, was initiated by the Ministry of Information and Communications to trace high risk individuals, warns if users are in close contact with the high-risk individuals and also allows users to alert health authorities about suspected COVID-19 cases.



SmartCity is a mobile application that is mandatory for infected patients in Vietnam to install on their smartphones. The application would raise the alarm to the local health authorities if patients were found to be 20 to 30 meters away from their quarantine areas. Health authorities could monitor the health of the patient through the application. Regional health authorities were required to monitor and report all of the infected cases to the higher authorities daily.

Besides the usual contact tracing application to ensure social distancing and enable contact tracing, many technology companies have taken the initiative to re-purpose existing technologies, such as wristbands for athletes. The German tech company, Kinexon, originally developed ultra-wideband sensors to collect data for athletes. During the pandemic, they re-positioned their product as a tool for manufacturers to keep track of employee shifts and also a tool to ensure social distancing when two sensors are in close contact. Singapore, Hong Kong SAR, and Korea (ROK) have implemented wristbands for contact tracing.

Real-time contact tracing technology may also become a permanent fixture in some geographies. The Chinese city of Hangzhou, of the major country's technology hubs, is considering making the contact tracing app compulsory for its entire population of 10 million to safeguard people's health after the pandemic. In the proposed app, users would have colour-coded statuses with scores of up to 100 based on the data from medical records, activity, and other lifestyle habits such as smoking. The proposal of permanent contact tracing raised multiple concerns among the population over privacy issues and is being reviewed for potential breaches before the final decision.

A study by Future Market Insights (2020)¹ reported that the contact tracing market was valued at US\$147 million in 2020 and will grow at 15% CAGR (compound average growth rate) through 2030. Although the main purpose of contact tracing platforms is to control infectious disease outbreaks, data privacy, child protection rights, and transparency remained as important concerns, which created opportunities for new companies to take a piece of the pie from existing market revenue share.

¹<https://www.futuremarketinsights.com/reports/contact-tracing-application-market>

Bluezone (VN)



Developed and owned by: Leading Vietnamese internet security company BKAV and the Ministry of Information and Communications

Deployed in: Vietnam

Rather than just a contact tracing application, they also identify and alert people who are in contact with potential patients by using Bluetooth low energy technology. Along with a platform for doctors to perform remote medical examination, medical consultation, surgery consultation and treatment with its patient.

SmartCity (VN)



Developed and released by: Hanoi Steering Committee

Deployed in: Hanoi, Vietnam

An application to monitor patients' health, and if they travel out of their quarantine areas, the application will raise an alarm and send notifications to the local authorities.

Kinexon (Germany)



Funded by: EIT Digital Accelerator

Deployed in: Germany and United States

German technology company, which originally developed ultra-wideband sensors to collect data for athletes are now selling a product that it says can ensure social distancing and trace infections by using the same sensors. A light will blink if two sensors get too close to each other.

DISINFECTANT TECHNOLOGY

Beyond preventing transmission through contact tracing, actual disinfection of physical areas and objects are just as important. The pandemic has pushed innovators to develop more efficient ways for disinfection. In New York, the Metro Transit Authority implemented UVC lighting in subways. Puro Lighting, a US-based startup, provided the lighting which eliminates almost all viruses immediately. We can expect airport, trains, and other mass transportation systems to adopt similar measures. The UV disinfection systems market is expected to register a CAGR of 11.2% over the forecast period, 2020-2025.²

Hong Kong SAR and Singapore have led the charge on disinfection with full-body disinfection booths and cleaning robots that disinfect public areas. India-based Aqoza, founded in 2019, developed a water-based sanitiser for disinfecting public spaces to encourage mobility among citizens. The Global Surface Disinfectant Market is forecast to reach US\$1.53 billion by 2027, according to a new report by Reports and Data.³ As to gaining short-term profitability in the era of COVID-19, investing in the disinfectant technology market were seen to receive at least eight percent increase in revenue growth rate and at least a 40% increase in market value from 2019 to 2020.

Low cost-effective preventive measures include Plexiglass barriers at front desks and also at dining areas in restaurants, with disinfecting wipes. Hotels could leave rooms empty for longer periods between a series of cleanings to make sure that any contamination is eliminated. Hotel rooms should be sealed before disinfection.

The pandemic is likely to lead to permanent shifts in cleaning procedures as disinfection and hygiene are prioritised. As heightened cleaning standards will remain for the long haul, new disinfection technologies will continue being deployed.

<p>Puro Lighting (US)</p> 	<p>Founded by: Webb Lawrence, Brian Stern, Jonathan Hafemann, Jim Colantoni</p>	<p>Deployed in: Colorado, United States</p>	<p>Rapid and affordable small mobile disinfectant technology that uses broad-spectrum UV light to eliminate viruses and bacteria.</p>
<p>Aqoza (India)</p> 	<p>Founded by: Zahid Muhammed</p>	<p>Deployed in: Kerala, India</p>	<p>Aqoza is an eco-friendly disinfectant technology company that eliminates the risk of hazardous gases that causes odor nuisance from disinfectant and air purification solutions.</p>

² <https://www.globenewswire.com/fr/news-release/2020/09/23/2097853/0/en/Global-UV-Disinfection-Systems-Market-2020-to-2025-Growth-Trends-and-Forecasts.html>




³ <https://www.reportsanddata.com/report-detail/global-surface-disinfectant-market-by-manufacturers-countries-type-and-application-forecast-to-2022>

SOLUTIONS TO ENSURE SOCIAL DISTANCING/CROWD MEASUREMENT & ANALYTICS

The first thing that comes to mind when tracking crowds during the COVID-19 pandemic is temperature. India-based Arvi, founded in 2019, develops contactless thermal scanning kiosks. BlueSemi is another startup developing IoT-based contactless thermal scanning devices. Besides tracking crowds' temperature, Sensory, a Silicon Valley company, provides a solution to detect people who do not wear a face mask, or detect people who cough and sneeze. This device can be integrated in the corporate security software.

Aside from introducing thermal scanners at airports and transportation hubs to detect fever, the other important element when it comes to crowds is distancing, especially under the circumstances that infection rates might spike again. Airports will rely on visual sensors to optimise the traveller experience and ensure social distancing. For example, Sensors has created a technology that converts security cameras into sensors that automate space analytics which could subsequently help ensure that travellers keep distance. Another example is Xandar Kardian, which is a startup that has developed software that can identify overcrowding through radar. Crowd measurement and analytics are imperative to ensuring healthy travel.

It has already been confirmed that a thermal scanner will become a permanent solution along some travel routes. According to Joe Rankin, the Head of Communications at London City Airport, thermal scanners will be used at the entrances of terminals and the arrival corridors to detect potential health threats and alert the staff. Also, as prior to the pandemic, social distancing measures will be deployed not only semi-permanently during the occurrence of disease outbreaks but also for monitoring in crowded locations, such as large events, to track crowd behaviour and enable security.

<p>Arvi (India)</p> 	<p>Founded by: Sushant Reddy</p>	<p>Deployed in: India</p>	<p>Arvi provides smart post-COVID workplace healthcare solutions such as screening kiosks for workplaces, manufacturing plants, corporate offices, restaurants, etc.</p>
<p>BlueSemi</p> 	<p>Founded by: Sunil Kumar Maddikatla</p>	<p>Deployed in: India, Singapore, Phillipines, Dubai, Qatar</p>	<p>BlueSemi developed a wireless thermal scanning device that measures and records temperature data without any manual intervention.</p>
<p>Sensory</p> 	<p>Founded by: Todd Mozer</p>	<p>Deployed in: Worldwide</p>	<p>Sensory's Truly Secure face and voice biometrics platform could identify individuals who are wearing face masks and can now recognise coughs and sneeze.</p>

Zensors (US)



Founded by: Chris Harrison in 2018

Deployed in: Pittsburgh International Airport, Tulsa International Airport

Their Zensors AI platform can convert any existing CCTV / mobile device camera into a smart sensor that helps in social distancing and crowd management.

Zensors AI Driven COVID-19 Compliance Monitoring solution also allows businesses to get real-time updates on complying with regulatory capacity limits, verify face mask compliance, and crowd control on the person entering into an entity.

Xandar Kardian (US)



Founded by:
1. Jason Chiu
2. Sam Yang

University spin-off US-Korea startup with its R&D roots in Hanyang University, South Korea.

Deployed in: South Korea, Canada, Singapore, United States

Xandar Kardian Monitoring Technology uses real-time occupancy sensors to identify the micro-vibrational patterns from humans, such as breathing and heartbeat. The solutions helps maintain safe occupancy levels.

CONTACTLESS HOSPITALITY SERVICE

The utilisation of contactless service improves prevention procedures against infectious diseases and gained significant attention amid the COVID-19 pandemic. Hospitality providers are expected to further improve their services by minimising contact services by digitising check-ins so that guests could avoid lining up at the front desk. Travelio, a proptech apartment rental provider from Indonesia, provides safety and hygienic solutions for its guests, as they can now enter apartments with smart locks, which reduces human contact.

Hotels could implement property management software with mobile concierge apps so that guests could check in using digital keys, order meals and services, and access disinfection record logs. For the Chinese market, Marriott International has partnered with Alibaba Group’s Fliggy to install self-service kiosks powered by facial recognition technology for travellers to check-in upon their arrival. Its guest will need to scan their identity, take a photo, and input contact details; after the device verifies the identities, the device will then allocate room key cards. Other than that, Marriott International allows 31 of its hotels to allow travellers to check-in, access loyalty programmes and guest service requests through its newly launched mobile application. Connected hotel systems have proven effective in reducing the overall turnover time by automating bookings and communication with guests. In addition, smart hospitality solutions for mobile control of amenities have also been on the rise. According to the “*Smart Hospitality Market - Forecasts from 2020 to 2025*” report by Knowledge Sourcing Intelligence LLP, the global smart hospitality market is expected to grow at a CAGR of 13.14% from 2020 to 2025, increasing to around US\$12.7 billion in 2025 from around US\$6.1 billion in 2019.

Key players in providing such solutions are NEC Corporation, Siemens AG, and Honeywell International, with Europe being seen as the global leading hotel connected systems. Dorchester Collection, a luxury hotel operator, owned by Brunei Investment Agency, which is an arm of the Ministry of Finance and Economy of Brunei Darussalam, deployed an AI platform to be implemented in nine of its hotel brands across 18 cities in Europe. Currently, the hotel industries are lagging behind other industries in the implementation of AI and machine learning, according to McCune (2019)⁴, with the majority of the hotels using AI for chatbots, which created investment opportunities in guest personalisation, hotel operations, and revenue management solutions that integrate with AI and machine learning.

In the post-COVID-19 world, in line with technology advancements, the hospitality industry will further implement contactless technology solutions, such as scannable QR codes, mobile locks, contactless check-ins, touchless payments, and many others. Colliers International⁵ reported that implementation of AI in hotel premises could eliminate 73% of manual activities, subsequently reducing 15% of hotel operation cost, meaning at least a 10% increase in profit margin, US\$60 billion increasing in global hotel revenue.

<p>Fliggy (CN)</p> 	<p>Owned by: Alibaba</p>	<p>Deployed in: China</p>	<p>Fliggy is China’s online travel agency, developed to tap into resources from the Alibaba ecosystem. Fliggy have also rolled out a facial-recognition system for hotel check-ins.</p>
<p>Marriott International (US)</p> 	<p>Owned by: Marriott International</p>	<p>Deployed in: Worldwide</p>	<p>Marriott International developed the Bonvoy app that allows guests to check in online and use the app as a mobile key to access the room (in some locations), communicate with hotel representatives, and control amenities remotely.</p>

⁴ <https://hotelnewsnow.com/Articles/298997/Poll-Hotel-industry-graded-average-or-below-in-AI-use>

⁵ <https://www.nor1.com/artificial-intelligence-and-revenue-impact>

Travelio (ID)

Founded by: Christie Amanda, Christina Suriadjaja, Hendry Rusli.

Investors: Pavilion Capital, Vynn Capital, Gobi Partners, Samsung Ventures

Deployed in: Indonesia

Travelio, a platform to help tenants rent apartments, implemented smart locks to decrease contact with among staff.

CONTACTLESS AIRPORT CHECK-IN AND BAGGAGE DROP-OFF SERVICES

In the post-pandemic world, heightened standards on health and safety will drive decisions in the travel industry. The use of contactless technology is expected to grow, as this can reduce transmission rates. Many stakeholders in the aviation, hospitality and other tourism-related sectors will likely push for “contactless” travel.

With the rise of contactless travel, biometric facial recognition technology will play a crucial role in verifying an individual’s identity and bookings. The biometrics industry includes products and services for fingerprint recognition, iris recognition, voice recognition, and palm & vein recognition. Currently, most airports are still relying on an automated fingerprint identification system (AFIS), an outdated biometric identifier technology that uses contact for identifying an individual. However, with the emergence of various infectious diseases, more airports will opt for an alternative identification system that enables contactless identifications. One of such solutions is Hanwang Technology, developed by a Beijing-based facial recognition solution company, which can identify an individual even if they are wearing a mask. On the whole, biometric technologies like facial recognition are cost-effective and faster for checking passengers into their flights. AirAsia rolled out a programme called the Fast Airport Clearance Experience System (FACES) which uses facial recognition technology to board passengers. According to Forrester, this technology reduced the number of employees needed for AirAsia.

