

Travel and Tourism Tech Startup Ecosystem and Investment Landscape



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UNWTO Investment Guidelines

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World Tourism Organization (UNWTO)

Calle del Poeta Joan Maragall, 42 28020 Madrid, Spain

Tel. : (+34) 915 67 81 00

Fax : (+34) 915 71 37 33

Website : www.unwto.org

E-mail : info@unwto.org

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Contributors include:

Drafting:

Natalia Bayona, Director Innovation, Education and Investments, UNWTO

Miguel Angel Figueroa C., Investments Principal, UNWTO

Addaia Arizmendi, Senior Innovation Specialist, UNWTO

Diana Gómez Muñoz, Innovation Associate, UNWTO

Data and graphs:

Miguel Angel Figueroa C., Investments Principal, UNWTO



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CONTENT



Travel and tourism tech investment landscape

- 1.1** Investment during COVID-19
- 1.2** Investment by industry (top industries)
- 1.3** Top investors and VCs



Travel and tourism tech startup landscape

- 2.1** Travel and tourism tech startups by verticals (technology)
- 2.2** Travel and tourism tech startups by geographic location
- 2.3** Travel and tourism tech startup unicorns
- 2.4** Travel and tourism tech startup trends and venture capital outlook



UNWTO travel and tourism tech startups

- 3.1.** UNWTO Innovation Ecosystem
- 3.2.** UNWTO startup challenges and competitions' impact
- 3.3.** UNWTO top tourism startup competitors
- 3.4.** UNWTO top 100 tourism startup competitors



CHAPTER 1

TRAVEL AND TOURISM TECH INVESTMENT LANDSCAPE

1



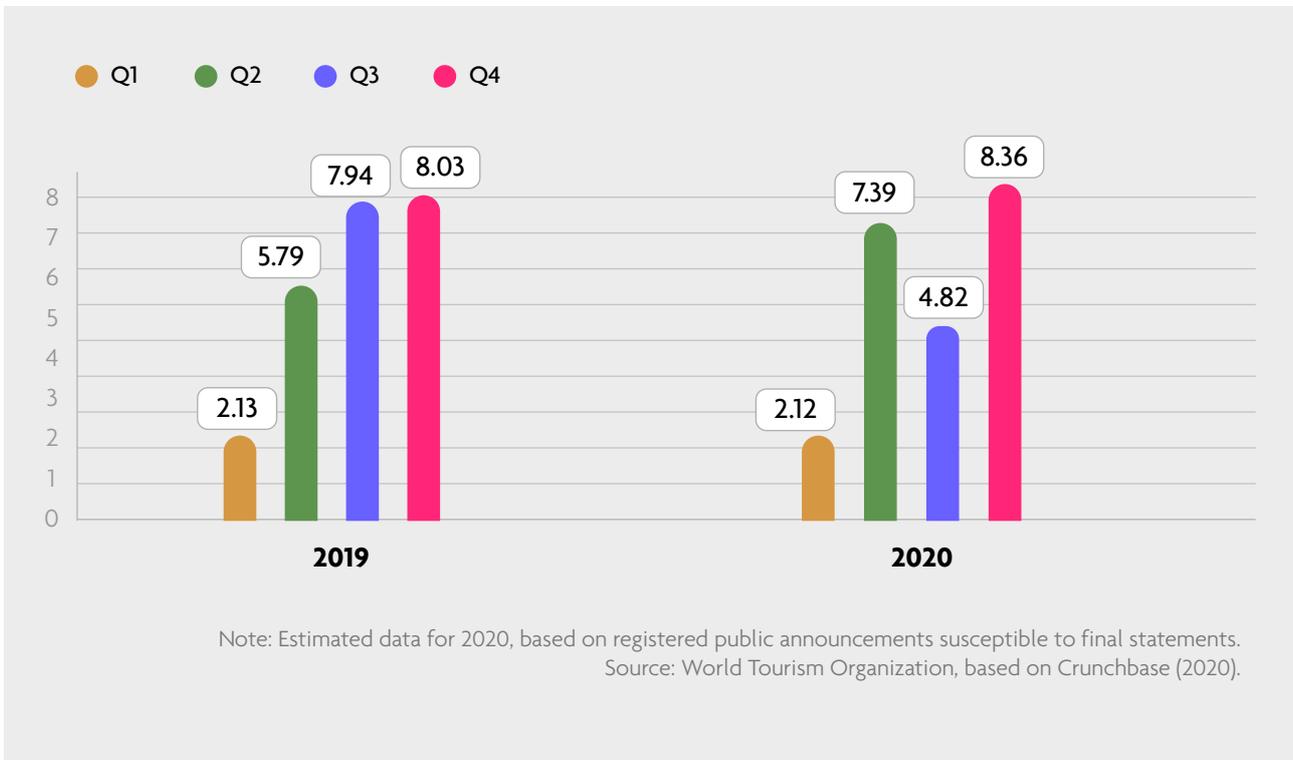
1.1. Investments during COVID-19

As presented in UNWTO's Investment Guidelines,¹ venture capital (VC) investment in the travel and tourism tech sector has experienced continuous growth throughout the last decade. Around USD 455 billion has been invested in travel and mobility tech startups from 2010 to 2019.² Surprisingly, despite the 2020 drop in global investment,³ the amount of funding towards the travel tech sector remains not only stable, but experiences a marginal increase during the first semester compared to 2019 (see figure

1.1). This is noteworthy considering the major impact of the COVID-19 pandemic on public health and the global economy, which could translate into a loss of 850 million to 1.1 billion international tourist arrivals, USD 910 billion to USD 1.2 trillion in export revenues and 100 million to 120 million direct tourism jobs.⁴



Figure 1.1: Value capital (VC) funded value travel and tourism tech startups, 2019 and 2020 (USD billion)



It is important to note that figure 1.1 does not account for the anticipated Airbnb initial public offering (IPO) which raised about USD 3.5 billion reaching a current market valuation of USD 75.4 billion, doubling its initial expectation of USD 40 billion. This IPO is considered one of the largest tech IPO of the year, closely followed by delivery company DoorDash and cloud company Snowflake.⁵ Another important insight to point out, when analysing the data closer, is that in 2020 the VC investments measured by the number of deals dropped considerably around 43% in June (see figure 1.2), but the trend started back in February 2020 as lockdowns and travel restrictions were implemented globally, and after witnessing highly volatile stock markets with historic drops that affected the performance of the entire tourism sector.

However, the flows of capital investments remain constant and even increased slightly compare with the 2019. This suggests a strong signal from investors and their commitment therein for the long term in the sector, enhancing its resilience. Boosting investments in sustainable innovations that accelerate sustainable transitions with startups focussing on energy, health, and procurement that were accelerated during the COVID-19 pandemic.

Figure 1.1: Venture capital (VC) deals account, by number of investments, 2019 and 2020



Note: Estimated decrease on VC backed investments for 2020.
 Source: World Tourism Organization, based on Crunchbase (2020).

1.2. Investments by top industries

According to UNWTO Investment Guidelines,⁶ there are emerging non-traditional tourism subsectors outputs from the flows of capital allocated to travel tech innovations. These subsectors include a range of different industries that are intertwined and part of the tourism value chain. The figure below represents the most common industries based on the number of investments within the past ten years (2010–2020). Here, there is a clear evolution from solutions focused on search and booking platforms that have been dominating the number of deals to solutions focused on transportation, health care, food and beverage and financial services among others.

Recently, the travel and tourism tech sector has been heavily influenced by “mega rounds” and unicorn valuations most of them in the transportation industry, funding solutions related with micro-mobility, e.g., ride-hailers, bike-sharing or electric scooters, but also the increasing support of electric and self-driving vehicles. These startups rely on a B2C business models which are capital-intensive, taking into account the list of unicorns funded over past five years.

Figure 1.3: Top industries travel and tourism tech startups funded, 2010–2020 (deals above USD 1 million)
 Weighted based on deals above US\$ 1 million | Investment above US\$ 1 million (2010-2020)



Note: Investments excluding initial public offerings, mergers and acquisitions (M&A) and large assets investments.
 Source: World Tourism Organization, based on Crunchbase (2020).

Therefore, there is a trend to move towards B2B solutions that focus on niche opportunities that serve to the complex problems of the tourism value chain, especially those that are able to build scalable technologies on existing digital infrastructure, e.g., revenue management, flight and ground operations, and security. And given the on-going pandemic, there is an entire window of opportunities for solutions related to safety, health, air quality, biosecurity, sustainability and so on.

This new reality provides new opportunities to create B2B markets with solutions that are relevant as we recover from the pandemic. Furthermore, it shows a shift towards personalized services and innovation focusses on experiences, but at the same time the appetite for niche innovations focusses on new technologies such artificial intelligence (AI), big data, augmented and virtual reality (AR/VR) among others. Further down, this study will explore some of the top technology verticals and provide some case studies of startups that participated in the UNWTO healing solution challenge in response to the pandemic.

1.3. Top investors and venture capitals (VCs)

Investment in travel tech has been growing marginally since 2014, becoming one of the most attractive sectors among investors. This growth attracted the major accelerators and VC firms in Silicon Valley (see table 1.1) who invested in several early-stage startups to lead the path to becoming global category leaders. There have been also corporative investors searching for innovations; they have been developing strategies of open innovation or corporate venture capital

(CVC) to identify complementary business models or novel ideas to ensure their competitiveness. These CVCs have been investing mostly in late state ventures, focussing on large tickets, especially in the transportation and mobility subsectors especially from China. Among the CVCs we can mention: Tencent, Softbank, Alibaba, JetBlue Technology Ventures, GV (Google Ventures), Comcast Ventures, Amadeus Ventures, Didi Chuxing, BMW or Intel Rakuten, among others.



Table 1.1: Top investors travel and tourism tech by number of deals

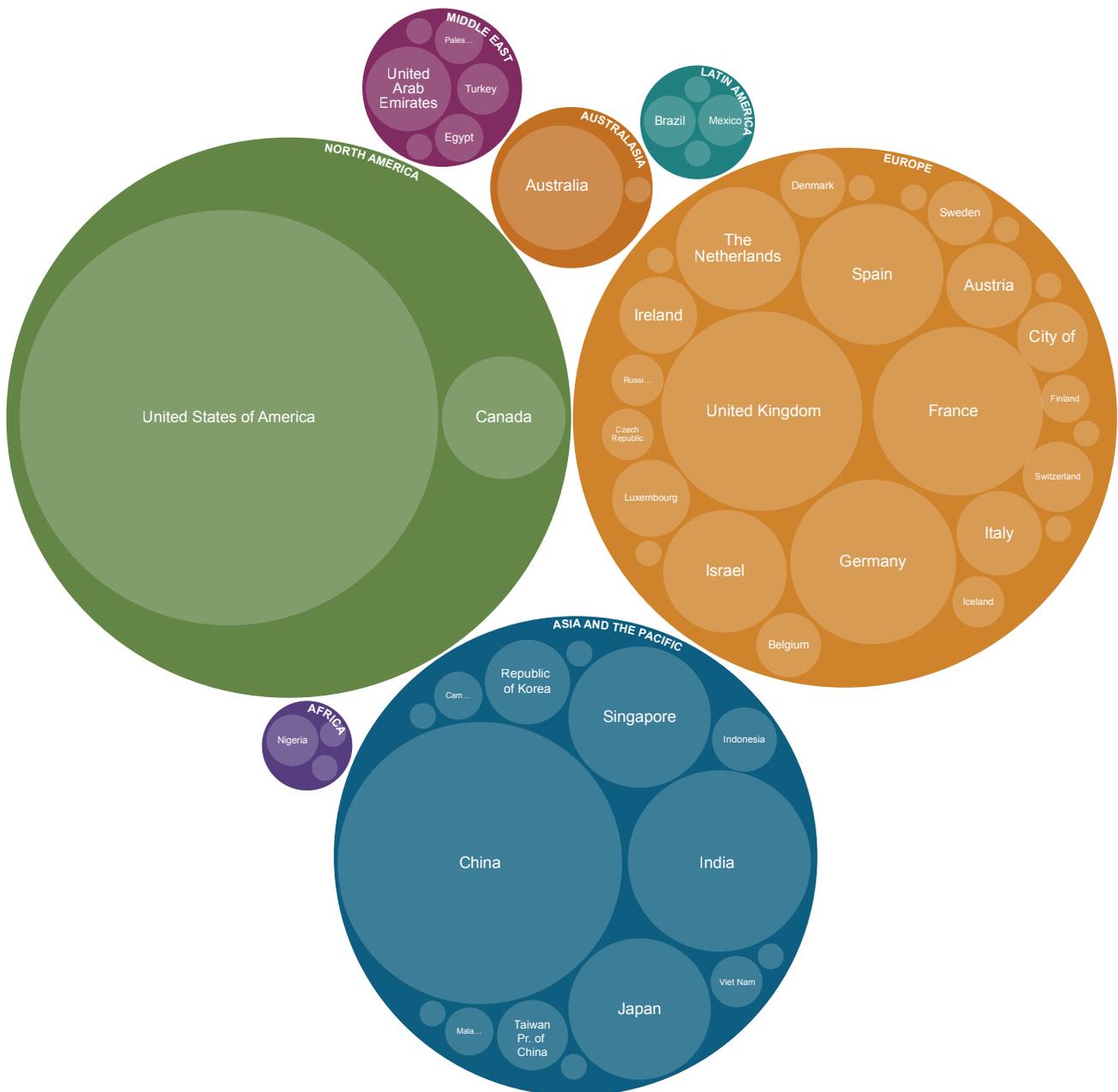
Rank	Investor	State	Country	Region	Investor type	Investments travel and transportation	Investments travel
1	500 Startups	California	United States of America	North America	Accelerator	123	89
2	Y Combinator	California	United States of America	North America	Accelerator	121	61
3	Plug and Play	California	United States of America	North America	Accelerator	91	60
4	Techstars	Colorado	United States of America	North America	Accelerator	119	58
5	Accel	California	United States of America	North America	Venture Capital	63	42
6	SOSV	New Jersey	United States of America	North America	Accelerator	77	36
7	Index Ventures	California	United States of America	North America	Venture Capital	42	27
8	SV Angel	California	United States of America	North America	Venture Capital	42	25
9	General Catalyst	Massachusetts	United States of America	North America	Venture Capital	31	25
10	Sequoia Capital	California	United States of America	North America	Venture Capital	54	24
11	Right Side Capital Management	California	United States of America	North America	Micro VC	51	24
12	GGV Capital	California	United States of America	North America	Venture Capital	98	21
13	New Enterprise Associates	California	United States of America	North America	Venture Capital	45	19
14	Battery Ventures	Massachusetts	United States of America	North America	Venture Capital	27	19
15	Lightspeed Venture Partners	California	United States of America	North America	Venture Capital	27	19