Demonstrating the recent uptick in investor interest in contactless biometrics, funding for voice, face, and iris recognition startups in 2020 was over US\$500 million. The biometric industry is poised for high growth over the next few years. In 2020, Grandview Research estimated the size of the global contactless biometric industry to be US\$8.25 billion. By 2027, the market is expected to grow to over US\$30 billion. Part of the reason why the industry is expected to grow so rapidly is that biometrics can be used in many industries. The expansion will be catalysed by necessity in travel, but there are many use cases in other industries. For example, biometric technology in banking has begun to take off. Recently, NatWest has implemented biometric fingerprint and facial recognition via selfie for credit card and debit card authentication. Contactless biometrics can also be used in healthcare as well. For example, in a hospital setting, easy access to a patient’s health information is needed. Furthermore, this information is highly confidential. Contactless biometrics implemented in this setting would ensure privacy while reducing manual processes for providers to access health data and medical history. While contactless biometrics is an immediately attractive opportunity for use in airports, these companies will eventually be able to provide their software in various industries.

Another solution to provide safe and contactless baggage check-in and drop-off services is from DUBZ, a UAE-based startup founded in 2016, which has developed a home check-in service that provides baggage disinfection. UK-based BotsandUs also developed other solution that reduces human contact during a travel journey. In particular, BotsandUs provides autonomous robots for in-terminal customer service that interact with passengers in multiple different languages using the latest technology to answer thousands of inquiries, including real-time flight updates. BotsandUs partnered with London Heathrow Airport to trial the autonomous robots.

Hanwang Technology (CN)



Founded by: Liu Yingjian in 1998.

Deployed in: China, United States, and 19 other countries across the world

Hanwang Technology Co., Ltd. is the pioneer in character recognition technology and intelligent interactive products. Developed a facial recognition system that can identify even when people are wearing masks, deployed by China's Ministry of Public Security, police, and roughly 200 other clients in Beijing.

Invested CNY 140 million into 23Mofang during its series B round in 2018. It was founded in 2015 by Zhou Kun to provide genetic testing service for Chinese people and conducts life data analysis business.

Hanwang Technology is registered under the ticker SZSE:002362.

DUBZ (UAE)



Founded by:
1. Omar Abou Faraj
2. Mustafe Maghraby
3. Samer Sobh
In 2016

Deployed in: Dubai

DUBZ offers baggage storage and delivery services when customers arrive in Dubai or departing from Dubai and assists customers with baggage check-in and boarding pass collection.

Acquired by Dubai National Air Transport Association (Dnata), an airport services provider in 2018

Launched home COVID-19 PCR test for its customers in July 2020, test is done by their medical partner.

BotsAndUs (UK)



Founded by:
1. Adrian Negoita
2. Andrei Danescu
3. Oana Andreea Jinga
In 2015

Trial in: Heathrow Terminal 5

Customer experienced robot for in-terminal passenger assistance, such as taking passengers to preferred location

British Airways' investment in airport automation.

One of its products, Bo is now on trial in Heathrow Terminal 5 with British Airways to assist traveller's in navigating through the terminal.



HEALTHCARE AND INSURANCE TECHNOLOGY

Amid the pandemic, more consumers observed the benefits of healthcare technology, and demand for tools to access healthcare remotely is expected to increase henceforward. Israel-based Air Doctor offers the simple solution of finding local doctors and scheduling appointments while abroad. NCOVI is a mobile application founded in Vietnam for locals to complete health declarations online to keep track of the public's medical conditions. Contact tracing and recommendations on methods to prevent the virus will also be communicated to the public through the app.

In the era of COVID-19, with travel being disrupted, many travellers faced financial loss, which subsequently made them realise the importance of possessing an insurance policy that protects their interest in the unforeseeable future. France-based Koala is reinventing travel insurance by compensating for flight disruptions, which could especially benefit business travellers and help travellers maintain confidence in uncertain times.

Before the pandemic, the number of the uninsured population continued to increase in 2019, according to data from the Centers for Disease Control and Prevention (CDC). Overall growth for global insurance policies was approximately three percent since 2008. This pandemic has increased the demand for insurance products that could either protect or benefit the traveller's journeys, including travel insurance, home care coverage, medical insurance, life insurance, etc. Although the insurance industry landscape was highly dominated by a few players, such as Zurich, and Allianz, insurtech companies are redesigning the conventional and complicated industry with technology innovations.

Venture investors have recognised the scale of the opportunity, hence are scaling up investments in this area. According to Statista, US\$2.2 billion of funding are heavily invested in InsurTech solution providers during the first half of 2019, and US\$11.6 billion was raised by insurtech companies over the last five years. Grand View Research (2019) estimated that the global insurtech market revenue is valued at US\$5.48 billion in 2019 and is projected to witness a CAGR of 43% from 2019 to 2025. This percentage is likely to increase due to the pandemic being a catalyst for the steep rise of demand for insurance products and digitised solutions.

<p>NCOVI (VN)</p> 	<p>Developed and owned by: the Ministry of Health and the Ministry of Information and Communications</p>	<p>Deployed in: Vietnam</p>	<p>A mobile application to assist the Vietnamese to make voluntary medical declarations, contributing to the prevention and fight against COVID-19.</p> <p>An official channel for the state agencies to send recommendations to people about the disease situation.</p>
<p>Koala (France)</p> 	<p>Founded by: Léo Tordjman and Ugo Weyl</p>	<p>Deployed in: European Union, The United Kingdom</p>	<p>An insurtech startup currently focused on flight disruption insurance. Expanding to luggage and missed connection insurance.</p> <p>Provides instant compensation for flight delays and cancellations. It is sold directly inside the purchase funnel among other insurances or additional services.</p>

PRACTICING FLEXIBILITY WITH PERSONALISED TRAVEL

The trend of personalisation in travel tech will have a renewed meaning. Recently, Journera, a startup focused on creating a seamless journey, raised US\$11.6 million. Journera provides a solution to match hotel reservations to air, ground, or other relevant reservations to drive better personalisation. When its users face flight disruption, Journera will automatically help its users rebook reservations in the travel destination, notify hoteliers to get the room ready before the customer arrives, and deliver bags straight to the hotel room, so users do not have to wait at the carousel. Interestingly, instead of compensating for travel disruptions, Pilota leverages artificial intelligence (AI) and machine learning to predict flight disruptions and automatically rebook travellers' flights.

Another startup that focuses on personalised travel experience is Malaysia-born Igotopia. Igotopia will offer a personalised online travel agency platform Igoroom. Igoroom will be powered by VR tours, allowing users to access customised luxury travel experiences in resorts and hotels across the world. Remarkably, users will be able to explore locations through aerial, indoor, and underwater VR and choose the most suitable options with the help of interactive comparisons of hospitality properties using VR360 tours. According to the CEO and Founder of Igotopia, James South, Igoroom will be the world's first online luxury travel agent powered by virtual reality and artificial intelligence.

AI helps analyse large amounts of data and improve advertisement creation, competitor analysis, and optimise rankings based on learning from the algorithm, and most importantly, attract the right potential loyal customers. In the service sector, airlines and hospitality providers could leverage big data to understand customer expectations, tailor recommendations, and provide seamless after-purchase services to the customer. The top 5 global investors in AI technologies are Intel Capital, 500 Startups, NEA, Y Combinator, and Battery Ventures. Although there is insufficient data surrounding global AI market size in the T&T industry, it was valued at US\$39.9 billion in 2019 globally and is expected to grow at a compound annual growth rate (CAGR) of 42.2% from 2020 to 2027, based on a report by Grandview Research (2020). IDC forecasts that AI software will be the largest and fastest-growing technology category, taking up to 40% of all AI spending. Besides that T&T industry, AI and big data technologies could be deployed in many other industries.

Pilota (US)



Founded by:
Cyrus Ghazanfar,
Kulvinder Lotay,
Omer Winrauke, and
Saniya Shah

Deployed in:
United States

An extension in Google Chrome. Leverages on machine learning and AI to predict flight disruptions and automatically rebook travellers' flights ahead of time.

Launched FlySafe product during the COVID-19 pandemic to add transparency to health and safety standards of flight, i.e. capacity cap, cabin sanitisation, seat blocking, etc.

Journera (US)



Founded by:
BCG (a top business consulting firm) and Jeffrey G. Katz

Deployed in:
Chicago, Illinois

A travel technology company that provides Global Experience Record (GXR) to allow the travelling companies to connect and share their data to create better experience, personalisation and seamless end-to-end travel across airlines, hotels, ground transportation and restaurants. For example, automatically rebooking car reservation due to flight cancellation and delivering your bags/luggage straight to your hotel.

Igotopia



Founded by:
James South

Deployed in: Malaysia (expected)

Igotopia has developed the world's first online travel agent powered by VR and AI, which will provide exclusive 360-degree and virtual reality content to its users.




DIGITAL TRAVEL PASS

During times of uncertainty, solutions to revive the tourism industry have been proposed by several organisations. Recently, a new term has entered the vocabulary: a COVID-19 passport, digital health passport, or vaccine passport. A vaccine passport is a mobile app that verifies a person's immunity against COVID-19 based on vaccination or negative test results. Start-ups, non-profits, and governments have rolled out several kinds of vaccine passports with an aim to enable travelling and grant access to events or spaces.

Airlines have supported a number of digital health solutions, including IATA Travel Pass and CommonPass. International Air Travel Association (IATA) is one of the several organisations, which has launched a vaccination passport for cross-border travel, IATA Travel Pass, to help travellers easily engage and manage their travel in line with the local government requirements for COVID-19 testing or vaccine information. Over 30 airlines have signed for trials of the IATA travel pass, including Swiss, Qatar Airways, Emirates, and EL AL. In addition to IATA, the Commons Project Foundation, together with the World Economic Forum, have been testing a digital health passport CommonPass for travellers to document their COVID-19 lab results and vaccination records to satisfy country entry requirements while protecting their health data privacy. The first trials of CommonPass have already been completed by United Airlines, Lufthansa, Virgin Atlantic, Swiss International Air Lines, and JetBlue.

Beyond air travel, vaccine passports are also being used to resume normal everyday activities in some countries. In Israel, a vaccination passport Green Pass enables individuals to access public locations, while in Saudi Arabia a digital health app grants entrance to the holy sites of Mecca. Another prominent player in this space is a Singapore-headquartered blockchain startup Affinidi that provides a digital verification of COVID-19 swab results, health credentials, and is used in travel, financial, and recruitment sectors.



On the one hand, a coordinated digital health passport system offers a ticket to normal life; on the other hand, it faces logistical and ethical conflicts. The solution spurs the ongoing debate over privacy and resistance to sharing private data. As of May, 31, 2021, over 10 U.S. states have banned businesses and entities from requiring vaccine passports. Another challenge for vaccination passports is changing regulations within geographies which prevents the technology from being seamlessly recognised across different institutions and borders. With an aim to provide cross-border interoperability, the World Health Organisation have been working on establishing key specifications, standards, trust framework for a digital vaccination certificate to facilitate implementation of effective and interoperable digital solutions that support COVID-19 vaccine delivery and monitoring the proposal of Smart Vaccination Certificate, in which they are currently scouting for experts to contribute the programme.

<p>International Certificates of Vaccination (ICV)</p>	<p>Issued by: World Health Organisation</p>	<p>Considered but solutions are not in effect: The United Kingdom, Estonia, Italy, and Chile</p>	<p>An internationally recognised certificate that may be required for entry to certain countries where there are increased health risks for travellers.</p>
<p>IATA Travel Pass</p> 	<p>Proposed by: International Air Travel Association (IATA)</p>	<p>IATA Travel Pass successfully trialed from Singapore Changi Airport to London Heathrow Airport. Over 30 airlines will be deploying IATA Travel Pass across continents.</p>	<p>A mobile app to help travellers easily engage and manage their travel in line with the local government requirements for COVID-19 testing or vaccine information.</p>
<p>CommonPass</p> 	<p>Issued by: The World Economic Forum</p>	<p>As part of the Common Trust Network by the World Economic Forum</p>	<p>A trusted and interoperable platform for people to document their COVID-19 status (health declarations/ PCR tests/vaccinations) to satisfy country entry requirements, while protecting data privacy</p>
<p>Affinidi</p> 	<p>Founded by: Temasek</p>	<p>Deployed in: Singapore</p>	<p>Affinidi allows trusted institutions and entities to issue verifiable credentials to users which can be in turn shared to enable access to services, including travel, financial services, and recruitment.</p>

DATA SAFETY AND SECURITY

Players in the biometric-enabled sector could also implement blockchain to enable secure and seamless cross-border travel experience for travellers. For example, in order to securely share and transmit passenger's biometric data, UK-based Zamna, founded in 2016, uses blockchain technologies to secure transmission between airlines, governments and security authorities. With biometric data, government authorities could also efficiently identify everyone who had received a COVID-19 vaccine. The World Economic Forum proposed the idea of "The Known Travellers Digital Identity (KTDI)" in 2020 to leverage blockchain to decentralise identity based on a government-issued verifiable identity data and stimulate global acceptance of travel.

According to Market Research Future (2020), the global blockchain technology in the data security market was estimated at US\$178.37 million in 2020, and this segment is projected to be worth US\$1.57 billion by the end of 2023 at a CAGR of 43.73%.⁶ World-leading data-centric companies such as Facebook, Apple, Microsoft, etc., have the advantage and benefit from connecting the right data and algorithms to gain revenue from businesses and non-data intelligent organisations. With organisations profiting from data and consumer insights, the need for data privacy is significantly increasing, where blockchain technologies could provide server and cloud-based companies with an alternative solution in securing user data. Key players in the global blockchain data security market are IBM (US), SAP (Germany), Oracle (US), and Microsoft (US), which represent four out of nine companies located in the USA. Although the USA is expected to dominate the blockchain security market in the near future, Asia Pacific is seen to be more competitive with the highest CAGR during the forecast period.

<p>Zamna (UK)</p> 	<p>Founded by: Alexander Gorelik and Irra Arriella Khi</p>	<p>Deployed in: London, The United Kingdom</p>	<p>It is a blockchain-powered data verification platform for airlines. Zamna enables airlines and travel authorities to verify a passengers' identity prior to arriving at the airport, this positively leads to better passenger experience and security. Regarding passenger data, Zamna will not share it with third parties in any form. The technology reduces airlines' data management costs and reduces the need for manual checking.</p>
<p>The Known Travellers Digital Identity (KTDI)</p> 	<p>Initiated by: World Economic Forum</p>	<p>Development by: WEF, the Governments of the The Netherlands and Canada, KLM Royal Dutch Airlines, and others</p>	<p>Aims to leverage advances in emerging technologies, such as blockchain and decentralised key management systems, to simultaneously enhance the security capabilities in the travel continuum while improving the passenger experience.</p>


⁶ <https://www.marketresearchfuture.com/reports/blockchain-in-security-market-7198>

FINTECH SOLUTIONS TAILORED TO BUSINESS TRAVEL

In addition, contactless payment is desired by travellers, as well. In a survey of 1,260 business travellers conducted by global corporate travel management company BCD Travel, 67% said that contactless payment systems were extremely important. This strong preference will favour merchants that accept mobile wallets or enable a mobile-based shopping experience in airports. In order to stimulate business travels, Divvy is an expense management software that helps corporations create travel budgets, and cards and provides real-time transaction tracking. However, it would be an add-on if the company could include COVID health-related costs to help accurately estimate travel budgets and by introducing a membership wallet for corporations to earn loyalty programmes, basic travel coverages, and concierge services. AIG Travel Guard offers a travel insurance policy that provides personalised business travellers insurance to business jet setters. Furthermore, AIG Travel Guard also provides 24-hour travel medical assistance, with doctor referrals and medical evacuations.

Today, the contactless payments industry is estimated to be valued at roughly US\$10.3 billion. In an effort to combat the pandemic, countries have increased contactless payment transaction limits significantly, presenting a strong tailwind for the contactless payments industry. Even countries that historically favoured cash payments are increasing adoption of contactless payments. According to Forbes, “The global contactless payments market size is expected to go from US\$10.3 billion in 2020 to US\$18 billion in the next five years, which corresponds to an 11.7% compound annual growth rate (CAGR)”.

Divvy Travel (US)	Powered by: TripActions (a corporate travel management company)	Deployed in: Lehi, UT, United States	A combination of Divvy expense management platform and TripActions corporate travel technology and service experience. Divvy Travel helps corporations create budget business travel. It enables automated and integrated expenses processes that track travel spending in real-time, reports on budget at the point of purchase.
	Developed by: Alex Bean and Blake Murray		
	Owned by: Divvy		

AIG Travel Guard (US)	Developed and owned by: AIG, Inc.	Deployed in: United States	Travel Guard is under AIG’s portfolio of travel insurance and travel-related services including medical and security services, available for both leisure and business travel.
			

While the pandemic has certainly had dramatic adverse effects on international tourism worldwide, travel and tourism remain growth markets, and the pandemic has created massive opportunities for value creation as the travel industry adapts to the new environment. We have identified a few areas of growth for investors and a few solutions to build resilience for the T&T industry. There are noteworthy opportunities in solutions in the areas of contactless travel, disinfection, consumer tools for travel disruption, customer retention solutions for travel companies, and crowd analytics.

While the pace of Mergers & Acquisitions (M&A) in the travel industry has slowed understandably due to the pandemic, there will likely be consolidation in the industry as smaller companies are forced to sell. This presents an investment opportunity for well-capitalised investors, especially for target companies in the travel technology industry. Naturally, as the travel industry recovers, travel and tourism companies with healthy balance sheets are also likely to consider M&A opportunistically in travel tech to diversify product and services offerings.

The pandemic has optimised the use of AI and big data. Initially, the sudden spike of demand in AI and big data technologies was supposed to provide mass contact tracing solutions, deployment of disinfection robots, big data-powered crowd maps, contactless check ins and outs. However, due to the speedy adaptation of AI, big data, and robotics, travel industries players in the hospitality and aviation sectors are looking forward to implementing solutions that are integrated by AI, big data, and robotics, not only to ensure contactless travel but also to empower a seamless travel experience to its customers.

KEY TAKEAWAYS: MARKET OPPORTUNITIES FOR THE TECHNOLOGY SOLUTIONS PROPOSED ABOVE

Real-Time Contact Tracing

- The contact tracing application market was valued at US\$147 million in 2020. This market will grow at 15% CAGR through 2030.
- Existing opportunities to re-position current business model:
Re-purposing of sports and fitness tracker/sensors: to help local authorities ensure contact tracing by providing solutions to replace manual and repetitive scanning of QR codes (sensors placed at QR code and automatically check in without having to scan constantly).
- The future prospect of contact tracing fitness tracker/sensors: Global Smart Sport Accessories market size is currently US\$40.48 million in 2020 and is set to grow at a CAGR of 14.4% during 2021-2026 (increasing health consciousness led to the growing demand for tools to ensure a healthy lifestyle).

Disinfectant Technology

- The global antiseptics and disinfectants market size was valued at US\$16.75 billion in 2018 and is expected to expand at a CAGR of 6.7% through 2026.
- The Global Surface Disinfectant Market is forecasted to reach US\$1.53 billion by 2027.
- 8% increase in revenue growth rate, and at least 40% increase in market value of disinfectant solutions from 2019 to 2020.

Crowd Measurement & Analytic/Solutions to ensure social distancing

- From tracking temperatures to ensuring people follow COVID-19 standard operating procedures manually, AI and big data technologies have enabled effective and convenient solutions to prevent infections, which in other words is to ensure public safety with mass surveillance.
- Security and surveillance are required for all organisations worldwide. The security solutions market was valued at US\$257.9 billion in 2019 and is projected to reach US\$397.6 billion by 2024; it is expected to grow at a CAGR of 9.0% during 2019-2024.

Contactless Hospitality Service

- Implementation of AI in hotel premises could eliminate 73% of manual activities, subsequently reducing 15% of hotel operation cost, meaning at least 10% increase in profit margin, US\$60 billion increase in global hotel revenue.
- Currently, the hotel industries are lagging behind other industries in the implementation of AI and machine learning.

Contactless Airport Check-in

- The biometrics industry includes products and services for fingerprint recognition, iris recognition, voice recognition, and palm & vein recognition.
- Currently the majority of airports are still relying on automated fingerprint identification systems (AFIS).
- Due to an increased demand for contactless solutions, funding for voice, face, and iris recognition startups in 2020 during the pandemic was over US\$500 million.
- In 2020, Grandview Research estimated the size of the global contactless biometric industry to be US\$8.25 billion. By 2027, the market is expected to grow to over US\$30 billion.

Healthcare and Insurance Tech

- Overall growth for global insurance policies was approximately 3% since 2008, stable growth until COVID-19 happened.
- US\$2.2 billion of funding are heavily invested in InsurTech solution providers during the first half of 2019 and US\$11.6 billion was raised by InsurTech companies over the last five years.
- Global insurtech market revenue was valued at US\$5.48 billion in 2019 and is projected to witness a CAGR of 43% from 2019 to 2025.

Practicing Flexibility with Personalised Travel

- Top 5 global investors in AI technologies are Intel Capital, 500 Startups, NEA, Y Combinator and Battery Ventures.
- Global AI market size was valued at US\$39.9 billion in 2019 and is expected to grow at a compound annual growth rate (CAGR) of 42.2% from 2020 to 2027.
- AI software will be the largest and fastest growing technology category.

Immunity passport providers and verification

- Individuals are allowed to travel freely if presented with this certificate.
- Considered but solutions are not in effect: UK, Estonia, Italy and Chile.

Data Safety and Security

- The global blockchain technology in the data security market was estimated at US\$178.37 million in 2020 and is projected to be worth US\$1.57 billion by the end of 2023 at a CAGR of 43.73%.
- Key players in the global blockchain data security market are IBM (US), SAP (Germany), Oracle (US), and Microsoft (US), which contributed to four out of nine companies located in the USA.
- Asia Pacific is seen to be more competitive with the highest CAGR during the forecast period.

Fintech solutions tailored to Business travel

- The contactless payments industry is roughly US\$10.3 billion.
- The global contactless payments market size is expected to go from US\$10.3 billion in 2020 to US\$18 billion in the next five years, which corresponds to an 11.7% compound annual growth rate (CAGR).

CHAPTER VI: REFRAMING TRAVEL AND TOURISM COMPETITIVENESS INDEX

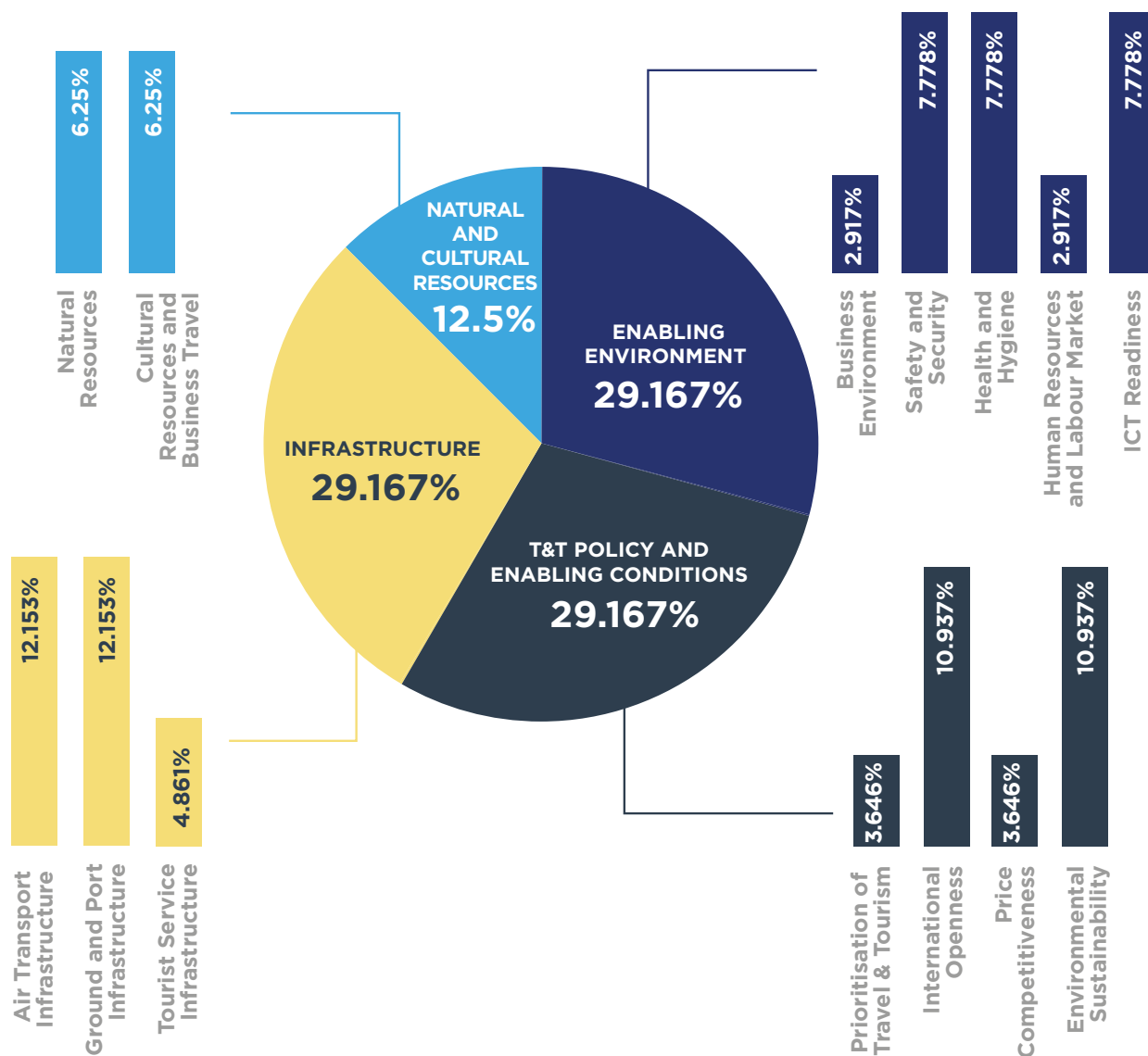
METHODOLOGY ON NEW SCORING

Seamless framework for travellers’ journeys was mapped out above. In this part of the report, countries could anticipate the latest TTCI as a benchmark to position themselves in a more competitive ranking in post-COVID travel scenario.

The TTCI Index was produced by the **World Economic Forum** for 140 economies to benchmark and measure its overall country’s competitiveness in the travel and tourism context since 2007. The latest TTCI report was published in 2019, which consisted of four sub-indexes, 14 pillars and 90 indicators, with weightings equally distributed among all indicators.

However, in order to better cater the current situation, a revised version of the TTCI will be presented below so that policymakers or government authorities from countries that represent 98% of global T&T GDP in the world could deploy this as a benchmark in enabling countries into developing a more sustainable and competitive post-COVID travel and tourism environment globally. In this report, TTCI comprises 4 sub-indexes with 14 pillars, which weightings are altered to better reflect the post-COVID environment.

FIGURE 5: ADJUSTED TRAVEL AND TOURISM COMPETITIVENESS INDEX METHODOLOGY



Note: the term ‘country’ refers to country and/or territory.

ASSUMPTIONS ON FOUR SUB-INDEXES IN TRAVEL AND TOURISM COMPETITIVENESS INDEX:

1. Enabling Environment:

Weightings to 3 of the pillars, “Safety and Security”, “Health and Hygiene”, and “ICT Readiness”, have been increased as we consider these to be key factors in addressing the possibility of the world in re-routing mobility. According to a report published by Tripadvisor (May 2019), COVID-19 White Paper, more than 80% of the consumer would pay extra attention towards “Health and Hygiene” and “Safety and Security” when selecting a destination in the post-COVID situation. Digital adoption has accelerated globally throughout this pandemic. ICT Readiness would be crucial in the post-COVID travel scenario, due to the perception of safety and convenience which is consistent with research papers from SCMP Research (2020), Pomona (2020), Deloitte (2020).