Source: UNWTO based on top 1000 investors from the travel tech cluster.

It is important to note that the top investors presented above are weighted by the number of investment deals, since the majority of their investments are coming from the same region. However, if we weighted investments by the amount of capital invested, Asian investors, specifically from China, lead the chart with mega rounds with fewer numbers of deals, but with large size tickets and large round of investments (see section 2.3 on unicorns) serving emerging

markets in the Asia and the Pacific region driven by a growing demand of tourists. For instance, in 2018, around 10% of China’s 1.4 billion inhabitants travelled internationally, and it is estimated that by 2027, the number of Chinese passport holders is to reach 300 million or 20% of the country’s population.⁷ The following figure shows the investors’ geographies based on the amount of capital invested.

Figure 1.4: Travel and tourism tech startups funded, by geographic location, 2010–2020



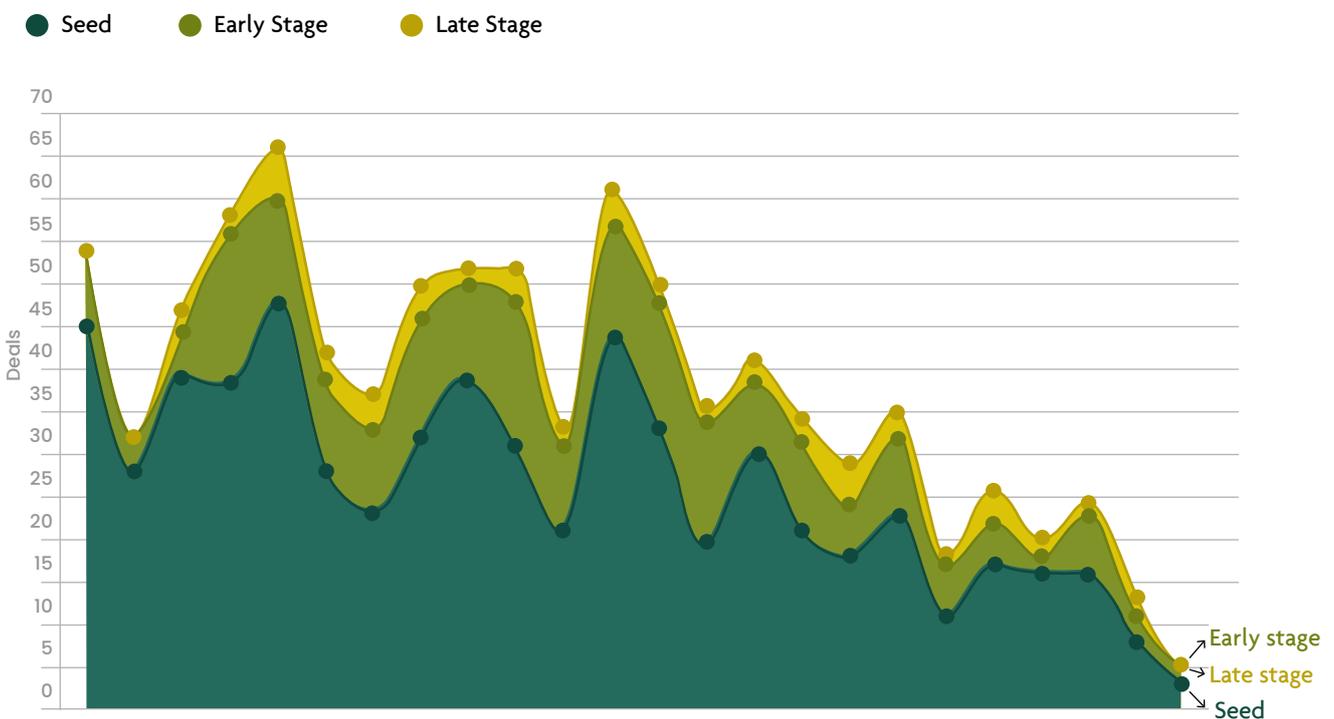
Notes: Weighted based on total USD millions raised. - Investments excluding initial public offerings and mergers and acquisitions (M&A).
 “Taiwan” refers to Taiwan Province of China. - “South Korea” refers to Republic of Korea.
 Source: World Tourism Organization, based on Crunchbase (2020).



Regardless of its geographic location, the growth in the travel tech space seems to be slowing down, as the global tourism demand was affected by COVID-19, forcing to pivot investment strategies especially in seed and early stages. Many investors have been consolidating current portfolios, helping

startups with liquidity strategies and re-programing investments during the pandemic restrictions. The declining of deals was a trend, even before the pandemic, which is related with the stabilization and cycle of investments in the travel tech space (see figure 1.5).

Figure 1.5: Declining of venture capitals (VC) funding, 2019–2020 (stage deal per month)



Note: Estimated decrease on VC backed investments 2020
Source: World Tourism Organization, based on Crunchbase (2020).

Irrespective of the unicorns and mega rounds, early-stage investments are more frequent for travel tech startups, which present several needs for early-stage rounds concerning the “equity gap” needs. The World Bank has estimated the financing gap in developing countries to be USD 5.2 trillion.⁸ Several studies conducted to measure the financing gap have established that while challenges are abundant for all

“missing middle” segments,⁹ early-stage enterprises face bigger hurdles and the lack of financing is a major constraint to their growth. Often perceived by finance providers to be very risky and difficult to serve given their limited track record, high failure rates, low collateral and high transaction costs, early-stage enterprises are a particularly challenging segment of the “missing middle”.



CHAPTER 2

**TRAVEL AND TOURISM
TECH STARTUP
LANDSCAPE**

2



Methodological note:

This section considered investments made above USD 1 million tickets registered from 2010 and 2020¹⁰ only, analysing information from the top 10,000 active startups from the travel and tourism tech sector ranked above 710,000 points according to Crunchbase data base. This information was used as a proxy to measure capital formation on the travel tech sector which might vary and need to be updated accordingly. Data collection as for 5 December 2020.

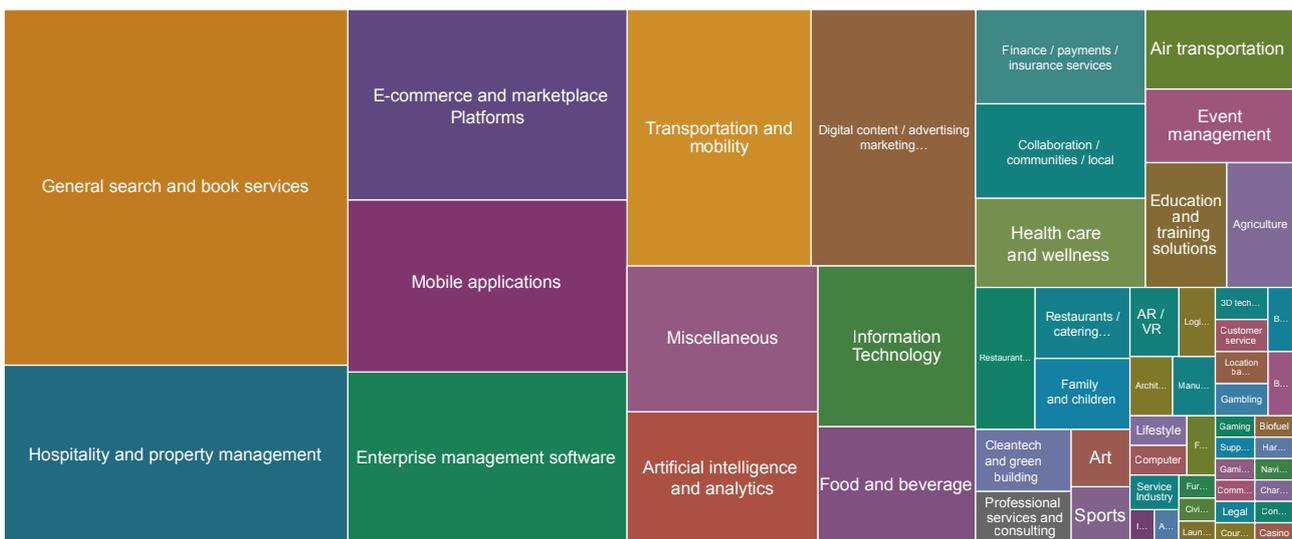
2.1. Travel and tourism tech startups by verticals (technology)

As presented above, over the past years the trend was marked by a growth period as the tourism sector continues its digitalization across its value chain. Approximately, since 2012, investors have been backing travel tech startups as a space with high potential. Furthermore, between 2015 and 2018, investors' appetite for travel tech startups generated a rapid growth of pipelines, speeding the investment process and consolidating subsectors, and defining

key technology verticals. Therefore, to have a better understanding of the types of verticals, this section uses data from travel tech startups that received investments above USD 1 million from 2010 to 2020, with the underlying assumption that technology was validated in the market, but also was backed by investors who validated the innovation with investment rounds.

Figure 2.1:

Verticals travel and tourism tech startups funded (based on frequency), 2010–2020 (investments above USD 1 million)



Notes: Investments excluding initial public offerings and mergers and acquisitions (M&A).
Source: World Tourism Organization, based on Crunchbase (2020).