2. T&T Policy and Enabling Condition:

In order for the T&T industry to fully recover, reopening of international borders will be one word with the growth of tourism. Therefore, International Openness is vital to boost tourism and its sub-sectors. A few surveys carried out by independent researchers from McKinsey (2020), HSBC (2020) and BCG (2020) have shown evidence on increasing consumer engagement in environmental sustainability issues after the outbreak. Although Environmental Sustainability has always been a global issue, however the issue was not prioritised due to human’s overwhelming lifestyle. This pandemic has made more people realise the importance of prioritising Environmental Sustainability, an issue that will be more relevant in the post-COVID era. The portion of weightings in International Openness and Environmental Sustainability are enlarged.

3. Infrastructure

Air Transport Infrastructure is essential for outbound tourism, Ground and Port Infrastructure measures the accessibility and connectivity to local economies. As highlighted by Soshkin (2020) from the World Economic Forum, air, ground and port infrastructure development is positively correlated to the capacity to handle tourism growth. Travellers’ preference towards seamless travel experience would be significant, and countries should be investing in both of the pillars to encourage tourism and to stimulate local economies.

4. Natural and Cultural Resources

Although Natural and Cultural Resources would play a vital role when travellers are deciding on the destination, weightings in this pillar is lowered due to the post pandemic situation where consumer’s awareness towards certain pillars have increased.

COMPARISON OF 2019 TRAVEL AND TOURISM COMPETITIVENESS INDEX AND ADJUSTED EDITION

2019 TTCI weightings on four sub-indexes are all equally weighted which could not reflect its competitiveness given the current situation where travellers are in higher demand of certain pillars such as 'Health and Hygiene', 'International Openness' and etc. Another reason why we reassessed the weightings is that many countries are still in doubt whether to loosen their borders' control, which would greatly influence the degree to which a traveller could access travel destinations. Approximately 35% of the scoring was put to focus on countries' accessibility. Countries' accessibility will be routed back to its ability to control the outbreak internally before opening up to other travellers. Countries' accessibility reflects the quarantine requirement, health measure requirement, and tourist facilities. The accessibility will increase if the country is able to provide safe, hygienic, and hassle-free travel. With that, high countries' accessibility will help in the recovery of the fourth industry.

For the comparison sub-regional analysis, no significant changes were seen, the overall scoring have therefore increased in which every sub-region increased its competitiveness over time. The greatest changes were seen in the 'T&T Policy Enabling Conditions', as the 2019 Top 5 sub-regions were Western Europe, Northern Europe, Southern Europe, South-East Asia, and Eastern Asia and Pacific. However, in this report, the Top 5 sub-regions in the adjusted edition for 'T&T Policy and Enabling Condition' sub-index were Southern Europe, Eastern Asia, Western Europe, North and Central America and South-East Asia.

TABLE 2: TOP 15 SUB-REGIONS IN 2019 ADJUSTED TTCI COMPETITIVENESS INDEX

ADJUSTED TTCI COMPETITIVENESS SUB-REGION WORLD RANKING		
	1	Western Europe 0.72
	2	Eastern Asia and Pacific 0.69
	3	Southern Europe 0.68
	4	Northern Europe 0.67
	5	South-East Asia 0.60
	6	North and Central America 0.58
	7	South America 0.55
	8	Balcans and Eastern Europe 0.57
	9	Eurasia 0.56
	10	Middle East 0.56
	11	North Africa 0.54
	12	South Asia 0.52
	13	Southern Africa 0.48
	14	Eastern Africa 0.48
	15	Western Africa 0.43

- Europe*
- Asia Pacific*
- US*
- Africa*

TABLE 3: TOP 15 COUNTRIES IN ADJUSTED TRAVEL AND TOURISM COMPETITIVENESS INDEX

Adjusted TTCI		Score	Changes compared to the 2019 TTCI Index
1	Japan	0.81	3
2	Germany	0.80	1
3	Spain	0.79	-2
4	Hong Kong SAR	0.79	10
5	France	0.79	-3
6	Singapore	0.79	11
7	Switzerland	0.79	3
8	United States	0.77	-3
9	United Kingdom	0.77	-3
10	Netherlands	0.77	5
11	Australia	0.76	-4
12	Austria	0.75	-1
13	Canada	0.74	-4
14	Korea (ROK)	0.74	2
15	New Zealand	0.74	3

Although Spain was the top performer for the third consecutive report, the top adjusted 2019 TTCI score goes to Japan. Spain's competitiveness score did not decline; its competitiveness in some sub-indexes has in fact increased, however it was due to other countries improvement in competitiveness hence ranking Spain 3rd in place. The top 10 for the adjusted 2019 TTCI are, from highest to lowest score, Japan, Germany, Spain, Hong Kong SAR, France, Singapore, Switzerland, the United States, the The United Kingdom and the The Netherlands. Among the top ten scorers, it was the first time for Hong Kong SAR (14th to 4th) and the The Netherlands (15th to 10th) to make into the top 10 performer list.

The overall results show that all regions have improved in the TTCI scoring, with Northern Europe as the most improved sub-region in 2019. The top 5 most competitive performer sub-regions are from highest to lowest, Western Europe, Eastern Asia and Pacific, Southern Europe, Northern Europe and South-East Asia, based on Table 2.

Country coverage exceptions include Barbados, Belize, Bhutan, Gabon, Guyana, Libya, Madagascar, Myanmar, Puerto Rico, Suriname, Syria, Timor-Leste and Togo due to insufficient data.

The report features Regional Dashboard and Analysis for five different regions: the Americas, Asia Pacific, Europe and Eurasia, Middle East and North Africa, and Sub-Saharan Africa. These provide insight into the regional performance against the 14 pillars which we have adjusted to adapt to the pandemic.

The scoring system ranges from 1 to 7 in the 2019 TTCI report. However, it has been changed to percentage form (100%) in this report for ease of presentation. For Infrastructure, Enabling Environment and T&T Policy and Enabling Conditions sub-indexes, the maximum score that a country would receive from reach sub-index is 29.167% each, while a country's highest score for Natural and Cultural Resources sub-index in 12.5%.

IMPACT OF COVID-19 ON COUNTRIES WITH THE HIGHEST RANKING IN THE ADJUSTED TTCI INDEX

The top 10 countries in the adjusted TTCI index have all experienced the fourth wave of COVID-19 pandemic as of December 2021, even though they have the advantage in high TTCI ranking. Seven of the Top 10 countries have experienced the fourth wave outbreak, namely, Hong Kong SAR (in November 2020), The United Kingdom (in July 2021), Spain (in July 2021), Singapore (in September 2021), United States (in September 2021), The Netherlands (in November 2021), and Germany (in November 2021). Three of the Top 10 countries recorded the fifth outbreak, namely, Japan (in September 2021), France (in November 2021) and Switzerland (in November 2021).

Countries with higher scoring for Enabling Environment and Infrastructure sub-indexes such as Hong Kong SAR, Austria, Japan, and Singapore are gaining an advantage in recovering their tourism economy fast, but they are also exposed to higher risk as the good infrastructures are likely to facilitate massive travel activities and indirectly increase the spread of COVID-19. Meanwhile, these countries are the transit hubs where the passengers and cargos are frequently exchanged between vehicles or fleets. With the advanced public transit system, a high volume of public transport users is another risk factor, especially in Japan and Singapore.

Cambodia, and countries in Africa region have a lower ranking in Enabling Environment and Infrastructure sub-index; however, they controlled the outbreak relatively well compared to the US and the UK. When the first COVID-19 case was confirmed in Cambodia, the government ordered to stop the schools and entertainment venues to avoid large-scale activities. In the Africa region, the government implemented strict health measures and closed schools to slow the spread of COVID-19; the public showed support by following health and social measures. In short, quick actions in responding to the outbreak, drastic health measures, and public support are the keys to control the pandemic.



CONCLUSION

Given the forecast growth in the T&T in the coming decade, although both developing and developed economies have advanced in competitiveness, the higher the ranking, countries tend to face subsequent outbreaks due to overconfidence in controlling the widely contagious spread of COVID-19, relaxing of social distancing rules, rush to open up the economy too soon without having a constructive plan for the worst case scenario. Even with comprehensive health and hygiene infrastructure or reliable air, road, port, and T&T infrastructure, there are many developed economies that may not adequately anticipate the impact that COVID-19 has brought. As a result, many destinations are still ill-prepared to deal with foreigners or even locals who are looking to cross borders to return.

TABLE 4: ADJUSTED TTCI COUNTRY RANKINGS, CHANGES COMPARED TO THE 2019 TTCI INDEX

	Adjusted TTCI	Score	Changes compared to the 2019 TTCI Index
1	Japan	0.81	3
2	Germany	0.80	1
3	Spain	0.79	-2
4	Hong Kong SAR	0.79	10
5	France	0.79	-3
6	Singapore	0.79	11
7	Switzerland	0.79	3
8	United States	0.77	-3
9	The United Kingdom	0.77	-3
10	The Netherlands	0.77	5
11	Australia	0.76	-4
12	Austria	0.75	-1
13	Canada	0.74	-4
14	Korea (ROK)	0.74	2
15	New Zealand	0.74	3
16	Italy	0.73	-8
17	Portugal	0.73	-5
18	Denmark	0.73	3
19	Norway	0.73	1
20	Iceland	0.72	10
21	Finland	0.72	7
22	Luxembourg	0.72	1
23	Sweden	0.71	-1
24	Ireland	0.71	2
25	Malta	0.71	10
26	Belgium	0.71	-2
27	Greece	0.70	-2
28	Malaysia	0.70	1
29	China	0.70	-16
30	United Arab Emirates	0.69	3
31	Chinese Taipei	0.68	6
32	Czech Republic	0.68	6
33	Cyprus	0.68	11
34	Slovenia	0.67	2

	Adjusted TTCI	Score	Changes compared to the 2019 TTCI Index
35	Croatia	0.67	-8
36	Estonia	0.66	10
37	Hungary	0.66	11
38	Indonesia	0.66	2
39	Qatar	0.66	12
40	Mexico	0.66	-21
41	Thailand	0.66	-10
42	Mauritius	0.65	12
43	Panama	0.65	4
44	Poland	0.65	-2
45	India	0.65	-11
46	Latvia	0.65	7
47	Russian Federation	0.64	-8
48	Costa Rica	0.64	-7
49	Turkey	0.64	-6
50	Lithuania	0.63	9
51	Seychelles	0.63	11
52	Bahrain	0.63	12
53	Chile	0.63	-1
54	Oman	0.63	4
55	Israel	0.63	2
56	Bulgaria	0.62	-11
57	Slovakia	0.62	3
58	Azerbaijan	0.61	13
59	Jamaica	0.61	17
60	Morocco	0.60	6
61	Brazil	0.60	-29
62	Romania	0.60	-6
63	Georgia	0.60	5
64	Argentina	0.60	-14
65	Brunei Darussalam	0.59	7
66	Dominican Republic	0.59	7
67	Saudi Arabia	0.59	2
68	Vietnam	0.59	-5

Adjusted TTCI		Score	Changes compared to the 2019 TTCI Index
69	Montenegro	0.59	-2
70	Peru	0.59	-21
71	Egypt	0.59	-6
72	Ecuador	0.59	-2
73	Sri Lanka	0.59	4
74	Uruguay	0.58	0
75	Colombia	0.58	-20
76	Ukraine	0.58	2
77	Jordan	0.57	7
78	Armenia	0.57	1
79	Trinidad and Tobago	0.57	7
80	Kazakhstan	0.57	0
81	South Africa	0.57	-20
82	Philippines	0.57	-7
83	Serbia	0.56	0
84	Cabo Verde	0.56	3
85	Kenya	0.56	-3
86	Tunisia	0.55	-1
87	Namibia	0.55	-6
88	Nicaragua	0.55	3
89	Albania	0.55	0
90	Honduras	0.54	4
91	Iran (Islamic Republic of)	0.54	-3
92	Kuwait	0.53	4
93	Lebanon	0.53	7
94	Cambodia	0.53	4
95	Mongolia	0.53	-2
96	Lao PDR	0.52	1
97	Tanzania	0.52	-2
98	Republic of Moldova	0.52	5
99	Tajikistan	0.52	5
100	Gambia	0.52	11
101	Botswana	0.52	-9
102	El Salvador	0.52	6
103	Nepal	0.51	-1
104	Rwanda	0.51	3

Adjusted TTCI		Score	Changes compared to the 2019 TTCI Index
105	Guatemala	0.51	-6
106	Bolivia	0.51	-16
107	North Macedonia	0.51	-6
108	Paraguay	0.50	1
109	Bosnia and Herzegovina	0.50	-4
110	Kyrgyzstan	0.50	0
111	Senegal	0.49	-5
112	Bangladesh	0.49	8
113	Eswatini	0.49	5
114	Ghana	0.49	1
115	Algeria	0.49	1
116	Uganda	0.48	-4
117	Zimbabwe	0.47	-3
118	Zambia	0.47	-5
119	Pakistan	0.47	2
120	Lesotho	0.46	4
121	Ethiopia	0.46	1
122	Côte d'Ivoire	0.46	-3
123	Benin	0.45	0
124	Venezuela	0.45	-7
125	Sierra Leone	0.44	6
126	Mozambique	0.43	1
127	Malawi	0.43	-2
128	Haiti	0.43	5
129	Cameroon	0.42	-1
130	Guinea	0.42	-4
131	Mauritania	0.42	4
132	Mali	0.41	-2
133	Burkina Faso	0.41	-1
134	Nigeria	0.41	-5
135	Angola	0.40	-1
136	Liberia	0.40	2
137	Burundi	0.40	0
138	Chad	0.38	1
139	Congo (Democratic Republic of)	0.36	-3
140	Yemen	0.35	0