Consequently, figure 2.1 represents the top technologies developed by 819 travel tech startups based on the numbers of solutions developed by entrepreneurs. On top of the list were solutions for general search and booking services, which are related to interfaces and web-based engines that consume data from consumers, as well as from businesses incorporating B2B and B2C models. In second place, we could observe solutions for property management and commercial software to increase performance and

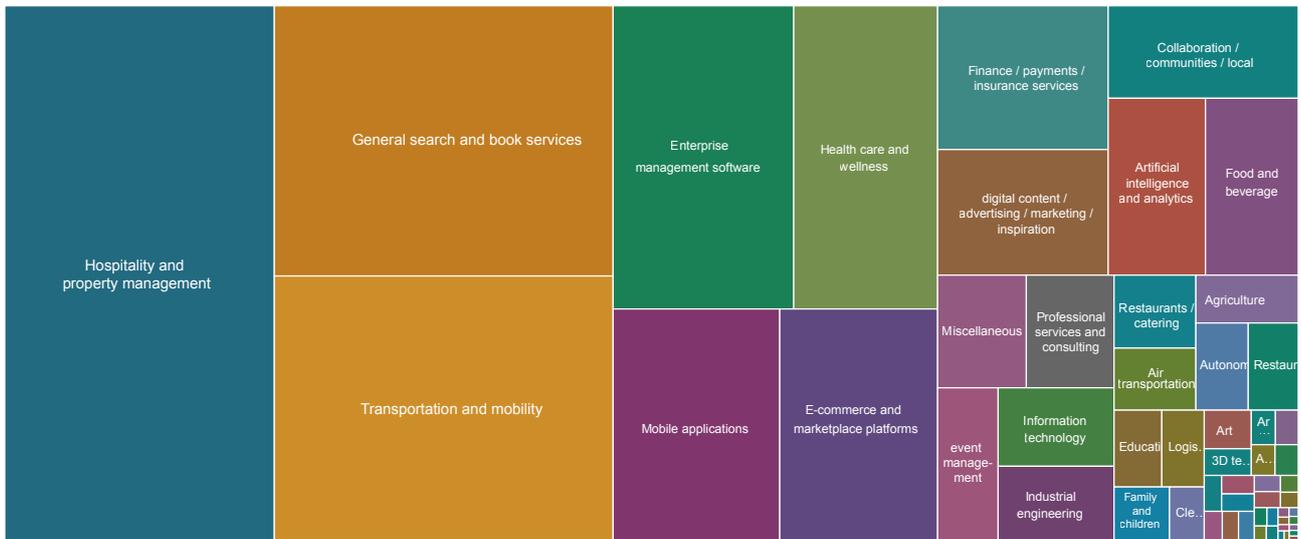
managing revenues and cost. These solutions introduced software as a service (SaaS) models and commercial fees per transaction. The third group is related to platform-based solutions focussed on B2C, and the digitalization of travel agencies, which involved mobile application technologies, cloud services, and meta data analysis as the technologies were diffused. These solutions were developed from the founders' and entrepreneurs' experiences and preferences.



If we analyse the data closer (see figure 2.2), from the investor’s perspective the technologies that were funded the most were different. The investors preferred solutions based on a B2B models leveraging their commercial and business networks, especially in regards SaaS, and web platforms that offered a combination of B2B and B2C models. These solutions incorporated technologies based on data analysis, enterprise management software, payment and connectivity, among others. Late investments increased funding towards B2C modes focussed on micro-mobility and the share economy with solutions related to hailing and carpooling, electric vehicles and autonomous driving, car rental and car sharing, and even aircraft and flying, and other personalized experiences and segmented platforms, increasing the

solutions on AI, cloud-based platforms, mobile application technologies and payments, among others. Remarkably, as personalization increase, there is a tendency towards technologies using AI and analytics, augmented and virtual reality (AR/VR), blockchain, internet of things (IoT), clean tech, health tech and sustainable technologies. There was special interest in technologies with potential applications in specialized niches and segments with specific complex problems that need innovative solutions such as energy efficiency, electric transportation, space transportation, decarbonization or health and safety. COVID-19 has accelerated technological transition and influenced consumer behaviour towards sustainability.

Figure 2.2: Verticals travel and tourism tech startups funded, 2010–2020 (investments above USD 1 million)



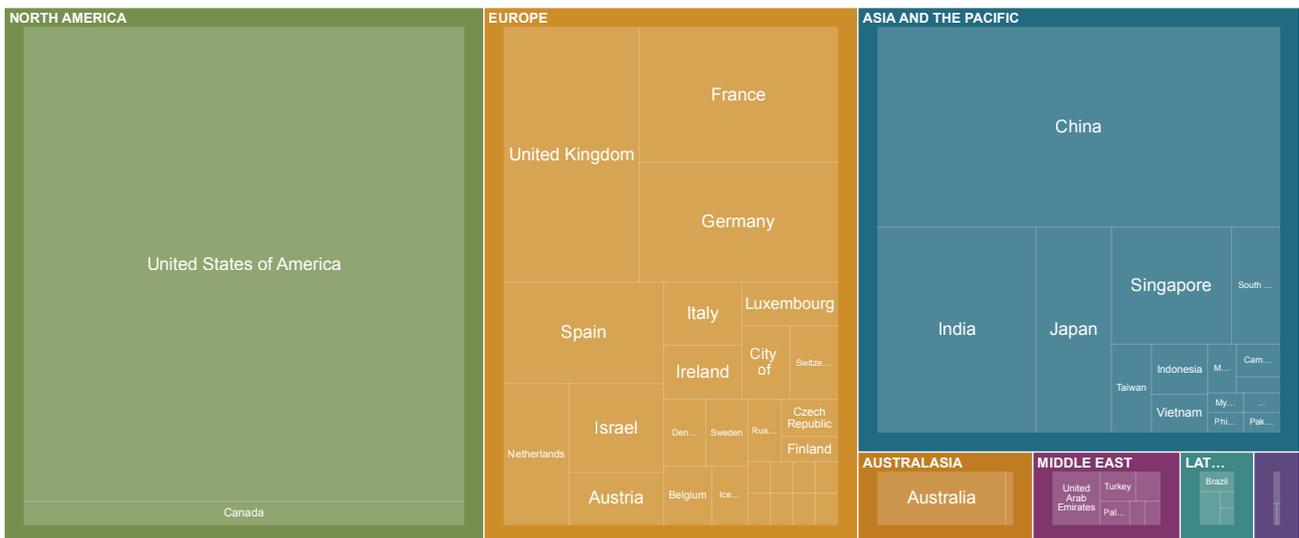
Notes: Weighted based on total USD millions raised. Investments excluding initial public offerings and mergers and acquisitions (M&A). Source: World Tourism Organization, based on Crunchbase (2020).

2.2. Travel and tourism tech startups by geographic location

Regarding the geographical distribution of travel tech startups, North America continues to drive innovation with the United States of America leading with more than 280 funded startups. The second region is Asia and the Pacific with larger investment rounds. Chinese investors backed more than 100 startups in China and across the region (231). In third place is Europe which continues growing its deals supported by the European Union policies in digital infrastructure, sustainable transitions and mobility. Within

Europe, as an innovation hub and influenced by its financial sophisticated ecosystem, the United Kingdom is the frontrunner with more than 50 leads, followed by Germany, France and Spain with around 100 among them. European startups have been increasing in number with electric vehicles and micromobility solutions, where France and Spain respectively have been growing driven by their vast international tourist arrivals and their tourism ecosystem.

Figure 2.3: Travel and tourism tech startup deals by region, 2010–2020 (investments above USD 1 million)



Notes: Weighted based on startup accounts. Investments excluding initial public offerings and mergers and acquisitions (M&A).

“Taiwan” refers to Taiwan Province of China.

“South Korea” refers to Republic of Korea.

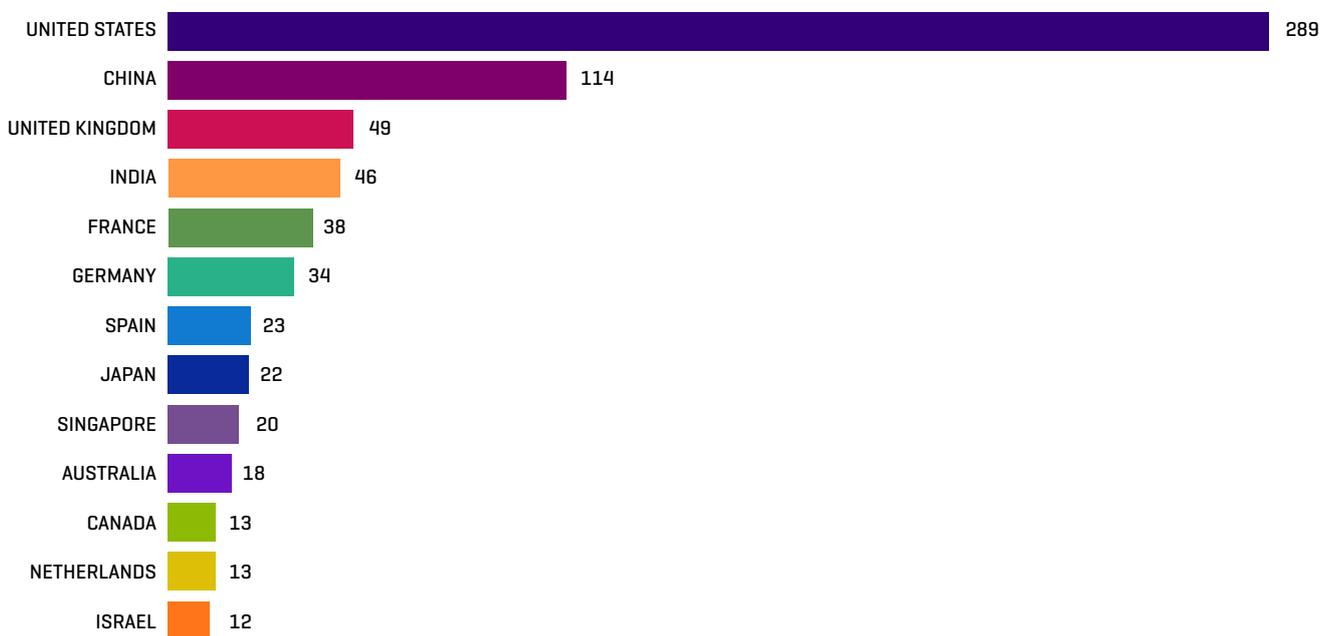
Source: World Tourism Organization, based on Crunchbase (2020).



Finally, the Middle East region reached almost 16 deals, followed by Latin America with 10 deals and Africa with 5 deals. Figure 2.4 shows the most active countries by number of deals. Besides the countries already mentioned above, Singapore is worth noticing with 20 deals, Australia with 18 and Israel with 12 deals, part of the top active countries to watch for: for example, Refundit, a startup from Israel with a solution to change the VAT refund process,

helping the tax authorities by enabling big data analytics, and improving fraud prevention capabilities. Refundit was awarded with the 1st prize of the UNWTO Global Travel Tech Competition in 2019. After the competition, Refundit was able to raise USD 9.8 million from Amadeus Venture (lead investor) and co-investors (Portugal Ventures), both part of the UNWTO Investment Network.¹¹

Figure 2.4: Most active travel and tourism tech startup deals by country, 2010–2020



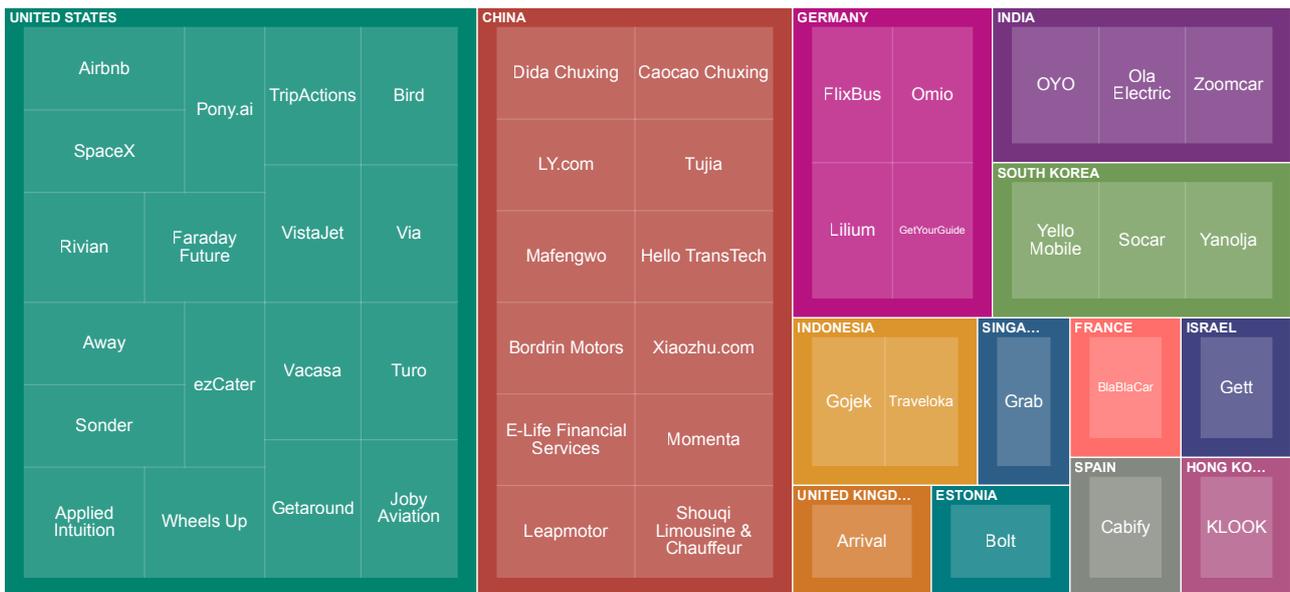
Source: World Tourism Organization, based on Crunchbase (2020).