TTCI COMPETITIVENESS RANKING	A. ENABLING ENVIRONMENT (DECREASE ON BUSINESS ENVIRONMENT AND HUMAN RESOURCE LABOUR)	B. T&T POLICY AND ENABLING CONDITIONS	C. INFRA-STRUCTURES	D. NATURAL AND CULTURAL RESOURCES	T&T INDUSTRY SHARE OF GDP (% OF TOTAL GDP)	T&T INDUSTRY SHARE OF EMPLOYMENT (% OF TOTAL EMPLOYMENT)
1	Western Europe	Northern Europe	Southern Europe	Western Europe	Eastern Asia and Pacific	Southern Europe
2	Eastern Asia and Pacific	Western Europe	Eastern Asia and Pacific	Southern Europe	Southern Europe	South-East Asia
3	Southern Europe	Eastern Asia and Pacific	Western Europe	Eastern Asia and Pacific	Western Europe	North Africa
4	Northern Europe	Southern Europe	North and Central America	Northern Europe	South America	Eastern Africa
5	South-East Asia	Eurasia	South-East Asia	South-East Asia	South Asia	North and Central America
6	North and Central America	Balcans and Eastern Europe	Northern Europe	Middle East	South-East Asia	Western Africa
7	South America	Middle East	South America	North and Central America	North and Central America	Middle East
8	Balcans and Eastern Europe	South-East Asia	Balcans and Eastern Europe	Balcans and Eastern Europe	North Africa	South Asia
9	Eurasia	North Africa	Eurasia	South America	Northern Europe	Northern Europe
10	Middle East	North and Central America	North Africa	Eurasia	Southern Africa	Balcans and Eastern Europe
11	North Africa	South America	South Asia	North Africa	Balcans and Eastern Europe	South America
12	South Asia	South Asia	Southern Africa	South Asia	Eastern Africa	Western Europe
13	Southern Africa	Southern Africa	Middle East	Southern Africa	Eurasia	Southern Africa
14	Eastern Africa	Eastern Africa	Eastern Africa	Eastern Africa	Western Africa	Eurasia
15	Western Africa	Western Africa	Western Africa	Western Africa	Middle East	Eastern Asia and Pacific

A. ENABLING ENVIRONMENT (29.167%)			B. T&T POLICY AND ENABLING CONDITIONS (29.167%)		C. INFRASTRUCTURES (29.167%)		D. NATURAL AND CULTURAL RESOURCES (12.499%)	
1	Switzerland	26.33%	New Zealand	22.80%	Hong Kong SAR	27.52%	China	10.8094%
2	Hong Kong SAR	25.99%	Singapore	22.73%	Singapore	27.14%	France	10.4698%
3	Finland	25.98%	Indonesia	22.14%	The Netherlands	26.85%	Spain	10.2386%
4	Iceland	25.73%	Malta	21.59%	Switzerland	26.75%	Italy	10.1954%
5	Austria	25.61%	Iceland	21.47%	Germany	25.25%	Mexico	10.0505%
6	Luxembourg	25.47%	Jamaica	21.36%	Japan	24.95%	Brazil	10.0041%
7	Norway	25.44%	Cyprus	21.22%	The United Kingdom	24.93%	Japan	9.4835%
8	Germany	25.43%	Portugal	21.21%	France	24.75%	Germany	9.3965%
9	Japan	25.40%	Spain	21.08%	United States	24.20%	India	8.9638%
10	The Netherlands	25.25%	Australia	20.92%	Spain	24.01%	The United Kingdom	8.9280%
11	Denmark	25.06%	Costa Rica	20.88%	Canada	23.76%	Australia	8.8229%
12	Sweden	25.02%	Japan	20.82%	Denmark	23.68%	United States	8.6679%
13	Estonia	24.99%	Ireland	20.81%	Austria	23.16%	Canada	7.8497%
14	Singapore	24.92%	Greece	20.67%	United Arab Emirates	23.11%	Argentina	7.7181%
15	Korea (ROK)	24.85%	Mauritius	20.66%	Korea (ROK)	23.02%	Portugal	7.2309%
16	New Zealand	24.78%	Hong Kong SAR	20.49%	Sweden	22.92%	Peru	6.9538%
17	United Arab Emirates	24.63%	Dominican Republic	20.33%	Belgium	22.89%	South Africa	6.8883%
18	Czech Republic	24.62%	Malaysia	20.23%	Luxembourg	22.79%	Indonesia	6.8319%
19	Lithuania	24.53%	United States	20.21%	Finland	22.70%	Colombia	6.8050%
20	The United Kingdom	24.46%	Honduras	20.14%	Norway	22.62%	Russian Federation	6.7787%
21	Malta	24.36%	Panama	20.13%	Australia	21.73%	Thailand	6.6429%
22	Australia	24.33%	Switzerland	20.08%	Qatar	21.72%	Austria	6.5134%
23	France	24.25%	Thailand	20.05%	Chinese Taipei	21.48%	Croatia	6.4334%
24	Belgium	24.24%	Chile	19.99%	Ireland	21.44%	Korea (ROK)	6.4195%
25	United States	24.13%	Luxembourg	19.88%	Italy	21.36%	Greece	6.1134%
26	Spain	24.05%	Hungary	19.88%	Iceland	21.08%	Vietnam	6.0061%
27	Chinese Taipei	23.96%	Estonia	19.86%	Malta	21.06%	Turkey	5.8841%
28	Canada	23.95%	Austria	19.83%	Malaysia	20.91%	Costa Rica	5.7818%
29	Portugal	23.92%	Norway	19.83%	Bahrain	20.81%	Switzerland	5.7606%
30	Ireland	23.90%	Nicaragua	19.71%	Portugal	20.64%	New Zealand	5.6726%
31	Latvia	23.84%	Mexico	19.68%	Czech Republic	20.59%	Malaysia	5.6619%
32	Israel	23.70%	Peru	19.64%	New Zealand	20.52%	Belgium	5.5613%
33	Cyprus	23.64%	France	19.63%	Seychelles	20.38%	Egypt	5.5587%
34	Slovenia	23.62%	Korea (ROK)	19.56%	Greece	20.22%	Poland	5.5209%
35	Qatar	23.58%	Germany	19.52%	India	20.07%	Bolivia	5.4822%
36	Hungary	23.43%	Turkey	19.48%	Panama	19.61%	Venezuela	5.4804%
37	Poland	23.13%	Croatia	19.27%	Cyprus	19.34%	Sweden	5.4649%
38	Oman	23.12%	Finland	19.25%	Israel	19.27%	The Netherlands	5.4528%
39	Slovakia	23.11%	The Netherlands	19.17%	Mauritius	19.09%	Tanzania	5.3579%
40	Bahrain	23.10%	Slovenia	19.17%	Slovenia	19.02%	Hong Kong SAR	5.3405%

A. ENABLING ENVIRONMENT (29.167%)			B. T&T POLICY AND ENABLING CONDITIONS (29.167%)		C. INFRASTRUCTURES (29.167%)		D. NATURAL AND CULTURAL RESOURCES (12.499%)	
41	Azerbaijan	23.05%	Georgia	19.16%	China	18.97%	Ecuador	5.3243%
42	Malaysia	22.93%	El Salvador	18.99%	Oman	18.94%	Kenya	5.3063%
43	Saudi Arabia	22.92%	Denmark	18.92%	Turkey	18.90%	Slovenia	5.1733%
44	Georgia	22.91%	Bulgaria	18.87%	Latvia	18.82%	Bulgaria	5.1533%
45	Uruguay	22.91%	Latvia	18.85%	Hungary	18.65%	Denmark	5.0609%
46	Russian Federation	22.90%	Cambodia	18.85%	Croatia	18.62%	Philippines	5.0224%
47	Romania	22.90%	Canada	18.82%	Russian Federation	18.53%	Chile	4.9891%
48	Kazakhstan	22.87%	Colombia	18.75%	Poland	18.21%	Panama	4.9740%
49	Greece	22.81%	Italy	18.68%	Estonia	18.10%	Romania	4.9142%
50	Italy	22.80%	Philippines	18.67%	Thailand	18.03%	Ireland	4.9043%
51	Bulgaria	22.76%	Jordan	18.65%	Saudi Arabia	17.89%	Norway	4.8143%
52	Brunei Darussalam	22.75%	Ecuador	18.62%	Trinidad and Tobago	17.37%	Sri Lanka	4.7608%
53	Croatia	22.60%	Morocco	18.60%	Lithuania	17.32%	Congo, Democratic Rep.	4.6879%
54	Kuwait	22.58%	The United Kingdom	18.54%	Brunei Darussalam	17.26%	Morocco	4.6817%
55	Serbia	22.50%	Guatemala	18.53%	Jamaica	17.14%	Uganda	4.6665%
56	Armenia	22.42%	Kenya	18.53%	Mexico	17.06%	Nepal	4.6634%
57	Mauritius	22.39%	Seychelles	18.46%	Indonesia	16.87%	Iran (Islamic Republic of)	4.6469%
58	Montenegro	22.37%	Czech Republic	18.31%	Egypt	16.73%	Chinese Taipei	4.6422%
59	Chile	22.15%	Lithuania	18.29%	Morocco	16.54%	Slovakia	4.5016%
60	China	22.13%	Uruguay	18.27%	South Africa	16.41%	Hungary	4.4954%
61	Costa Rica	21.70%	Azerbaijan	18.27%	Montenegro	16.39%	Czech Republic	4.4297%
62	Argentina	21.53%	Chinese Taipei	18.20%	Dominican Republic	16.37%	Mongolia	4.4111%
63	Republic of Moldova	21.53%	Belgium	18.14%	Azerbaijan	16.30%	Finland	4.4105%
64	Seychelles	21.39%	Poland	18.13%	Cabo Verde	16.26%	Zambia	4.3825%
65	Jordan	21.38%	India	18.11%	Slovakia	16.21%	Zimbabwe	4.3577%
66	Mongolia	21.37%	Tanzania	18.09%	Chile	16.11%	Singapore	4.2268%
67	Ukraine	21.37%	Sweden	18.04%	Sri Lanka	16.10%	Botswana	4.1770%
68	North Macedonia	21.12%	Ukraine	17.87%	Namibia	15.80%	Ethiopia	4.1399%
69	Albania	20.94%	Slovakia	17.87%	Costa Rica	15.52%	Côte d'Ivoire	4.1251%
70	Thailand	20.88%	Sri Lanka	17.85%	Vietnam	15.43%	Namibia	4.1204%
71	Morocco	20.66%	Nepal	17.80%	Kenya	15.42%	Iceland	4.0928%
72	Vietnam	20.44%	Armenia	17.75%	Bulgaria	15.39%	Cambodia	4.0857%
73	Bosnia and Herzegovina	20.39%	Qatar	17.74%	Ecuador	15.26%	United Arab Emirates	4.0784%
74	Panama	20.30%	Cabo Verde	17.73%	Brazil	14.95%	Malawi	4.0292%
75	Indonesia	20.21%	China	17.71%	Romania	14.85%	Guatemala	4.0079%
76	Algeria	20.15%	Lesotho	17.71%	Kuwait	14.84%	Dominican Republic	3.9710%
77	Kyrgyzstan	20.12%	Tunisia	17.64%	Philippines	14.71%	Luxembourg	3.9425%
78	Tunisia	20.07%	Romania	17.61%	Georgia	14.69%	Cameroon	3.9382%

A. ENABLING ENVIRONMENT (29.167%)		B. T&T POLICY AND ENABLING CONDITIONS (29.167%)		C. INFRASTRUCTURES (29.167%)		D. NATURAL AND CULTURAL RESOURCES (12.499%)		
79	Trinidad and Tobago	19.97%	Lao PDR	17.60%	Ukraine	14.62%	Senegal	3.9286%
80	Iran (Islamic Republic of)	19.90%	Paraguay	17.56%	Serbia	14.53%	Nicaragua	3.9202%
81	Sri Lanka	19.82%	Egypt	17.55%	Jordan	14.30%	Honduras	3.9104%
82	Tajikistan	19.82%	Vietnam	17.46%	Rwanda	14.28%	Malta	3.8601%
83	Ecuador	19.69%	United Arab Emirates	17.42%	Bangladesh	14.13%	Oman	3.8397%
84	Turkey	19.60%	Namibia	17.16%	Iran (Islamic Republic of)	14.13%	Kazakhstan	3.8304%
85	Brazil	19.50%	Oman	17.16%	Gambia	14.09%	Uruguay	3.8195%
86	Lebanon	19.33%	Lebanon	17.14%	Colombia	14.05%	Guinea	3.7778%
87	Cabo Verde	19.27%	Eswatini	17.07%	Kazakhstan	13.97%	Pakistan	3.7696%
88	Egypt	19.21%	Montenegro	17.06%	Honduras	13.86%	Lao PDR	3.7470%
89	Mexico	19.14%	Argentina	17.00%	Pakistan	13.84%	Ukraine	3.7224%
90	Paraguay	18.82%	Gambia	16.89%	Argentina	13.81%	Algeria	3.7153%
91	Peru	18.80%	Bahrain	16.83%	Albania	13.74%	Cyprus	3.7107%
92	Dominican Republic	18.79%	Trinidad and Tobago	16.77%	Peru	13.74%	Nigeria	3.7055%
93	Jamaica	18.60%	Botswana	16.67%	Tunisia	13.74%	Tajikistan	3.6991%
94	Colombia	18.57%	Uganda	16.65%	Lebanon	13.67%	Albania	3.6453%
95	Nicaragua	18.56%	Albania	16.62%	Eswatini	13.46%	Israel	3.6366%
96	Bolivia	18.50%	Haiti	16.48%	Armenia	13.43%	Azerbaijan	3.6103%
97	Lao PDR	18.47%	Brunei Darussalam	16.40%	Senegal	13.42%	Kyrgyzstan	3.6018%
98	Philippines	18.19%	Rwanda	16.37%	Tanzania	13.36%	Benin	3.5918%
99	Nepal	17.99%	Israel	16.27%	Uruguay	13.30%	Mozambique	3.5774%
100	Gambia	17.94%	South Africa	16.25%	Botswana	13.01%	Tunisia	3.5699%
101	Ghana	17.93%	Zimbabwe	16.22%	Tajikistan	12.86%	Mali	3.5493%
102	Namibia	17.92%	Mozambique	16.19%	Côte d'Ivoire	12.81%	Jamaica	3.5436%
103	Cambodia	17.89%	Kazakhstan	16.18%	El Salvador	12.81%	Armenia	3.5375%
104	Botswana	17.87%	Serbia	16.00%	Algeria	12.79%	Estonia	3.5329%
105	India	17.81%	Brazil	15.87%	Nicaragua	12.77%	Bangladesh	3.5046%
106	Bangladesh	17.54%	Kyrgyzstan	15.87%	North Macedonia	12.60%	Georgia	3.4821%
107	Rwanda	17.35%	Tajikistan	15.73%	Republic of Moldova	12.55%	Montenegro	3.4420%
108	Senegal	17.32%	Russian Federation	15.71%	Lao PDR	12.50%	Ghana	3.4273%
109	Guatemala	17.26%	Bolivia	15.67%	Ghana	12.24%	Paraguay	3.3963%
110	South Africa	17.24%	Republic of Moldova	15.60%	Sierra Leone	12.14%	Burkina Faso	3.3903%
111	El Salvador	16.68%	Mongolia	15.48%	Ethiopia	12.12%	Latvia	3.3599%
112	Côte d'Ivoire	16.66%	Zambia	15.35%	Cambodia	12.09%	Serbia	3.3489%
113	Kenya	16.50%	Saudi Arabia	15.21%	Bosnia and Herzegovina	11.87%	Saudi Arabia	3.3413%
114	Mauritania	16.24%	Ghana	15.15%	Cameroon	11.64%	Lithuania	3.3406%
115	Honduras	16.17%	Bosnia and Herzegovina	15.05%	Guinea	11.62%	Rwanda	3.3365%
116	Lesotho	16.00%	Iran (Islamic Republic of)	14.95%	Bolivia	11.60%	Chad	3.2942%
117	Venezuela	15.87%	Senegal	14.77%	Burundi	11.59%	Mauritius	3.2749%

A. ENABLING ENVIRONMENT (29.167%)			B. T&T POLICY AND ENABLING CONDITIONS (29.167%)		C. INFRASTRUCTURES (29.167%)		D. NATURAL AND CULTURAL RESOURCES (12.499%)	
118	Zambia	15.86%	Ethiopia	14.76%	Zambia	11.57%	Seychelles	3.2265%
119	Benin	15.80%	Benin	14.50%	Uganda	11.53%	North Macedonia	3.1611%
120	Zimbabwe	15.70%	North Macedonia	14.37%	Guatemala	11.47%	Jordan	3.1297%
121	Pakistan	15.55%	Malawi	14.20%	Mongolia	11.37%	El Salvador	3.1124%
122	Eswatini	15.54%	Bangladesh	14.04%	Liberia	11.35%	Gambia	3.0730%
123	Tanzania	15.45%	Pakistan	13.99%	Mali	11.16%	Brunei Darus-salam	3.0709%
124	Ethiopia	15.19%	Sierra Leone	13.85%	Mozambique	11.12%	Angola	3.0427%
125	Sierra Leone	15.01%	Kuwait	13.28%	Zimbabwe	11.11%	Lebanon	3.0320%
126	Guinea	14.98%	Venezuela	13.18%	Benin	11.09%	Bosnia and Herzegovina	3.0276%
127	Cameroon	14.91%	Mauritania	13.08%	Nepal	10.97%	Qatar	2.9181%
128	Liberia	14.89%	Nigeria	12.89%	Nigeria	10.97%	Eswatini	2.8887%
129	Malawi	14.77%	Mali	12.74%	Burkina Faso	10.76%	Trinidad and Tobago	2.8752%
130	Uganda	14.77%	Angola	12.59%	Kyrgyzstan	10.69%	Sierra Leone	2.8675%
131	Angola	14.45%	Côte d'Ivoire	12.11%	Paraguay	10.68%	Burundi	2.8619%
132	Burkina Faso	14.41%	Burkina Faso	12.06%	Angola	10.31%	Lesotho	2.8568%
133	Haiti	14.25%	Algeria	12.05%	Venezuela	10.29%	Yemen	2.7827%
134	Burundi	14.14%	Chad	11.86%	Malawi	10.20%	Mauritania	2.7593%
135	Mali	14.03%	Cameroon	11.62%	Congo (Democratic Republic of)	10.00%	Cabo Verde	2.7298%
136	Yemen	13.47%	Burundi	11.45%	Chad	9.97%	Kuwait	2.6280%
137	Nigeria	12.99%	Guinea	11.40%	Lesotho	9.82%	Haiti	2.6110%
138	Congo, Democratic Rep.	12.72%	Liberia	11.25%	Haiti	9.69%	Liberia	2.5880%
139	Chad	12.67%	Yemen	9.55%	Mauritania	9.60%	Republic of Moldova	2.5690%
140	Mozambique	12.45%	Congo (Democratic Republic of)	8.78%	Yemen	9.01%	Bahrain	2.5682%

TABLE 5: ADJUSTED TRAVEL AND TOURISM COMPETITIVENESS INDEX

TOTAL SCORE OF TTC															
ASIA PACIFIC	1. ENABLING ENVIRONMENT						2. T&T POLICY AND ENABLING CONDITIONS				3. INFRASTRUCTURE			4. NATURAL AND CULTURAL RESOURCES	
	Global Rank	Business Environment	Safety and Security	Health and Hygiene	Human Resources and Labour Market	ICT Readiness	Prioritisation of Travel and tourism	International Openness	Price Competitiveness	Environmental Sustainability	Air Transport Infrastructure	Ground and Port Infrastructure	Tourist Service Infrastructure	Natural Resources	Cultural Resources and Business Travel
Eastern Asia Pacific															
New Zealand	15	0.023	0.070	0.065	0.022	0.067	0.029	0.086	0.024	0.088	0.085	0.066	0.033	0.039	0.018
Australia	11	0.021	0.068	0.069	0.021	0.064	0.027	0.076	0.023	0.082	0.105	0.062	0.031	0.049	0.039
Japan	1	0.023	0.069	0.072	0.022	0.069	0.028	0.072	0.025	0.083	0.083	0.104	0.030	0.037	0.058
Hong Kong SAR	4	0.026	0.071	0.067	0.023	0.074	0.030	0.059	0.024	0.091	0.097	0.111	0.032	0.032	0.021
Korea (ROK)	14	0.020	0.066	0.072	0.021	0.070	0.026	0.067	0.026	0.077	0.080	0.090	0.033	0.021	0.043
Chinese Taipei	31	0.021	0.066	0.067	0.022	0.063	0.024	0.057	0.028	0.073	0.067	0.089	0.031	0.023	0.023
China	29	0.019	0.062	0.062	0.022	0.056	0.025	0.049	0.030	0.074	0.075	0.067	0.026	0.046	0.062
Mongolia	95	0.018	0.062	0.068	0.019	0.048	0.023	0.029	0.032	0.070	0.039	0.038	0.025	0.028	0.017
South-East Asia															
Singapore	6	0.025	0.071	0.062	0.023	0.068	0.032	0.075	0.026	0.095	0.095	0.111	0.030	0.020	0.023
Indonesia	38	0.020	0.060	0.050	0.020	0.052	0.031	0.067	0.032	0.092	0.068	0.058	0.024	0.040	0.028
Malaysia	28	0.023	0.065	0.058	0.022	0.060	0.025	0.070	0.033	0.075	0.079	0.078	0.028	0.034	0.023
Thailand	41	0.020	0.053	0.056	0.021	0.058	0.027	0.061	0.030	0.081	0.080	0.057	0.025	0.043	0.024
Cambodia	94	0.016	0.057	0.045	0.018	0.044	0.026	0.054	0.029	0.079	0.040	0.043	0.023	0.027	0.014
Philippines	82	0.018	0.040	0.053	0.021	0.049	0.025	0.055	0.031	0.076	0.055	0.049	0.028	0.034	0.016
Lao PDR	96	0.018	0.059	0.050	0.019	0.038	0.025	0.046	0.031	0.074	0.041	0.044	0.026	0.026	0.011
Vietnam	68	0.018	0.062	0.055	0.020	0.048	0.022	0.058	0.031	0.065	0.059	0.053	0.026	0.034	0.026
Brunei Darussalam	65	0.020	0.068	0.061	0.019	0.060	0.018	0.058	0.034	0.054	0.057	0.066	0.028	0.021	0.010
South Asia															
India	45	0.020	0.050	0.048	0.019	0.040	0.022	0.060	0.032	0.067	0.073	0.078	0.025	0.040	0.049
Sri Lanka	73	0.018	0.060	0.059	0.018	0.043	0.027	0.042	0.028	0.081	0.048	0.065	0.028	0.032	0.015
Nepal	103	0.017	0.058	0.048	0.018	0.039	0.026	0.042	0.031	0.078	0.039	0.035	0.024	0.035	0.012
Bangladesh	112	0.018	0.054	0.050	0.016	0.038	0.019	0.038	0.028	0.056	0.035	0.061	0.027	0.021	0.014
Pakistan	119	0.018	0.041	0.050	0.014	0.033	0.019	0.035	0.030	0.056	0.039	0.057	0.025	0.021	0.017

TOTAL SCORE OF TTC															
MENA	1. ENABLING ENVIRONMENT						2. T&T POLICY AND ENABLING CONDITIONS				3. INFRASTRUCTURE			4. NATURAL AND CULTURAL RESOURCES	
	Global Rank	Business Environment	Safety and Security	Health and Hygiene	Human Resources and Labour Market	ICT Readiness	Prioritisation of Travel and tourism	International Openness	Price Competitiveness	Environmental Sustainability	Air Transport Infrastructure	Ground and Port Infrastructure	Tourist Service Infrastructure	Natural Resources	Cultural Resources and Business Travel
Middle East															
Jordan	77	0.019	0.064	0.060	0.017	0.054	0.027	0.052	0.028	0.080	0.048	0.050	0.030	0.020	0.012
Qatar	39	0.024	0.070	0.059	0.021	0.063	0.023	0.055	0.031	0.069	0.079	0.082	0.030	0.016	0.013
United Arab Emirates	30	0.023	0.070	0.060	0.021	0.071	0.025	0.047	0.029	0.074	0.098	0.077	0.031	0.021	0.020
Oman	54	0.022	0.073	0.059	0.019	0.059	0.025	0.043	0.030	0.074	0.059	0.076	0.030	0.021	0.017
Lebanon	93	0.017	0.053	0.062	0.016	0.046	0.026	0.039	0.029	0.078	0.044	0.049	0.028	0.018	0.012
Bahrain	52	0.023	0.066	0.057	0.021	0.065	0.023	0.045	0.030	0.070	0.061	0.090	0.029	0.015	0.011
Israel	55	0.021	0.062	0.067	0.022	0.066	0.026	0.040	0.018	0.078	0.062	0.077	0.030	0.021	0.016
Saudi Arabia	67	0.022	0.067	0.063	0.019	0.058	0.024	0.025	0.031	0.072	0.072	0.061	0.027	0.017	0.017
Iran (Islamic Republic of)	91	0.016	0.060	0.056	0.017	0.050	0.019	0.037	0.035	0.058	0.043	0.054	0.027	0.022	0.025
Kuwait	92	0.019	0.064	0.063	0.018	0.062	0.019	0.029	0.029	0.056	0.045	0.057	0.028	0.016	0.010
Yemen	140	0.014	0.036	0.045	0.012	0.027	0.011	0.021	0.031	0.033	0.021	0.035	0.024	0.016	0.011
North Africa															
Egypt	71	0.018	0.053	0.056	0.018	0.047	0.027	0.034	0.034	0.081	0.057	0.059	0.033	0.026	0.029
Morocco	60	0.020	0.066	0.052	0.017	0.051	0.027	0.048	0.029	0.082	0.056	0.060	0.031	0.027	0.019
Tunisia	86	0.018	0.058	0.058	0.017	0.049	0.026	0.040	0.032	0.078	0.043	0.048	0.031	0.023	0.013
Algeria	115	0.016	0.063	0.058	0.017	0.047	0.016	0.023	0.032	0.049	0.038	0.049	0.025	0.019	0.018