2.3. Travel and tourism tech startups unicorns

Driven by the large funding rounds the travel and tourism tech unicorn valued at more than USD 1 billion have doubled from 22 startups in the 2018 to more than 50 companies by the end of 2020 (see figure 2.5). Among them we can mention the transportation and mobility startups: SpaceX, Waymo, Via and Lime (United States of America); Li Auto and Peng (China); Go-JEK (Indonesia); and Lilium (Germany); consolidating as one of the industries with major investments in travel tech, not only due to their capital-intensive nature, but for its potential to disrupt the space. Moreover, despite the effects of COVID-19, there were several other large investments rounds in 2020 besides the transportation industries. For instance, Traveloka (Indonesia) raised USD USD

250 million for its online travel booking platform; TripActions (United States of America) raised USD USD 125 million and Cloudbeds (United States of America) raised USD USD 82 million for their hospitality management solutions confirming the trend for B2B startups. There are also other traditional booking platforms such as: Vacasa (United States of America) which raised USD USD 108 million; Hopper (Canada) raising USD USD 75 million; business platforms like Selina (United States of America) a travel accommodation platform that raised USD USD 60million; or SevenRooms (United States of America), a reservation tool for hospitality businesses, raised USD USD 50 million.

Figure 2.5: Top 50 travel tech unicorns per country



Source: World Tourism Organization, based on Crunchbase (2020).

2.4. Travel and tourism tech startup trends and venture capital outlook

By measuring the flows of capital invested in the travel and tourism tech startups, there is more evidence of a new cycle in this space. Given its potential to reach large markets at the consumer level, as well as at the ecosystem level, this cycle may

continue consolidating as an attractive sector for investors as it cross-cuts several industries. This creates opportunities to disrupt specific niches through new technologies. For instance, there is an increasing number of investments that began with



micro-mobility solutions (introducing electric vehicles) which create channels to spread technologies or promote them. Here, a potential trend can be observed for electric transportation solutions and other forms of transportation services like space aircrafts or hyper-loops which introduce other complementary services once technologies are adopted.

There are other niche opportunities to be addressed related to complex problems associated to big data and analytics, payments and finance, health and safety or energy efficiency, among others; for example, Fly Now Pay Later (United Kingdom), a travel payment startup that recently raised USD 43.28 million; startups like Cloud Helios (China) that raised USD 42.74 million; or Fenbeitong (China) which raised USD 36 million – both Chinese solutions are focussed on travel expense management.

Understanding the impacts of the COVID-19 pandemic into tech startup investments is critical, as variables influence a possible attempt of a 2021 outlook. How long it will take to re-establish pre-COVID-19 conditions is still unknown, as there are several political and economic crises that are expected as consequence of the pandemic, such as unemployment, inflation, drops on FDI and trade worldwide.

These issues affect both VC investors and companies, and have a direct impact on the consumer behaviours, due to ongoing travel restrictions and consequent fear. In addition to macro conditions, the travel tech industry itself is undergoing a period of transformation and innovation within its investment cycle. The pandemic catapulted alternatives on virtual events and conferences. The case of Zoom (United States of America) whose revenue increased to almost USD 664 million in the first semester of 2020, growing almost 400% from last year. It is a good illustration how technology can be easily adopted and become a substitute to live virtual events, conferences and even business trips. Another example is Hopin (United Kingdom), a fairly new (2019) startup focussed on live events, grew exponentially from 5,000 registered pre-COVID-19 users to 3.5 million users, raising a round of Series A and B funding in 2020. These two cases illustrate the potential of introducing new technologies to traditional sectors paving the way for AR/VR technologies to be adopted and other solutions to be developed.

While macroeconomic uncertainty remains, it is expected that investments in travel tech will consolidate reading capital allocated – but with fewer deals as per trends presented above. Trends show that:

- Despite the global tourism foreign direct investment (TFDI) plummeted by 73.2% in the first half of 2020, compared to 2019, investments in travel tech have maintained stable but decreased in number of deals. This pattern is expected to be similar in 2021 where VC investment might focus on healthcare and health solutions such as immunity passports, travel testing, tracking and prevention solutions, among others. This diversification in portfolios might stabilize the flows of capital and start a mature cycle in the travel tech space consolidating subsectors and creating new ones.

- Generation Z's consumer behaviour is a key driver to since this demographic group is digital native, and keener to travel with less apprehension than older generations, whose health is generally more at risk. The evidence suggests¹² that Gen-Zs along with millennials consider travel experience a priority for 2021. And it can be observed that there is an increasing number of travel tech startups using blockchain tokens to add value to the users' booking experiences, but also to create incentives based on decentralized networks which encourage travelling by engaging with mobile app financial solutions that accelerate the digitalization of the tourism value chain and its stakeholders.

- COVID-19 has accelerated the transitions towards green investments in the tourism sector. This is a powerful investment opportunity for travel tech focused on green buildings, energy efficiency, safety and health solutions. Especially if these investments add value to potential customers like hotels and assets managers who are considering retrofitting, and green building as a passive strategy to reduce emissions and increase the quality of air in the hospitality sector while there is a low demand, and as they prepare for a potential restart.



CHAPTER 3

UNWTO

TRAVEL AND TOURISM

TECH STARTUPS

3



Against the backdrop of the global travel and tourism tech innovation landscape previously described, this chapter seeks to provide insight on the activities being carried out by UNWTO and show new opportunities travel tech startups could contribute with for reviving tourism. With the aim to anticipate and meet sector demands, drive the digitalization of tourism and create an Innovation Ecosystem¹⁶ that will maximize the potential of the sector in terms of economic growth, job creation and sustainability, in 2018 UNWTO developed a framework for Innovation, Education, Digital Transformation and investments. In its two and a half years of operation, the ecosystem has organically developed as a network of key actors and stakeholders collaborating to advance the sector and support its digital transformation. This chapter offers an opportunity to showcase UNWTO's work in meeting current sector demands.

3.1. UNWTO Innovation Ecosystem

UNWTO, witnessing both the challenges faced by destinations and the digital transformation taking place, took a lead role in integrating collaboration for co-creation, value sharing and fostering ecosystems for quick adoption, relying on joint expertise from key stakeholders across all sectors from member states, academia, investors, startups, small and medium-sized enterprises (SMEs) and corporations, alongside identifying experts for long-term economic and social resilience and sustainability. Transversal features such as digitalization, globalization and sustainability have provided a path to the rapid expansion of innovation in shared environments.

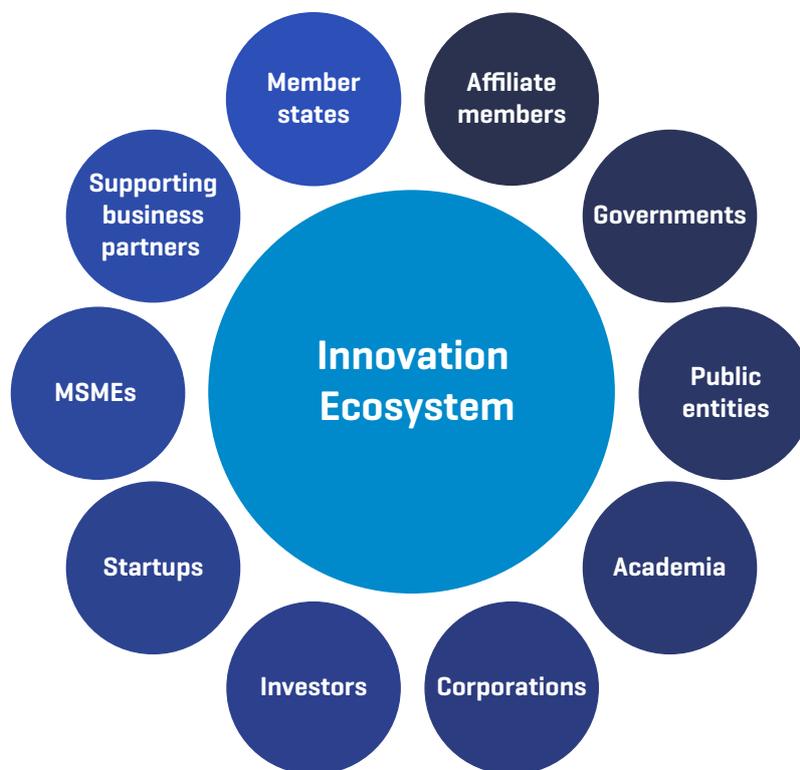
The UNWTO Innovation Ecosystem has emerged and evolved through the implementation of several initiatives carried out since 2018, including seven UNWTO Tourism Startup Competitions and six other challenges¹³ incorporating new technologies such as block-chain, artificial intelligence, Internet of things (IoT) and augmented/virtual reality (AR/VR).¹⁴ The support secured for finalists and winners has reached USD 74.9 million through UNWTO's network of corporations and venture capitalists, alongside pilot project development support from member states and the private sector since 2018.

As a result of the engagement to advance innovation, the above was carried out through the sourcing and encouragement of the adoption of disruptive technologies to propose a more seamless and sustainable tourism offer, enhance capacity building, as well as the opportunity for the startups to connect, partner and scale-up. Accordingly, UNWTO adopted an open innovation approach¹⁵ – a process that combines

internal and external ideas into platforms, architectures and systems as they look to advance innovations.

The UNWTO Innovation Ecosystem¹⁶ seeks to serve as a hub that fosters cutting-edge ideas and offers an enabling environment for determined entrepreneurs, risk-taking investors, leading sponsors and successful accelerators to work together.

Figure 3.1: UNWTO Innovation Ecosystem



UNWTO recognizes that its mission and commitment to digitally transforming the tourism sector can only be successful by guaranteeing the supply of necessary guidance, tools and skills to governments and stakeholders across the tourism value chain.¹⁷ Such an

innovation-led role includes encouraging the adoption of disruptive technologies to offer a more seamless and sustainable tourism offer, enhance capacity building, as well as the opportunity for startups to connect, partner and scale-up.

3.2. Impact of UNWTO startup challenges and competitions

To nurture the UNWTO Innovation Ecosystem from new ideas, stakeholders and disruptive solutions, UNWTO is recurrently hosting Innovation Challenges and Competitions. These challenges are multi-thema-

tic and/or can be adapted to the prevailing needs and demands of the tourism sector at any given time. The following table outlines the UNWTO initiatives which have taken place since 2018.

Table 3.1: Impact of UNWTO' competitions and challenges

	<p>Competitions and challenges: 1st UNWTO Tourism Startup Competition [2018]</p> <p>Main partners: Globalia</p> <p>Total participants: Over 3000 applications from 132 countries</p>	<p>Target: Identify innovative startups capable of transforming the way people travel and experience tourism, while adhering closely to the principles of sustainability [economic, social, and environmental]</p> <p>Winning startups: Refundit [Israel]</p>
	<p>Competitions and challenges: 1st UNWTO Global Gastronomy Tourism Startup Competition [2019]</p> <p>Main partners: Basque Culinary Center [BCC] and PromPeru</p> <p>Total participants: Over 300 applications from 84 countries</p>	<p>Target: Promote a sustainable Gastronomy Tourism sector that works towards achieving the 2030 Sustainable Development Agenda and its 17 SDGs.</p> <p>Winning startups: Dinify [Czech Republic] Bitemojo [Israel]</p>
	<p>Competitions and challenges: 1st UNWTO Global Sports-Tourism Startup Competition [2019]</p> <p>Main partners: FC Barcelona's Barça Innovation Hub and Qatar's National Tourism Council</p> <p>Total participants: Over 100 applications from 50 countries</p>	<p>Target: Identify challenges and projects, and catalyzing innovations that can transform the Sport and tourism sector in the near future.</p> <p>Winning startups: RunningCityMile [France]</p>
	<p>Competitions and challenges: 2nd UNWTO Tourism Startup Competition [2019-2020]</p> <p>Main partners: Turismo de Portugal, Wakalua, Fitur, Telefónica, IE Africa Center, Digital District of Valencia, Amadeus and Intu Costa del Sol</p> <p>Total participants: Over 1750 applications from 150 countries</p>	<p>Target: Identify and reward the new companies that will lead the transformation of the global tourism sector within the framework of innovation and sustainability</p> <p>Winning startups: Klustera [Mexico], Eccocar [Spain], Visualfy [Spain], Questo App [Romania], i-likelocal [Netherlands], HiJiffy [Portugal], Live, Electric Tours [Portugal]</p>



Competitions and challenges:
UNWTO Healing Solutions for Tourism Challenge (2020)

Main partners: World Health Organization (WHO)

Total participants: Over 1000 applications from 100 countries

Winning startups:
HandInScan/ChamHeleon [Canada/United States of America],
OUTPOST Healthcare [Canada],

Target: Global call to reach the most disruptive startups, entrepreneurs and drive solutions to mitigate Covid-19 impacts on tourism through health, economic and destination management solutions

SeeTrue AI [Israel],
Checkpoint [Spain]
MyStay [Czech Republic],
WAAM MACHINES [Poland],
iBonus Limited [Hong Kong (China)],
Beautiful Destinations, Inc. [United States of America]
and Airside [United States of America]



Competitions and challenges:
Desafio Brasileiro de Inovação em Turismo (2020)

Main partners: Ministério do Turismo Brasil and Wakalua in collaboration with UNWTO

Total participants: Over 700 applications participants

Target: To boost innovation in the Brazilian tourism sector, by improving the competitiveness of the sector throughout the country by digitally transforming public and private organizations.

Winning startups: WorldPackers [Brazil]



Competitions and challenges:
Beyond Tourism Innovation Challenge (2020)

Main partners: The Inter-American Development Bank (IADB), through its innovation laboratory, IADB Lab, in collaboration with UNWTO

Total participants: Over 214 applications from 28 countries

Target: Identify new digital skills for the recovery phase post-COVID; and environmental sustainability, to implement clean technologies and circular economy models, climate-smart agricultural practices, and protection of natural habitats.

Winning startups:
Better Batteries [Barbados],
Belizing Tourism Innovation Lab [Belize],
INTO [Costa Rica],
Green Fins Hub [Dominican Republic],
Safe Lodges Equal Safe Guests [Guyana],
Caribbean Tourism Career Accelerator [Haiti],
Digital Transformation of Indigenous [Panama] and
Nariva Swamp [Trinidad and Tobago]



Competitions and challenges:
UNWTO Rural Tourism Competition [Spain]

Main partners: Google, Ministerio de Industria, Energía y Turismo de España and FEDEMUR

Total participants: Over 136 from Spain

Target: Promote solutions to rural Spain's challenges, strengthen the role of tourism in addressing local problems, emphasis on greater employment and entrepreneurship opportunities based on sustainability

Winning startups: My Street Book and Vanwoow [Spain]



Competitions and challenges:
UNWTO Inspiration Africa Branding Challenge (2020)

Main partners: CNN

Total participants: Over 150 applications from 48 countries

Target: Identify a campaign that positions Africa as a destination in the minds of travellers supporting the efforts of individual countries and companies, making tourism a driver of development in the continent

Winning startups:
UBUNTU: Africa invites you to live-Atrevia [Spain]



Competitions and challenges:
2nd UNWTO Global Gastronomy Tourism Startup Competition (2020)

Main partners: Basque Culinary Center [BCC]

Total participants: Over 300 applications from 150 countries

Target: Identify challenges and projects, and catalyzing innovations that can transform the Gastronomy Tourism sector in the near future.

Winning startups: FoodieOn [Republic of Korea] and Jiranis Food [Kenya]



Competitions and challenges:
UNWTO Smart Solutions for Smart Destinations Challenge

Main partners: Athletic Club of Bilbao and Deputy for Economic Promotion, Regional Government of Bizkaia

Total participants: Over 99 applications from 37 countries

Target: Identify innovative, intelligent solutions that maximise the visitor's experience of stadiums or events. Proposals that affect the distribution of flows of tourists through the region, providing access to the offer the territory

Winning startups:
NECSUM Trisom [Spain] and Orwell Virtual Reality [Italy]

Currently, there are several ongoing initiatives. Among them, the UNWTO Sustainable Development Goals Global Startup Competition to support long-term recovery through the achievement of the UN Sustainable Development Goals (SDGs), in partnership with organizations such as Google, MasterCard, Plug and Play, Amadeus, Telefónica and the Inter-American Development Bank. The competition currently reached over 10,000 participants from 138 countries.

The UNWTO Hospitality Challenge supports in collaboration with Sommet Education the hospitality talents of tomorrow. The challenge received almost 600 applications from over 95 countries. The top 30 applicants will receive full-board scholarships to world class education programmes at Glion Institute of Higher Education, Les Roches and École Ducasse to promote the value of education and academic skills-acquisition in the tourism sector.

3.3. UNWTO top tourism startup competitors

The following section summarized data of the top 200 UNWTO tourism startups which were selected from a total of 7,750 applications from over 150 countries. These startups stand out for their level of innovation within the tourism sector or their meaningful impact on the environment, communities and the economy, and for genuinely aligning their mission with at least one of the SDGs.

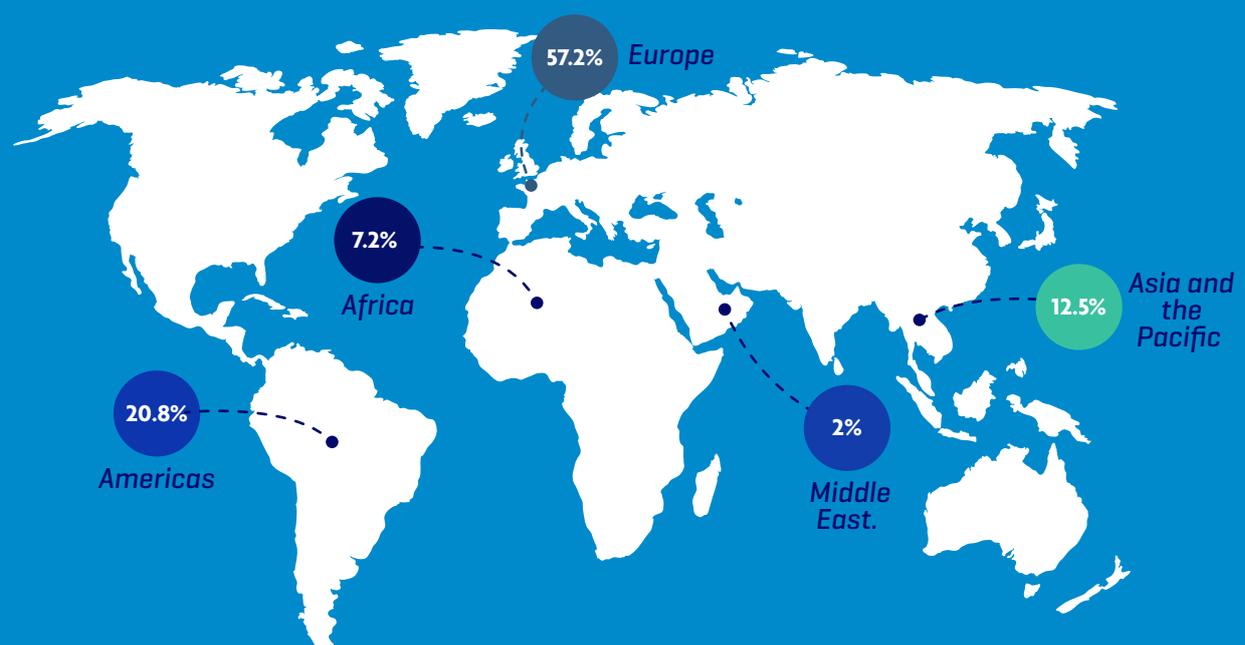
3.3.1. UNWTO top tourism startup competitors by region

Concerning the distribution by UNWTO world regions, the percentage of top Sstartups per region is as follows:

- 57.2% come from Europe;
- 20.8% from the Americas;
- 12.5% are from Asia and the Pacific;
- 7.2% are from Africa; and
- 2% from the Middle East.

Although it can be noted that the regions of Africa and the Middle East have a significant difference compared to the other regions, identifying this gap has made it possible to prioritize these regions and incorporate new opportunities to catalyze more efforts and partnerships in the countries covered by these regions.

Figure 3.2: UNWTO startups applications by region



3.3.2. UNWTO top tourism startup competitors by country

Currently, the UNWTO Innovation Ecosystem is enriched by over 200 top rated startups from 57 different countries.

Table 3.2: UNWTO top startup competitors¹⁸ by country

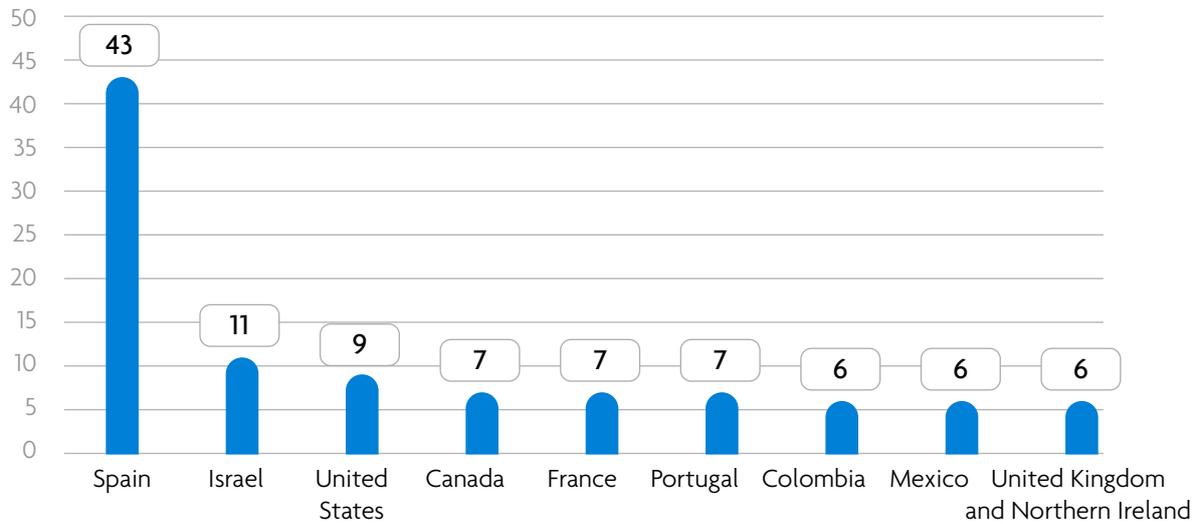
Country	Number of top startups
Argentina	3
Australia	4
Austria	2
Brazil	2
Canada	7
Chile	2
Colombia	6
Czech Republic	3
Denmark	4
France	7
Germany	4
Greece	2
India	5
Iran	4
Ireland	2
Israel	11
Italy	5
Japan	3
Kenya	3
Lebanon	2
Mexico	6
Netherlands	3
Peru	3
Portugal	7
Puerto Rico	2
Republic of Korea	3
Romania	2
Spain	43
Switzerland	3
Tanzania	2
Thailand	3
Turkey	3
Uganda	3
United Kingdom	6
United States of America	9



Note: The following countries delivered one (1) top tourism startup each: Azerbaijan, Belgium, Bolivia, Cameroon, China, Ecuador, Egypt, Georgia, Ghana, Jordan, Lithuania, Mauritius, Morocco, Namibia, Philippines, Poland, Senegal, Singapore, Slovenia, Sweden and Viet Nam.

3.3.3. Top 5 UNWTO startup competitors by country

UNWTO calls are open to entrepreneurs and proposals from all corners of the world, regardless of their nationality. A large concentration, 48% of the participating top startups, originate from eight countries. It was found that 46 out of the 57 countries which make up the list of top startups are from UNWTO member states, meaning an 80% of the total countries and a total of 154 Startups.

Figure 3.3: UNWTO top countries by number of startup applications


Spain leads the list with 43 of the top 200 startup.¹⁹ Second, Israel (11), the United States of America third (9), Canada, France and Portugal in fourth place with (7) startups each, fifth Colombia, Mexico, and the United Kingdom and Northern Ireland (6) Italy and India each with (5) top startups (see table 3.3).

Table 3.3: Top 5 countries by startups applications

Spain host to 43 shortlisted and some winner competitors from UNWTO's Challenges and Competitions, and in 2019 it launched its National Tourism Agenda: Sustainable Tourism Strategy of Spain 2030.^a As this strategy is the baseline for an effective tourism transformation, five strategic axes are addressed:

1. Governance system;
2. Sustainable growth;
3. Competitive transformation;
4. Touristic sites, companies and people; and
5. Marketing and tourism intelligence.

On strengthening innovation, Spain's Tourism Action Plan includes among its priorities the deployment of a digital strategy for the tourism sector, using technological capacities in favour of a more sustainable tourism management in the destinations and developing public policies for the digital transformation of the sector. Another priority is the development of a tourism intelligence model based on data using tourism monitoring systems, and the reinforcement of the digital marketing strategies in terms of microsegmentation through data mining.

a) For Sustainable Tourism Strategy of Spain 2030, please refer to: Secretaria de Estado de Turismo (2019), Directrices Generales de la Estrategia de Turismo Sostenible de España, SETUR, Gobierno de España (online), available at: <https://turismo.gob.es/es-es/estrategia-turismo-sostenible/Documents/directrices-estrategia-turismo-sostenible.pdf> (25-01-2021).