TOTAL SCORE OF TTC															
SUB SARAHAN	1. ENABLING ENVIRONMENT						2. T&T POLICY AND ENABLING CONDITIONS				3. INFRASTRUCTURE			4. NATURAL AND CULTURAL RESOURCES	
	Global Rank	Business Environment	Safety and Security	Health and Hygiene	Human Resources and Labour Market	ICT Readiness	Prioritisation of Travel and tourism	International Openness	Price Competitiveness	Environmental Sustainability	Air Transport Infrastructure	Ground and Port Infrastructure	Tourist Service Infrastructure	Natural Resources	Cultural Resources and Business Travel
Southern Africa															
Lesotho	120	0.017	0.060	0.033	0.015	0.035	0.026	0.040	0.032	0.079	0.023	0.032	0.034	0.020	0.009
Namibia	87	0.020	0.056	0.039	0.018	0.046	0.025	0.043	0.030	0.074	0.051	0.059	0.030	0.031	0.010
Eswatini	113	0.018	0.061	0.034	0.016	0.026	0.024	0.042	0.032	0.073	0.038	0.054	0.025	0.020	0.009
Botswana	101	0.021	0.059	0.036	0.018	0.045	0.025	0.035	0.031	0.075	0.037	0.048	0.030	0.031	0.011
South Africa	81	0.019	0.043	0.041	0.018	0.051	0.023	0.040	0.029	0.070	0.058	0.061	0.026	0.040	0.029
Zimbabwe	117	0.014	0.060	0.033	0.015	0.035	0.022	0.047	0.028	0.065	0.031	0.039	0.028	0.032	0.011
Zambia	118	0.018	0.059	0.029	0.016	0.036	0.020	0.045	0.027	0.061	0.031	0.041	0.030	0.032	0.011
Angola	135	0.015	0.056	0.035	0.013	0.026	0.017	0.030	0.028	0.051	0.030	0.034	0.028	0.020	0.010
Eastern Africa															
Mauritius	42	0.023	0.064	0.063	0.020	0.055	0.032	0.056	0.024	0.095	0.056	0.080	0.030	0.021	0.012
Kenya	85	0.019	0.052	0.038	0.018	0.039	0.028	0.047	0.026	0.085	0.047	0.058	0.032	0.040	0.013
Seychelles	51	0.020	0.058	0.060	0.021	0.056	0.031	0.042	0.020	0.092	0.074	0.076	0.030	0.023	0.009
Tanzania	97	0.017	0.057	0.033	0.015	0.032	0.025	0.051	0.029	0.076	0.039	0.049	0.031	0.042	0.011
Uganda	116	0.017	0.052	0.028	0.017	0.033	0.022	0.047	0.030	0.067	0.030	0.043	0.029	0.033	0.014
Rwanda	104	0.020	0.066	0.031	0.018	0.038	0.021	0.051	0.028	0.064	0.033	0.059	0.031	0.023	0.010
Mozambique	126	0.016	0.052	0.019	0.015	0.023	0.021	0.049	0.029	0.063	0.031	0.039	0.030	0.025	0.011
Ethiopia	121	0.016	0.057	0.037	0.015	0.027	0.020	0.040	0.029	0.059	0.039	0.041	0.028	0.027	0.015
Malawi	127	0.017	0.060	0.030	0.017	0.024	0.019	0.039	0.029	0.056	0.025	0.036	0.029	0.027	0.013
Burundi	137	0.017	0.053	0.036	0.017	0.019	0.015	0.028	0.028	0.044	0.029	0.044	0.029	0.019	0.010
Congo (Democratic Republic of)	139	0.015	0.049	0.028	0.016	0.019	0.010	0.024	0.025	0.029	0.028	0.034	0.027	0.036	0.010

TOTAL SCORE OF TTC															
SUB SARAHAN	1. ENABLING ENVIRONMENT						2. T&T POLICY AND ENABLING CONDITIONS				3. INFRASTRUCTURE			4. NATURAL AND CULTURAL RESOURCES	
	Global Rank	Business Environment	Safety and Security	Health and Hygiene	Human Resources and Labour Market	ICT Readiness	Prioritisation of Travel and tourism	International Openness	Price Competitiveness	Environmental Sustainability	Air Transport Infrastructure	Ground and Port Infrastructure	Tourist Service Infrastructure	Natural Resources	Cultural Resources and Business Travel
Western Africa															
Cabo Verde	84	0.019	0.058	0.052	0.018	0.046	0.025	0.049	0.030	0.074	0.061	0.054	0.031	0.018	0.009
Gambia	100	0.018	0.063	0.043	0.017	0.038	0.027	0.035	0.027	0.080	0.035	0.057	0.030	0.020	0.010
Ghana	114	0.020	0.061	0.033	0.020	0.045	0.020	0.046	0.026	0.060	0.034	0.045	0.029	0.023	0.012
Senegal	111	0.018	0.059	0.042	0.015	0.040	0.019	0.044	0.026	0.058	0.038	0.049	0.032	0.028	0.012
Benin	123	0.018	0.061	0.028	0.019	0.032	0.018	0.045	0.027	0.055	0.030	0.039	0.030	0.025	0.010
Sierra Leone	125	0.017	0.057	0.026	0.017	0.034	0.018	0.044	0.023	0.054	0.030	0.047	0.029	0.019	0.010
Mauritania	131	0.014	0.062	0.042	0.010	0.034	0.014	0.046	0.028	0.043	0.028	0.031	0.027	0.018	0.010
Nigeria	134	0.017	0.034	0.032	0.014	0.032	0.018	0.029	0.028	0.053	0.034	0.035	0.030	0.021	0.016
Mali	132	0.017	0.045	0.029	0.014	0.036	0.019	0.026	0.025	0.057	0.034	0.036	0.030	0.021	0.015
Côte d'Ivoire	122	0.018	0.051	0.037	0.017	0.045	0.013	0.041	0.027	0.040	0.036	0.048	0.029	0.030	0.012
Burkina Faso	133	0.018	0.053	0.026	0.014	0.032	0.017	0.025	0.029	0.050	0.027	0.039	0.029	0.024	0.010
Chad	138	0.012	0.046	0.031	0.013	0.025	0.017	0.026	0.025	0.051	0.027	0.033	0.029	0.024	0.009
Cameroon	129	0.016	0.052	0.031	0.018	0.031	0.016	0.028	0.026	0.047	0.029	0.043	0.031	0.029	0.011
Guinea	130	0.017	0.051	0.029	0.017	0.036	0.014	0.027	0.030	0.043	0.032	0.040	0.031	0.028	0.010
Liberia	136	0.017	0.059	0.035	0.014	0.024	0.014	0.031	0.025	0.042	0.031	0.040	0.030	0.016	0.009

TOTAL SCORE OF TTC															
THE AMERICA	1. ENABLING ENVIRONMENT						2. T&T POLICY AND ENABLING CONDITIONS				3. INFRASTRUCTURE			4. NATURAL AND CULTURAL RESOURCES	
	Global Rank	Business Environment	Safety and Security	Health and Hygiene	Human Resources and Labour Market	ICT Readiness	Prioritisation of Travel and tourism	International Openness	Price Competitiveness	Environmental Sustainability	Air Transport Infrastructure	Ground and Port Infrastructure	Tourist Service Infrastructure	Natural Resources	Cultural Resources and Business Travel
North/ Central America															
United States	8	0.024	0.063	0.064	0.024	0.066	0.029	0.063	0.025	0.086	0.103	0.084	0.028	0.045	0.042
Canada	13	0.022	0.067	0.064	0.023	0.064	0.026	0.057	0.026	0.079	0.115	0.067	0.034	0.042	0.036
Mexico	40	0.017	0.047	0.059	0.019	0.049	0.027	0.061	0.028	0.081	0.069	0.056	0.027	0.053	0.047
Costa Rica	48	0.019	0.060	0.056	0.020	0.062	0.029	0.066	0.027	0.087	0.053	0.052	0.034	0.043	0.014
Panama	43	0.020	0.059	0.057	0.017	0.051	0.026	0.070	0.029	0.077	0.078	0.065	0.033	0.035	0.014
Dominican Republic	66	0.017	0.053	0.056	0.018	0.044	0.031	0.051	0.026	0.094	0.052	0.063	0.029	0.027	0.013
Jamaica	59	0.020	0.043	0.055	0.020	0.048	0.032	0.063	0.023	0.096	0.043	0.080	0.024	0.023	0.012
Trinidad And Tobago	79	0.018	0.044	0.063	0.019	0.056	0.021	0.056	0.029	0.062	0.054	0.070	0.027	0.018	0.011
Honduras		0.017	0.040	0.050	0.016	0.038	0.027	0.066	0.029	0.080	0.036	0.054	0.031	0.028	0.011
Guatemala	105	0.017	0.045	0.050	0.016	0.045	0.023	0.062	0.030	0.070	0.032	0.042	0.027	0.027	0.013
El Salvador	102	0.015	0.033	0.056	0.016	0.047	0.022	0.071	0.030	0.066	0.036	0.050	0.026	0.020	0.011
Haiti	128	0.013	0.053	0.042	0.015	0.020	0.019	0.061	0.029	0.056	0.031	0.033	0.023	0.016	0.010
South America															
Brazil	61	0.015	0.048	0.060	0.018	0.054	0.021	0.046	0.028	0.063	0.064	0.042	0.030	0.052	0.048
Peru	70	0.017	0.052	0.055	0.019	0.045	0.025	0.071	0.028	0.074	0.049	0.044	0.031	0.042	0.028
Argentina	64	0.014	0.057	0.072	0.019	0.054	0.024	0.048	0.026	0.073	0.054	0.046	0.024	0.040	0.037
Chile	53	0.020	0.064	0.058	0.020	0.059	0.024	0.073	0.029	0.073	0.053	0.060	0.029	0.029	0.021
Colombia	75	0.016	0.042	0.058	0.019	0.051	0.021	0.072	0.030	0.064	0.052	0.044	0.030	0.040	0.028
Uruguay		0.018	0.059	0.069	0.019	0.064	0.028	0.046	0.026	0.083	0.040	0.048	0.029	0.022	0.016
Bolivia	106	0.012	0.058	0.053	0.016	0.045	0.019	0.051	0.029	0.058	0.039	0.037	0.029	0.037	0.018
Paraguay	108	0.018	0.054	0.056	0.016	0.043	0.026	0.043	0.028	0.079	0.028	0.040	0.026	0.022	0.012
Venezuela	124	0.010	0.037	0.056	0.015	0.041	0.018	0.034	0.026	0.054	0.032	0.034	0.026	0.036	0.018

TOTAL SCORE OF TTC															
EUROPE	1. ENABLING ENVIRONMENT						2. T&T POLICY AND ENABLING CONDITIONS				3. INFRASTRUCTURE			4. NATURAL AND CULTURAL RESOURCES	
	Global Rank	Business Environment	Safety and Security	Health and Hygiene	Human Resources and Labour Market	ICT Readiness	Prioritisation of Travel and tourism	International Openness	Price Competitiveness	Environmental Sustainability	Air Transport Infrastructure	Ground and Port Infrastructure	Tourist Service Infrastructure	Natural Resources	Cultural Resources and Business Travel
Southern Europe															
Spain	3	0.019	0.068	0.069	0.021	0.064	0.031	0.062	0.026	0.092	0.088	0.091	0.033	0.043	0.060
Italy	16	0.017	0.061	0.070	0.019	0.061	0.025	0.065	0.023	0.074	0.077	0.081	0.030	0.044	0.058
Portugal	17	0.019	0.070	0.067	0.021	0.062	0.030	0.066	0.026	0.090	0.082	0.073	0.029	0.036	0.036
Greece	27	0.016	0.062	0.072	0.020	0.058	0.029	0.064	0.025	0.088	0.083	0.067	0.031	0.031	0.030
Croatia	35	0.016	0.065	0.070	0.017	0.057	0.025	0.065	0.026	0.076	0.063	0.067	0.035	0.040	0.025
Malta	25	0.021	0.067	0.072	0.020	0.064	0.032	0.062	0.026	0.096	0.068	0.084	0.033	0.025	0.014
Turkey	49	0.018	0.048	0.061	0.017	0.052	0.026	0.060	0.029	0.079	0.082	0.062	0.026	0.025	0.034
Cyprus	33	0.021	0.066	0.063	0.021	0.066	0.032	0.059	0.025	0.096	0.065	0.077	0.027	0.022	0.015
Western Europe															
Switzerland	7	0.025	0.071	0.073	0.024	0.070	0.029	0.065	0.019	0.088	0.088	0.105	0.042	0.033	0.025
Austria	12	0.020	0.069	0.078	0.022	0.067	0.028	0.063	0.024	0.083	0.073	0.091	0.039	0.037	0.028
Luxembourg	22	0.024	0.070	0.069	0.023	0.069	0.026	0.067	0.026	0.079	0.063	0.095	0.039	0.025	0.014
Germany	2	0.023	0.065	0.077	0.024	0.066	0.026	0.067	0.024	0.078	0.085	0.100	0.037	0.036	0.058
The Netherlands	10	0.023	0.067	0.070	0.023	0.069	0.025	0.067	0.024	0.076	0.091	0.107	0.038	0.024	0.030
Czech Republic	32	0.019	0.068	0.076	0.020	0.063	0.022	0.065	0.028	0.067	0.058	0.086	0.035	0.023	0.022
The United Kingdom	9	0.024	0.064	0.065	0.023	0.069	0.026	0.066	0.017	0.077	0.091	0.093	0.036	0.039	0.050
France	5	0.020	0.063	0.073	0.021	0.066	0.027	0.066	0.024	0.080	0.084	0.096	0.037	0.044	0.061
Belgium	26	0.020	0.063	0.073	0.022	0.065	0.023	0.065	0.025	0.069	0.071	0.095	0.033	0.023	0.033
Ireland	24	0.022	0.066	0.065	0.022	0.064	0.028	0.070	0.024	0.085	0.078	0.078	0.034	0.023	0.026
Northern Europe															
Finland	21	0.024	0.074	0.071	0.023	0.068	0.026	0.064	0.024	0.078	0.085	0.079	0.039	0.026	0.018
Iceland	20	0.022	0.073	0.069	0.023	0.070	0.032	0.069	0.019	0.095	0.086	0.070	0.033	0.028	0.013
Norway	19	0.022	0.068	0.071	0.023	0.070	0.028	0.063	0.022	0.085	0.098	0.067	0.040	0.029	0.019
Denmark	18	0.023	0.065	0.069	0.023	0.071	0.025	0.068	0.023	0.074	0.078	0.093	0.037	0.030	0.021
Sweden	23	0.022	0.065	0.069	0.023	0.071	0.024	0.064	0.022	0.071	0.086	0.081	0.036	0.029	0.026
Estonia	36	0.021	0.069	0.070	0.021	0.068	0.028	0.057	0.028	0.085	0.043	0.078	0.036	0.021	0.014
Lithuania	50	0.019	0.065	0.077	0.021	0.063	0.023	0.063	0.030	0.068	0.043	0.075	0.032	0.020	0.013
Latvia	46	0.019	0.065	0.071	0.021	0.063	0.024	0.062	0.030	0.072	0.060	0.073	0.032	0.021	0.012