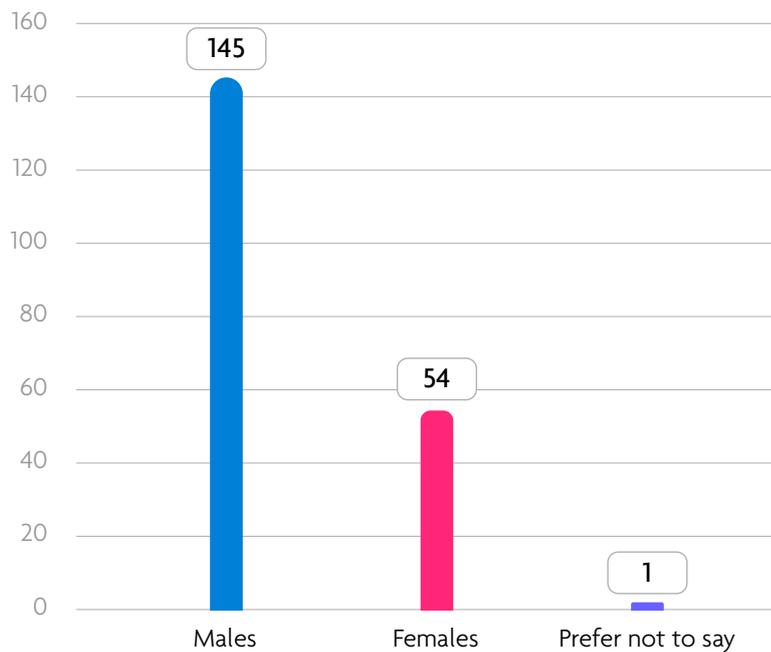


3.3.4. Top 5 UNWTO startup competitors by gender

Currently, 54 (27%) of the 200 selected top tourism startups are led by women, 145 (72.5%) by men and one (0.5%) did not detail. Additionally, during 2020, 41% of the winners from all UNWTO challenges and

competitions (including those the organization co-partnered with) were female led or female represented startups.

Figure 3.4: UNWTO top startup distribution by gender



As a sector with a female workforce majority worldwide, tourism has a pivotal role to play in achieving the commitments to gender equality and the empowerment of women of Sustainable Development Goal 5.20 In concordance with UN Women,²¹ the UNWTO Innovation Ecosystem recognizes that adopting a gender-responsive approach to innovation means going beyond acknowledging the need for gender equality in innovation and acting throughout the innovation cycle to ensure that women play a key role at every phase. With the goal of supporting this, the activities carried out aim to support female entrepreneurs by providing opportunities to train and develop their skills with leading institutions and

corporations from their respective, oftentimes male-dominated subsectors. For example, selected female startup founders from our competitions train and follow accompaniment processes with different expert partners such as large tech firms, gastronomy institutions, football clubs, banks and IT providers, among others. The mentorship sessions aim to empower female entrepreneurs through the acquisition of new skills and insights to continue to scale up their projects, helping support a more gender balanced sector in the long-run. UNWTO is working to source a larger percentage of female talent.



3.4

TOP 100 UNWTO TOURISM STARTUP COMPETITORS



To obtain more detailed and insight information regarding the top tourism startups, the total sum of top startups was narrowed down to 100,²² representing the most outstanding proposals, selected by the UNWTO Innovation Team of Experts after a process of rigorous examination and scrutiny. The selection criteria focussed on the milestones reached by the startups in terms of growth, impact, technology development, funding raised and new investors, before and after participating in any of the UNWTO challenges or competitions.

Once the top 100 tourism startups were chosen, and in order to deliver accurate and up-to-date information, entrepreneurs were invited to voluntarily parti-

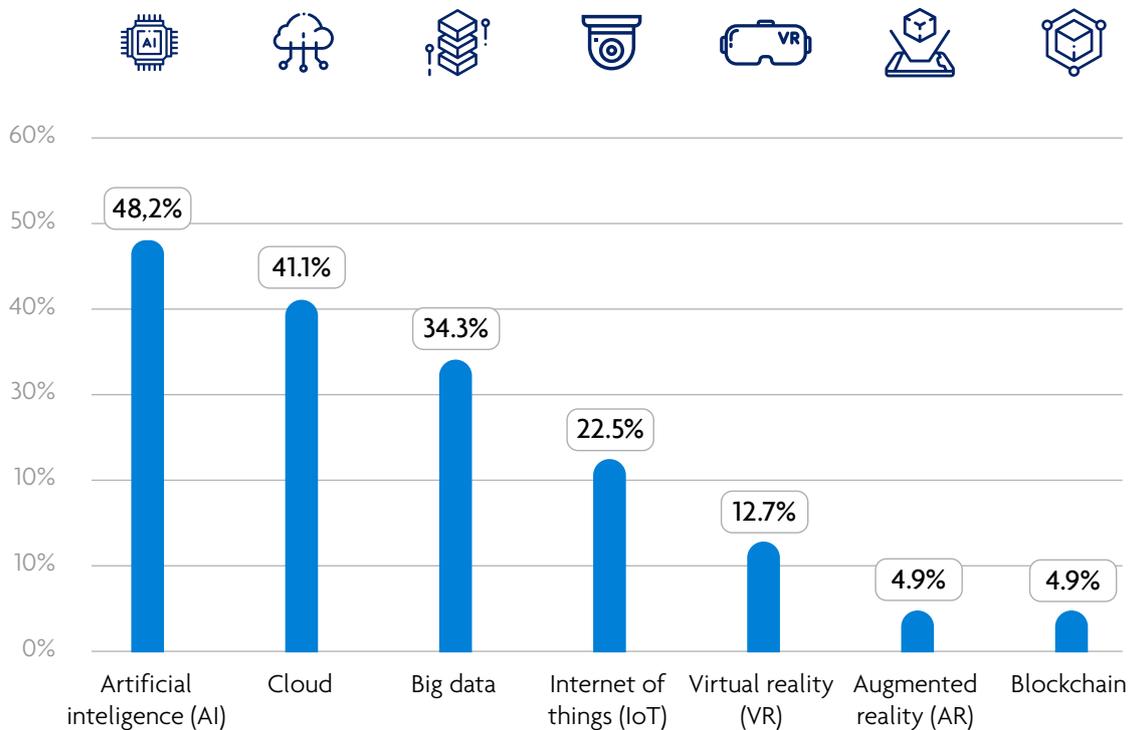
cipate in a brief questionnaire (annexed) about the tourism subsector represented, main technology used, venture capital investment stage, funding raised to date, main investors and identification with the Sustainable Development Goals by. Below, some of the most relevant results.

The Top 100 Tourism Startups is made up of the finalists from: 1st UNWTO Tourism Startup Competition, 2nd UNWTO Tourism Startup Competition, 1st Global Gastronomy Tourism Startup Competition, 2nd Global Gastronomy Tourism Startup Competition, Healing Solutions for Tourism Challenge, Rural Tourism Competition and the 1st Global Sports Tourism Start-Up Competition

3.4.1. Top 100 tourism startup UNWTO competitors by technologies

Among the various technologies that assembly the UNWTO Innovation Ecosystem, from the questionnaire provided where more than one answer was possible, the use of artificial intelligence (AI) remains the predilected alternative, as 42.2% of the top tourism startups stated offering their services based on this type of technology. Startups using AI are mainly related to services for accommodation, travel arrangements, and food and beverage. Cloud related-technologies like databases and storage servers are also part of the preferred tech-tools of

the top startups, representing 40% of the entrepreneurs. The startups using this type of technology provide solutions mainly for hotels and hospitality management, and events and MCCI. Lastly, 25.6% among the top entrepreneurs make use of the internet of things (IoT), developing tourism solutions mainly related to services as information, guides, destination management organizations services and Internet publishing, broadcasting, consultancy and web research.

Figure 3.5: UNWTO top startups distribution by technologies (%)


Note: Multiple answers were possible.

Table 3.4: UNWTO top startups distribution by most used technology by region

Region	Main technology	Tourism industry	Countries
Africa	Artificial intelligence	Mainly implemented for food, agriculture and beverage services.	Mauritius, Uganda, United Republic of Tanzania
Americas	Cloud	Mainly implemented for tour operators, travel agency, travel arrangement and reservation services, online travel agencies [OTAs] services.	Brazil, Colombia, Ecuador, Peru, Puerto Rico, United States of America
Asia and the Pacific	Big data	Mainly implemented for tourism services as information, guides and destination management organizations [DMO]	India, Iran, Republic of Korea, Singapore, Thailand, Viet Nam
Europe	Artificial intelligence	Mainly implemented for accommodation services and tour operators, travel agency, travel arrangement and reservation services, online travel agencies [OTAs] services	France, Germany, Israel, Italy, Portugal, Spain, Sweden, Switzerland and the United Kingdom
Middle East	Artificial intelligence	Mainly implemented for accommodation services	Lebanon, Qatar, Saudi Arabia, United Arab Emirate

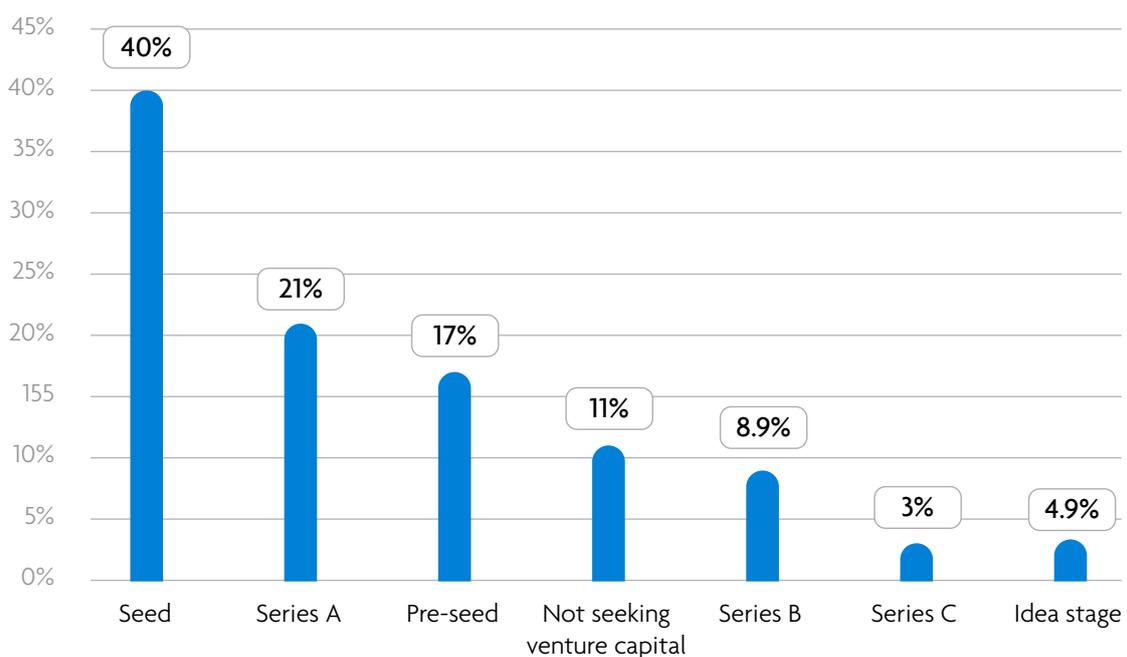


3.4.1. Top 100 tourism startup UNWTO competitors by technologies

Around 58% of the top 100 UNWTO competitor startups are in an early stage of round investments due to their nature. Nearly 40.6% of the top tourism startups are on a seed stage of funding, meaning they are working on validating their business models and gaining market traction. This funding is above USD 150,000 and under USD 1 million. A group of 17.8% are in pre-seed stage, raising funds from investors such as angels, own investments, grants, and others in order to develop a prototype or find a product market fit. These investments are usually below USD 150,000. The most developed startups have achieved a series A stage; a total of 20% received funding rounds ranging between USD 1 million to USD 10 million. Finally, 8.9% of the top tourism startups mentioned being on a series B investment stage. Funding rounds of this stage range on average between USD 10 million to USD 30 million. Lastly, 3% of the startups have successfully achieved a series C stage, whose rounds and onwards are for later stage and more established companies.²³

The total funding raised to date by the startups is of USD 139.2 from which USD 74.9 (54%) has been sourced since the creation of the UNWTO Innovation Network (2018)

Figure 3.6: Top 100 competition startups by investment stage (%)



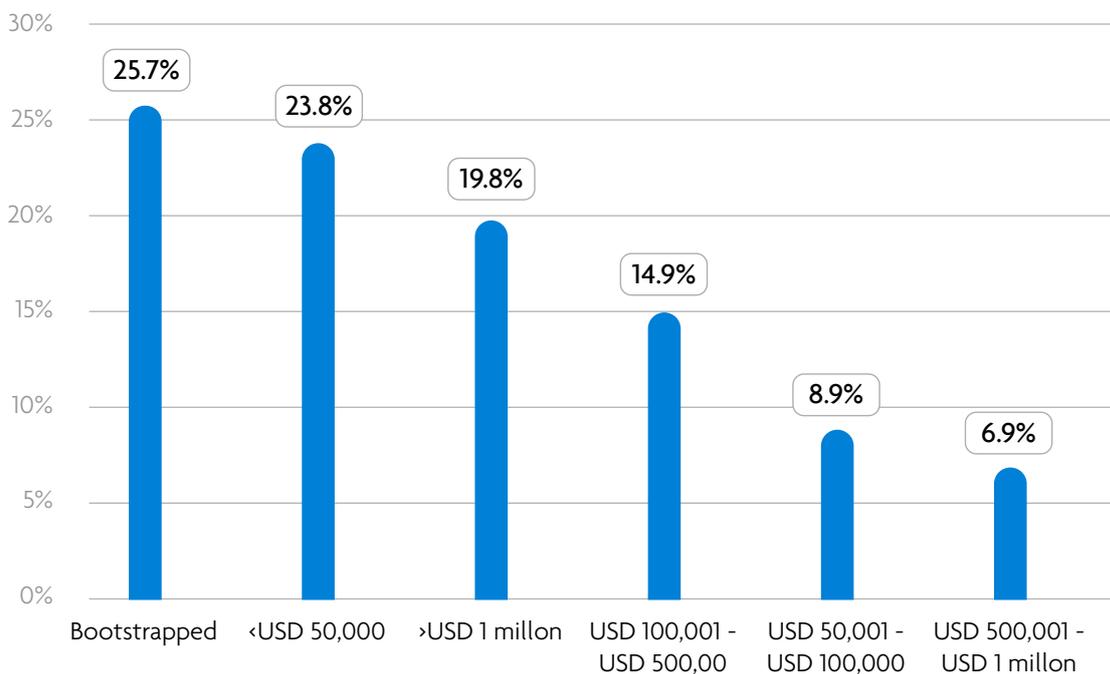


3.4.3. UNWTO top 100 tourism startup competitors by funds raised

As observed in previous sections, some UNWTO top 100 startup competitors are currently on a noteworthy stage of investment in terms of venture capital and have already identified their key investors. Around 25,7% of the entrepreneurs are still in a bootstrapped position in terms of funding, meaning they have not raised any kind of external resources. In

contrast with the 23,8% of top startups that raised less than USD 50,000 and, a total of 14,9% declared receiving between USD 100,001 – USD 500,000. Further, 6,9% have reached between USD 500,000 and USD 1 million, and 19,8% of the startups have raised to date more than USD 1 million.

Figure 3.6: Top 100 competition startups by investment stage (%)



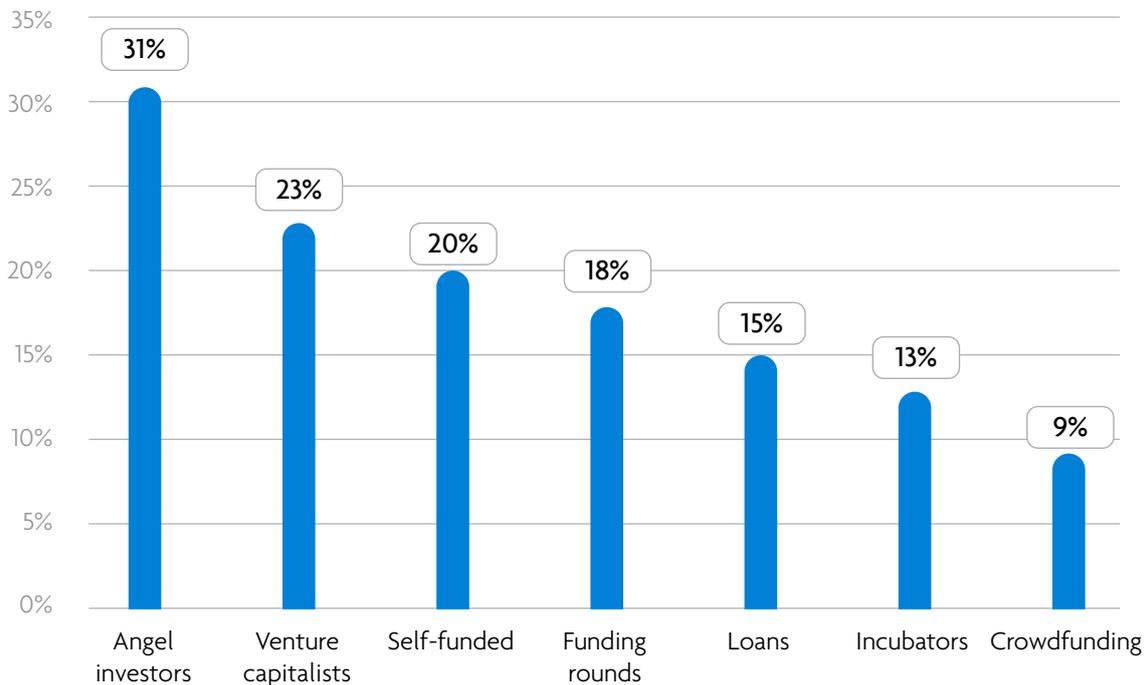
Note: Multiple answers were possible.

3.4.4. Top 100 tourism startup UNWTO competitors by types of investors

According to the results, the main type of investors funding the top 100 startups participating in UNWTO competitions and challenges are angel investors and venture capital firms. Around 31,4% of startups identified angel investors as their source of funding, followed by venture capitals firms with around 40% (22,5% + 17,6%) investing in different rounds stages.

meaning that they have no external investors as of today and that their operations are done with own resources or that they applied for a private loan from financial institutions and/or individuals (represented by 14,7% of the startups surveyed). Finally, accelerators and incubators were also identified as a relevant source of funding, as identified by 12,7% of the startups.

It is worth highlighting that around 20% of the startups classified themselves as self-funded,

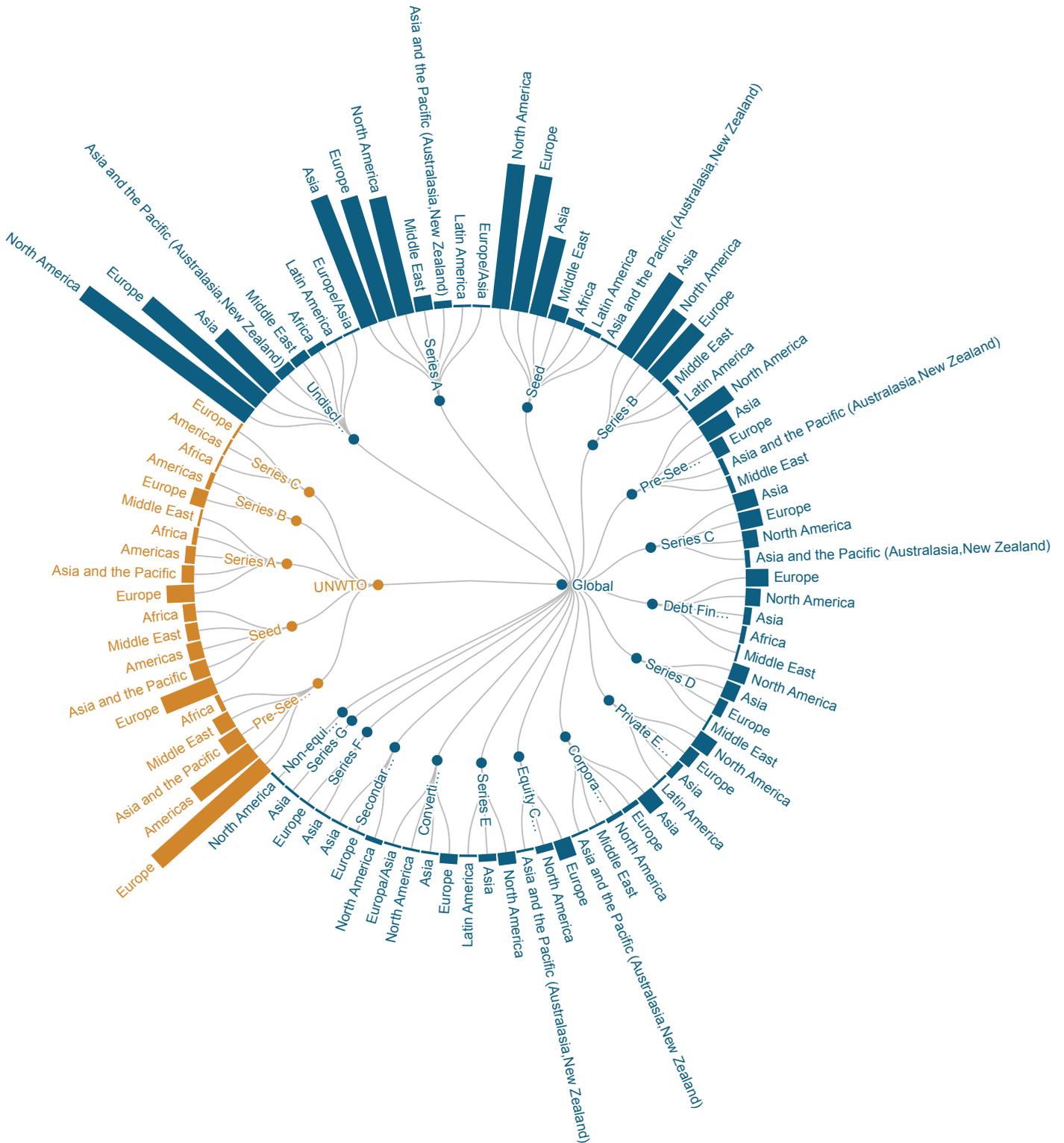
Figure 3.8: Top 100 UNWTO competition startups by types of investors (%)

3.4.5. UNWTO top startup competitors maturity and funding stage

Taking in consideration the data presented above, around 60% of the top UNWTO competitor startups are in early-stage of investment rounds. From which there are three main tiers of maturity based merely in funding rounds. The tier 1 correspond to the more mature startups (around 9% from the UNWTO surveyed startups). These startups were raising series B and – in a very small 3% – series C investment stage. The funding rounds ranged on average between USD 10 million and USD 30 million. Most of these startups applied from Spain, Israel, the United States of America, Canada, France, Portugal and the United Kingdom. The second tier 2 represents around 20% of the surveyed startups which received funding rounds ranging between USD 1 million and USD 10 million. These startups are still predominantly from Europe and North America like the tier 1, but adding countries such as Mexico or Colombia. Finally, the tier 3 corresponds to the largest group with more than 70% of startups which are in pre-seed stage below USD 150.000. with startups mostly from Europe, Latin America, Africa, Asia and the Pacific, and the Middle East respectively.



Figure 3.9: UNWTO competition startups by maturity and contribution



Note: Weighted based on total USD raised.



As figure 3.9 presents, the contribution of UNWTO's competitions is relevant since it sources new innovation and talent in early stages. Furthermore, it creates an open innovation platform where startups can gain exposure on an international platform. Moreover, contribution continues after the competitions as startups increase market traction and receive funding in subsequent investment rounds. It is important to point out that UNWTO's initiatives help to foster innovation from regions that are lagging behind e.g. Europe, Latin America, Africa, and Middle East in the travel tech race which is pronominally led by United States and China as shown at first part of this report.

3.4.6. UNWTO top 100 tourism startup competitors by venture type

Around 96% of the top 100 tourism startups stated that their business model venture type is for-profit. Compared to the 4% whose core-business is non-profit oriented (NGOs, academia and civil society organizations). In terms of the legal entity, 51% of the entrepreneurs established their startups as limited companies. On the other hand, and with a significant difference, 9% of the startups stated to be limited partnerships and 7% public limited companies. Additional types of legal entities identified by the startups were: private persons, associations, collective companies, foundations, public corporations, private companies, and corporations.