TOTAL SCORE OF TTC															
BALKANS & CENTRAL AND EASTERN EUROPE	1. ENABLING ENVIRONMENT						2. T&T POLICY AND ENABLING CONDITIONS				3. INFRASTRUCTURE			4. NATURAL AND CULTURAL RESOURCES	
	Global Rank	Business Environment	Safety and Security	Health and Hygiene	Human Resources and Labour Market	ICT Readiness	Prioritisation of Travel and tourism	International Openness	Price Competitiveness	Environmental Sustainability	Air Transport Infrastructure	Ground and Port Infrastructure	Tourist Service Infrastructure	Natural Resources	Cultural Resources and Business Travel
Balkans & Central and Eastern Europe															
Slovenia	34	0.018	0.068	0.069	0.021	0.061	0.027	0.058	0.027	0.080	0.044	0.083	0.037	0.037	0.015
Hungary	37	0.018	0.065	0.074	0.019	0.059	0.027	0.065	0.027	0.080	0.058	0.072	0.034	0.024	0.021
Poland	44	0.018	0.062	0.070	0.020	0.061	0.022	0.064	0.030	0.066	0.056	0.074	0.029	0.029	0.027
Slovakia	57	0.017	0.062	0.069	0.020	0.063	0.022	0.061	0.028	0.067	0.035	0.072	0.033	0.031	0.014
Romania	62	0.018	0.066	0.068	0.019	0.057	0.021	0.061	0.029	0.064	0.047	0.054	0.031	0.029	0.021
Bulgaria	56	0.018	0.058	0.075	0.019	0.058	0.025	0.061	0.029	0.074	0.047	0.056	0.034	0.033	0.019
Serbia	83	0.018	0.061	0.070	0.020	0.057	0.020	0.051	0.029	0.061	0.045	0.052	0.031	0.018	0.015
Montenegro	69	0.019	0.062	0.065	0.020	0.058	0.026	0.038	0.029	0.077	0.055	0.058	0.033	0.024	0.010
Republic of Moldova	98	0.017	0.061	0.068	0.018	0.051	0.019	0.049	0.031	0.057	0.037	0.045	0.030	0.015	0.011
North Macedonia	107	0.018	0.058	0.067	0.017	0.052	0.019	0.036	0.030	0.058	0.042	0.045	0.025	0.019	0.012
Albania	89	0.017	0.061	0.059	0.021	0.052	0.026	0.038	0.024	0.079	0.036	0.054	0.030	0.026	0.011
Bosnia and Herzegovina	109	0.014	0.060	0.062	0.017	0.050	0.021	0.038	0.028	0.063	0.035	0.041	0.030	0.017	0.013
Ukraine	76	0.017	0.054	0.072	0.020	0.050	0.022	0.058	0.031	0.067	0.048	0.054	0.027	0.020	0.017
Eurasia															
Azerbaijan	58	0.021	0.065	0.067	0.022	0.055	0.026	0.048	0.031	0.078	0.045	0.068	0.028	0.019	0.017
Georgia	63	0.022	0.066	0.067	0.020	0.054	0.027	0.053	0.030	0.081	0.044	0.056	0.030	0.021	0.014
Russian Federation	47	0.018	0.057	0.075	0.021	0.059	0.023	0.035	0.030	0.069	0.080	0.058	0.029	0.034	0.033
Kazakhstan	80	0.020	0.062	0.072	0.020	0.055	0.022	0.039	0.033	0.067	0.046	0.051	0.026	0.023	0.016
Armenia	78	0.021	0.065	0.067	0.020	0.052	0.024	0.050	0.030	0.073	0.042	0.049	0.028	0.022	0.013
Kyrgyzstan	110	0.018	0.057	0.063	0.018	0.045	0.020	0.047	0.032	0.060	0.034	0.036	0.026	0.022	0.014
Tajikistan	99	0.018	0.062	0.061	0.019	0.037	0.022	0.039	0.029	0.067	0.037	0.049	0.027	0.026	0.011

TABLE 6: T&T INDUSTRY SHARE OF GDP AND EMPLOYMENT BASED ON COUNTRIES, SOURCE FROM WTTC DATA VIA WORLD ECONOMIC FORUM (2018)

T&T industry Share of GDP 2018 (% of total GDP)			T&T industry Share of Employment 2018 (% of total employment)		
1	Seychelles	27.22	1	Seychelles	26.82
2	Cabo Verde	18.39	2	Cape Verde	16.42
3	Cambodia	14.46	3	Cambodia	14.63
4	Philippines	12.38	4	Greece	12.72
5	Croatia	10.93	5	Malta	11.35
6	Jamaica	10.56	6	Croatia	10.04
7	Montenegro	10.38	7	Jamaica	9.50
8	Georgia	10.09	8	New Zealand	9.30
9	Thailand	9.62	9	Uruguay	9.06
10	Uruguay	9.13	10	Austria	8.74
11	Iceland	8.99	11	Georgia	8.58
12	Albania	8.80	12	Mexico	8.57
13	Greece	8.48	13	Portugal	8.10
14	Morocco	8.33	14	Albania	8.04
15	Gambia	8.33	15	Iceland	7.64
16	Tunisia	8.05	16	Tunisia	7.44
17	Mexico	8.04	17	Mauritius	7.41
18	Austria	7.71	18	Morocco	7.23
19	Mauritius	7.59	19	Philippines	7.07
20	Portugal	7.10	20	Jordan	7.03
21	Lesotho	7.08	21	Germany	6.83
22	Lebanon	7.02	22	Montenegro	6.83
23	Cyprus	6.86	23	Lesotho	6.80
24	Rwanda	6.47	24	Lebanon	6.73
25	Egypt	6.20	25	Italy	6.63
26	Vietnam	6.02	26	Gambia, The	6.55
27	Bahrain	6.00	27	Thailand	6.46
28	New Zealand	5.91	28	Cyprus	6.28
29	Panama	5.77	29	Panama	6.18
30	Sri Lanka	5.74	30	Luxembourg	5.90
31	Malta	5.63	31	Norway	5.90
32	Italy	5.63	32	Sri Lanka	5.73
33	United Arab Emirates	5.48	33	Bahrain	5.65
34	Spain	5.42	34	The Netherlands	5.58
35	Dominican Republic	5.41	35	Qatar	5.58
36	Honduras	5.29	36	Rwanda	5.44
37	Nicaragua	5.29	37	Namibia	5.30
38	Jordan	5.24	38	United Arab Emirates	5.25

TABLE 6: T&T INDUSTRY SHARE OF GDP AND EMPLOYMENT BASED ON COUNTRIES, SOURCE FROM WTTC DATA VIA WORLD ECONOMIC FORUM (2018)*(Continued)*

T&T industry Share of GDP 2018 (% of total GDP)			T&T industry Share of Employment 2018 (% of total employment)		
39	Costa Rica	5.07	39	Costa Rica	5.19
40	Malaysia	4.83	40	Hong Kong SAR	5.08
41	Côte d'Ivoire	4.76	41	India	5.07
42	Botswana	4.73	42	Spain	4.96
43	Hong Kong SAR	4.64	43	Hungary	4.92
44	Oman	4.51	44	Dominican Republic	4.87
45	El Salvador	4.47	45	The United Kingdom	4.81
46	Senegal	4.34	46	Oman	4.77
47	Turkey	4.29	47	Saudi Arabia	4.74
48	Luxembourg	4.14	48	Vietnam	4.71
49	Ethiopia	4.11	49	Singapore	4.69
50	Tanzania	3.99	50	Malaysia	4.64
51	Singapore	3.97	51	France	4.60
52	France	3.93	52	Honduras	4.58
53	Armenia	3.93	53	Australia	4.51
54	Mali	3.92	54	Egypt	4.40
55	Lao PDR	3.92	55	Czech Republic	4.24
56	Estonia	3.77	56	South Africa	4.21
57	Venezuela	3.73	57	Côte d'Ivoire	4.05
58	Argentina	3.72	58	Nicaragua	4.04
59	Peru	3.71	59	Canada	4.03
60	The United Kingdom	3.71	60	Estonia	4.02
61	Azerbaijan	3.68	61	El Salvador	3.98
62	India	3.60	62	Slovenia	3.94
63	Nepal	3.60	63	Senegal	3.76
64	Latvia	3.59	64	United States	3.72
65	Norway	3.49	65	Indonesia	3.70
66	Malawi	3.49	66	China	3.69
67	Germany	3.46	67	Latvia	3.61
68	Slovenia	3.44	68	Tanzania	3.55
69	Kenya	3.35	69	Ethiopia	3.52
70	Saudi Arabia	3.30	70	Trinidad and Tobago	3.52
71	Cameroon	3.30	71	Sweden	3.51
72	Mongolia	3.28	72	Switzerland	3.42
73	Qatar	3.26	73	Armenia	3.37
74	Mozambique	3.23	74	Azerbaijan	3.34
75	Namibia	3.22	75	Lao PDR	3.33
76	Algeria	3.20	76	Argentina	3.32

TABLE 6: T&T INDUSTRY SHARE OF GDP AND EMPLOYMENT BASED ON COUNTRIES, SOURCE FROM WTTC DATA VIA WORLD ECONOMIC FORUM (2018)*(Continued)*

T&T industry Share of GDP 2018 (% of total GDP)			T&T industry Share of Employment 2018 (% of total employment)		
77	Uganda	3.17	77	Chile	3.25
78	Chile	3.17	78	Botswana	3.24
79	Zambia	3.14	79	Venezuela	3.22
80	Bulgaria	3.11	80	Mongolia	3.21
81	Tajikistan	3.02	81	Bosnia and Herzegovina	3.21
82	Australia	3.00	82	Kenya	3.09
83	Brazil	2.97	83	Bulgaria	2.94
84	Trinidad and Tobago	2.93	84	Malawi	2.92
85	Pakistan	2.84	85	Nepal	2.89
86	South Africa	2.81	86	Tajikistan	2.86
87	China	2.79	87	Algeria	2.76
88	Bosnia and Herzegovina	2.76	88	Cameroon	2.70
89	Ecuador	2.76	89	Slovak Republic	2.67
90	Bolivia	2.74	90	Uganda	2.67
91	Guatemala	2.71	91	Brazil	2.66
92	United States	2.71	92	Mozambique	2.65
93	Switzerland	2.69	93	Romania	2.64
94	Haiti	2.67	94	Ecuador	2.55
95	Czech Republic	2.67	95	Chinese Taipei	2.54
96	Hungary	2.59	96	Brunei Darussalam	2.44
97	Slovakia	2.57	97	Pakistan	2.41
98	Kuwait	2.55	98	Kuwait	2.39
99	Eswatini	2.54	99	Denmark	2.38
100	Yemen	2.49	100	Guatemala	2.38
101	Iran (Islamic Republic of)	2.48	101	Belgium	2.36
102	Sweden	2.43	102	Bolivia	2.35
103	Serbia	2.42	103	Peru	2.33
104	Japan	2.39	104	Haiti	2.25
105	Zimbabwe	2.37	105	Mali	2.25
106	Denmark	2.37	106	Colombia	2.24
107	Ghana	2.34	107	Finland	2.16
108	Belgium	2.21	108	Kazakhstan	2.16
109	Bangladesh	2.20	109	Serbia	2.08
110	Finland	2.04	110	Ireland	2.04
111	Benin	2.04	111	Poland	2.02
112	Guinea	2.02	112	Eswatini	2.00
113	Burundi	1.97	113	Israel	1.92
114	Canada	1.96	114	Zambia	1.91

TABLE 6: T&T INDUSTRY SHARE OF GDP AND EMPLOYMENT BASED ON COUNTRIES, SOURCE FROM WTTC DATA VIA WORLD ECONOMIC FORUM (2018)*(Continued)*

T&T industry Share of GDP 2018 (% of total GDP)			T&T industry Share of Employment 2018 (% of total employment)		
115	North Macedonia	1.96	115	Ghana	1.91
116	Ireland	1.94	116	Bangladesh	1.90
117	Sierra Leone	1.94	117	Iran, Islamic Rep.	1.87
118	Colombia	1.92	118	Lithuania	1.85
119	Poland	1.91	119	Japan	1.85
120	Indonesia	1.90	120	Turkey	1.85
121	Nigeria	1.86	121	Guinea	1.81
122	Kazakhstan	1.84	122	North Macedonia	1.79
123	Chinese Taipei	1.81	123	Nigeria	1.73
124	Lithuania	1.80	124	Sierra Leone	1.71
125	The Netherlands	1.72	125	Burundi	1.69
126	Israel	1.64	126	Benin	1.65
127	Burkina Faso	1.58	127	Zimbabwe	1.36
128	Romania	1.54	128	Kyrgyz Republic	1.32
129	Ukraine	1.44	129	Burkina Faso	1.32
130	Kyrgyzstan	1.37	130	Ukraine	1.27
131	Angola	1.35	131	Angola	1.18
132	Paraguay	1.34	132	Russian Federation	1.17
133	Chad	1.28	133	Yemen	1.14
134	Brunei Darussalam	1.26	134	Korea, Rep.	1.12
135	Russian Federation	1.19	135	Paraguay	1.04
136	Republic of Moldova	0.96	136	Chad	0.93
137	Korea (ROK)	0.92	137	Moldova	0.82
138	Congo (Democratic Republic of)	0.58	138	Congo (Democratic Republic of)	0.45

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Founded in 1951, the Pacific Asia Travel Association (PATA) is a not-for-profit membership association that acts as a catalyst for the responsible development of travel and tourism to, from and within the Asia Pacific region. Learn more by visiting <https://www.pata.org/>

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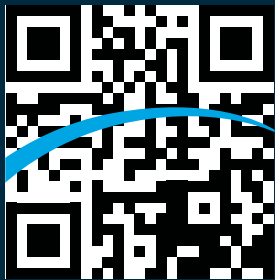
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