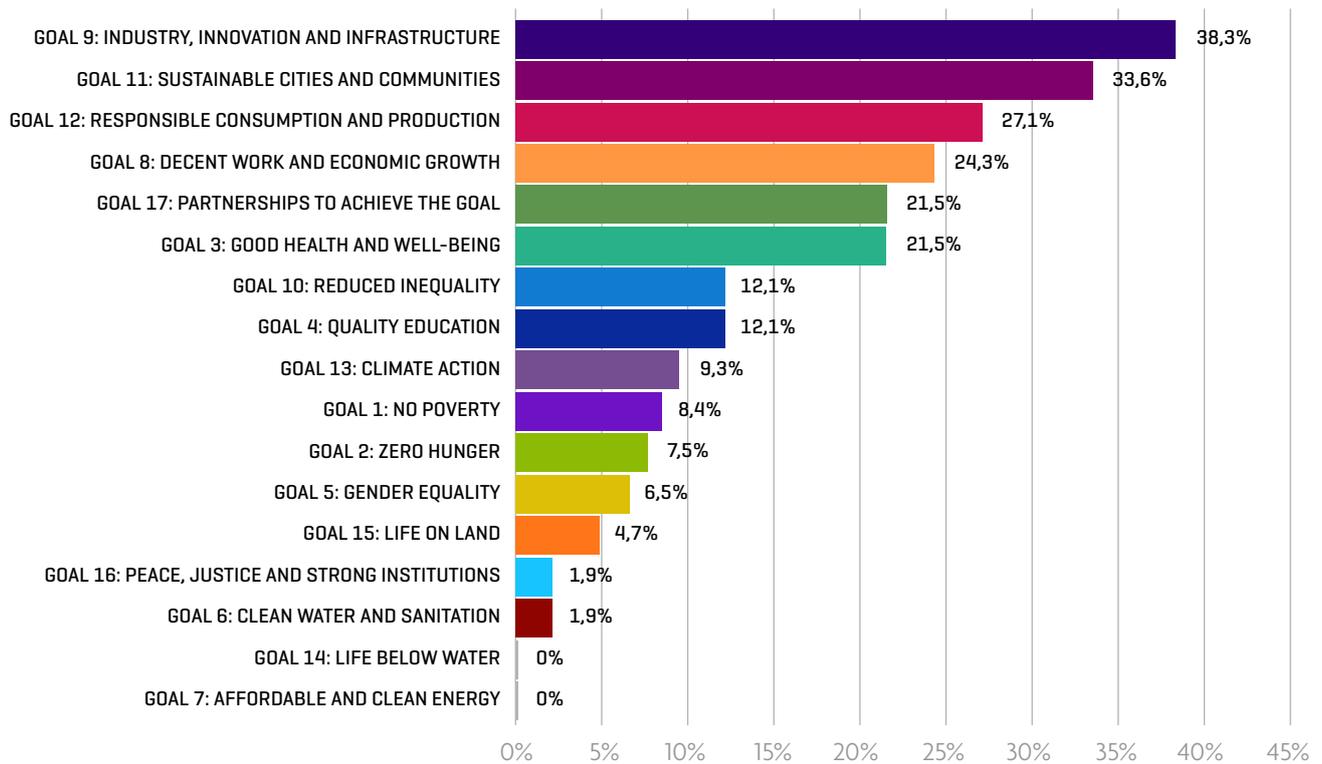
3.4.7. UNWTO top 100 tourism startup competitors by Sustainable Development Goals (SDG contribution)

As a specialized agency of the United Nations, World Tourism Organization is committed to the achievement of the 17 Sustainable Development Goals (SDGs) of the 2030 UN Agenda. Therefore, it is of the utmost priority to pinpoint the relation between the top 100 competition startups and the SDG. The contribution of the startups is evident and well-balance across the 17 SDGs. According to the results, 38.3% of the Top 100 tourism startups are working towards Goal 9 (industry, innovation and infrastructure), 33.6% for Goal 11 (sustainable cities and communities) and 27.1% for Goal 13 (responsible consumption and production). Nevertheless, the startups show a significant gap in addressing solutions to aim Goal 16 (peace, justice and strong institutions), Goal 6 (clean water and sanitation), Goal 7 (affordable and clean energy) and Goal 14 (life below water)





Figure 2.9: UNWTO top 100 startups by SDG contribution (%)



Note: Multiple answers were possible.

Nonetheless, and as stated before, there is an ongoing UNWTO SDGs competition to support long-term recovery through the achievement of the Goals, in partnership with organizations such as Google, MasterCard, Plug and Play, Amadeus, Telefónica and the Inter-American Development Bank. The

competition already reached over 10,000 participants from 138 countries, and the solution proposed by the innovators will contribute even more to the achievement of the SDGs globally.

3.5. UNWTO top startup competitors – examples of the evolution of some startups following participation in a UNWTO startup competition.

This section shows samples of UNWTO top tourism startups competitors based on the active funding deals they have secured since participating in one of the UNWTO challenges or competitions. Entrepreneurs were invited to provide insight on their perceived

benefit following their participation in the respective competition, as well as details on funding secured, scaling, key investors, impact and the public-private partnerships.



Radical waters

 South Africa

Solution: On site hypochlorous acid generators, using electrochemical activation of a brine solution

Funds raised to date: USD 6.5 million from four investors

Impact: Replacing traditional chemicals used in food, beverage and hospitality industries with non-toxic, environmentally friendly hypochlorous acid generated by electrochemical activation.

Public-private partnerships: Radical Waters collaborates closely with a worldwide network of distributors.

After participating in the UNWTO Healing Solutions for Tourism Challenge, Radical Waters noted an increased interest in its product from the hospitality sector, mainly hotels.



Otveit

 United States of America

Solution: Digital wallets for experiential shopping. A world in which consumers are identified and rewarded for shopping in both online and offline environments, across retail to entertainment to hospitality experiences. We call this: shoptainment.

Funds raised to date: USD 1.5 million

Investors: GapMinder Partners Ventures, SeedBlink Crowd, Capital Factory, International Accelerator and a number of angels.

Impact: Live experiential shopping is going to redefine the way we interact in retail, entertainment and hospitality. The impact is global.

Public-private partnerships: Large retail brands, various sports arenas, festivals, conferences, hotel resorts, theme parks.

Oveit has stated that its participation in the 1st UNWTO Tourism Startup Competition, contributed to the validation of its technology as an innovative disruptive cross-industry experiential technology.



IBonus

 Hong Kong, China

Solution: COVID-19 Digital Prevention System and Health Declaration System.

Funds raised to date: USD 400,000

Investors: Government funding and personal funding

Impact: Reduce the spread of COVID-19 while resuming daily economic activities.

Public-private partnerships:

Public: Pasig City Government in the Philippines, Hong Kong (China) Government.

Private: schools, elderly homes, hotels, temples, tourist attractions. One of the busiest temple with over 10 million visitors per year.

The participation in the UNWTO Healing Solutions for Tourism Challenge has helped IBonus to get support from governments.

BYHOURS

BYHOURS

 Spain

Solution: First hotel booking platform allowing

- Hotels to sell their inventory by hours (rooms, meeting rooms, fitness or spa access, etc.); and
- Guests to decide their check-in time and how many hours they want to stay in a hotel.

Funds raised to date: USD 14 million

Investors: Angel Ventures Mexico, Dila Capital, Howzat Partners, Caixa, Axon partners, Credit Andorra, Mediaset, among others.

Impact: BYHOURS brings the pay-per-use to the hospitality industry and helps hoteliers to optimize their empty rooms while offering flexibility to their guests.

Public-private partnerships: Enisa, Empre-
tur.

After participating in the 1st UNWTO Tourism Startup Competition, BYHOURS took the opportunity to meet with UNWTO network key players of the travel industry; it gained visibility and got smart advice.



Road.Travel

✚ United Kingdom/Russian Federation

Solution: Curated routes, trip planning and dynamic packaging for road trips, staycations and weekend getaways – bringing simplicity to car travels, enabling innovation for tourism destinations and connected cars.

Funds raised to date: USD 1.2 million

Investors: Business angels, founders, government grants.

Impact: Tourism dispersal, development of remote and rural destinations, accelerated adoption of electric vehicles through education and inspiration.

Public-private partnerships: Tourism boards and DMOs, automotive companies, airlines and travel service providers (e.g., Visit Saudi, Government of Moscow, Volkswagen Group, Mastercard, S7 Airlines)

After Road.Travel’s participation in the 2nd UNWTO Tourism Startup Competition, the startup have gained visibility, helping them move from conversations to partnerships, validating their approach through the prism of the Sustainable Development Goals.



VIAVII

🌀 Jordan and Qatar

Solution: Provide travelers, from all over the world, with an easy-to-use online platform to create custom-tailored and personalized travel experiences, based on budget and interest, while connecting them with passionate and talented people wherever they go, whatever they want to experience.

Funds raised to date: USD 492,000

Investors: (lead investors and co-investors): Supreme Committee for Delivery and Legacy, Qatar Science & Technology Park, Savour Ventures, Oasis 500 and angel investments.

Impact: Creating job opportunities for all locals to share their passion with travellers aiming for cultural preservation and equality.

Public-private partnerships: Amadeus, Supreme Committee for Delivery and Legacy (Qatar World Cup 2022), UNDP, Orange, European Bank for Reconstruction and Development, Ipark, Jordan Trail, Mercy Corps, USAID, EU Jade Project and EU Plan International.

According to VIAVII, following their participation in the 1st UNWTO Global Sports Tourism Startup Competition, they have had access to a global tourism network supported by a long-term social and sustainability-focussed mentorship.



Chapter 4:

Conclusions and key findings

Globally, the number of deals of travel tech startups dropped considerably in around 43% as lockdowns and travel restrictions were implemented during the COVID-19 outbreak. However, in 2020 the flows of capital investments remain constant and even increased slightly compare with the 2019. This suggests a strong signal from investors and their long-term commitment in the sector, but also enhancing its resilience. Boosting investments in sustainable innovations that accelerate sustainable transitions with startups focussing on energy, health, and procurement that were accelerated during the COVID-19 pandemic.

The travel and tourism tech sector has been heavily influenced by mega rounds and unicorn valuations, most of them in the transportation industry, these startups relayed on a B2C business model which are capital-intensive, and highly localized in the United States of America and China. Nevertheless, there is a trend to move towards B2B solutions that focus on niche opportunities that address complex problems of the tourism value chain, and that are able to build scalable technologies on existing digital infrastructure, e.g., revenue management, flight and ground

operations, and security. Given the COVID-19 pandemic, there are plenty of opportunities for solutions related to safety, health, air quality, biosecurity, sustainability and related.

Europe's startups are growing and presented most of the solutions to the UNWTO competitions. Spain was the major provider followed by Israel, France and Portugal. However, there is an imperative need to encourage the promotion and development of innovation strategies towards UNWTO member states in Africa, the Americas, Asia and the Pacific and the Middle East in order to foster more entrepreneurs and disseminate technology from these regions of the world.

As COVID-19 has accelerated technological transitions and has influenced consumer behaviour towards sustainability, it also created opportunities to promote and adapt new technologies and solutions and personalized services. The pandemic requires that the tourism sector accelerates its digitalization and innovates technology. New processes in transportation, mobile applications in hotels and automatic travel insurance are some of the keys for the tourism of the future. UNWTO startup competitors have demonstrated a tendency towards technologies using artificial intelligence (AI) and analytics, augmented and virtual reality (AR/VR), blockchain and the Internet of things (IoT). As the demand for safety and personalization increases, solutions for clean, health and sustainable technologies are addressed, especially with potential application in specialized niches and segments with specific complex problems that need innovative solutions such as energy efficiency, electric transportation, space transportation, decarbonization or health and safety, among others.

Early-stage investments are more frequent for travel tech startups, however there are several needs for early-stage rounds in order to fill the equity gap. Especially in emerging markets in Africa, the Americas and Asia and the Pacific. The World Bank has estimated the financing gap in developing countries to be USD 5.2 trillion.²⁴ Several studies conducted to measure the financing gap have established that challenges are abundant for the "missing middle".²⁵ This was evident while analysing the top 100 UNWTO startup competitors that presented needs for funding and access to investment instruments to foster their growth.

Innovation for the sustainable development of tourism is about identifying new technologies and more effective solutions that add value for tourists, communities, governments and the subsectors it integrates. New approaches adopted by UNWTO including supporting entrepreneurs and governments, embracing digital transformation and open innovation, fostering education and training opportunities, and exploring emerging and alternative sources of financing are at the core of UNWTO's mission to deepen and diversify resourcing and implementation of the SDGs. .

Through its competitions and challenges UNWTO serves as a network platform bringing together tourism stakeholders from the private and public sector, technology players, accelerators and innovators to present disruptive technologies and solutions to tackle the most pressing needs worldwide. Increasing participation of relevant actors such as investors and key sector leaders is of high importance to open opportunities for disseminating the startups' new technologies and support their implementation contributing to the achievement of the SDGs.

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Travel and Tourism Tech Startup Ecosystem and Investment Landscape