Chapter 2. Preparing tourism businesses for the digital future[1]

Digitalisation is changing the way people live, work, and travel, and has opened up new opportunities for tourism businesses to compete in global markets. This chapter examines the impact of digitalisation on tourism, with a particular focus on SMEs. It highlights the important role of government in creating the right framework conditions for the digital transformation of tourism business models and the wider tourism ecosystem, and identifies a number of key policy considerations to foster digital technology uptake and use by tourism SMEs.

The evolution and application of digital technologies are profoundly changing the way people live, work, travel and do business, and in the process, they are transforming and reshaping tourism. The scope and uptake of digital technologies varies across countries, sectors, organisations and places. The resulting opportunities and barriers create an uneven playing field, which is exacerbated by a growing gap between tech-driven and globally connected tourism businesses, and traditional micro and small businesses often characterised by low-tech business practices. Much attention to date has focused on digital marketing and e-commerce as a way of reaching new markets, engaging customers and building brand. However, while these technologies might build market access and awareness, increase connectivity and facilitate financial transactions, they are less effective in enhancing productivity or innovation in an increasingly competitive global marketplace.

Productivity-enhancing technologies (e.g. cloud computing, data analytics, revenue management software) have generally received low uptake in tourism, while innovative technologies (e.g. augmented reality, geotagging) are generating, customising and delivering in ever more novel ways, new visitor products, services and experiences (OECD, 2018c). Digital transformation is thus pushing tourism in new and often unpredictable directions. Digital technologies have important implications for tourism businesses of all sizes, for the structure and operation of tourism value chains and for the sector as a whole. Facilitating and enabling digitalisation in tourism is therefore a key policy challenge.

Box 2.1. Understanding the digital transformation

Digitisation is the conversion of analogue data and processes into a machine-readable format, while digitalisation is the use of digital technologies and data as well as interconnection that results in new activities or changes to existing activities. Digital transformation refers to the economic and societal effects of digitisation and digitalisation.

The OECD report on *Going Digital: Shaping Policies, Improving Lives*, highlights that the gap between technological developments and public policies will need to narrow significantly in order to reap the benefits and address the challenges of the digital age. Many current policies are the legacy of the pre-digital era, and difficulties in understanding the changes underway and their implications may delay the review and adaptation of these policies. Such an understanding is imperative as digital transformation affects the entire economy and society.

To develop policies fit for the digital age, it is necessary to:

- Be aware of the main elements of the evolving digital technology ecosystem and some of the opportunities (and challenges) resulting from their application.

- Understand the data revolution that is taking place, and how data and data flows affect individuals, the economy and society more broadly, and

- Identify the key properties of digital transformation, including how they are driving new and evolving business models, and what their implications are for public policy.

Source: OECD (2019b)

Digitalisation is bringing unprecedented opportunities for tourism SMEs to access new markets, develop new tourism products and services, adopt new business models and processes, upgrade their position in global tourism value chains and integrate into digital ecosystems. Digitalisation brings significant potential benefits to SMEs - it can help them to become more efficient, free up time and resources to focus on strategic tasks, and increase their capacity to develop new business models, enter new markets, or internationalise operations. However, SMEs are lagging behind in the digital transition (OECD, 2019d),

and many small traditional tourism businesses are struggling to understand the opportunities and reap the benefits.

SMEs that do not invest in their digitalisation will not survive, let alone thrive in the future. Destinations, businesses and the wider tourism sector will need to fully embrace these new technologies to remain competitive, and to take advantage of the innovation, productivity and value creation potential. Policy makers have an important role to play to help tourism businesses of all sizes, including the more traditional and smallest firms, to engage with the digital revolution, and thrive in response to these paradigm-shifting technologies.

This chapter discusses how digitalisation is transforming tourism business models and processes, and the integration of tourism SMEs into global value chains and digital business eco-systems. The discussion is framed around three core key themes: how digitalisation is reshaping the nature in which tourism businesses operate; emerging business models; and policy approaches to support digitalisation of tourism SMEs. It is informed by responses to a survey of OECD Member and Partner countries, as well as wider OECD work on the *Going Digital* integrated policy framework which highlights a range of policy dimensions where governments should focus their efforts facilitate the right conditions to enhance digitalisation (Box 2.1).

Digital trends driving change in tourism

Digitalisation is the process through which technology and data-driven management is transforming our social and economic systems and lives. The push to adopt digital technologies is driven by the convergence of advanced technologies and the increasing social and economic connectivity unfolding under globalisation. Digitalisation has the potential to boost innovation, to generate economic and environmental efficiencies and increase productivity, including in the highly globalised tourism sector (OECD, 2017a). For example, research from Australia shows that using digital tools can save small businesses in general (defined as those with between 0 and 19 employees) ten hours a week and can boost revenue by 27 per cent (ANZ, 2018). The capacity of tourism businesses of all sizes to evolve their business models, adopt digital technologies to effectively participate in global value ecosystems, and take up new ways of data-driven working, will shape productivity and social and economic wellbeing in the future (Andrews, Nicoletti and Timiliotis, 2018) (Box 2.2).

Digitalisation leverages digital technologies and data to transform business models and practices, and value ecosystems. For example, the sharing economy has evolved in the last 10 years as a result of new platform technologies and business model innovation to create new value from hidden or unused assets. The value of the ride sharing sector in 2019 was estimated at USD 61 billion, while the value of the sharing accommodation sector is expected to reach USD 40 billion by 2022. PwC has estimated that the value of the sharing economy will reach USD 335 billion by 2025. However, digital transformation is variable and data is patchy about the uptake of different technologies and the barriers and opportunities experienced in different sectors, countries and organisations (PwC, 2016).

Recent research undertaken by the European Commission found significant differences in the uptake of digital technologies in tourism across Europe. Nordic countries for example, exhibited higher uptake of digital technologies than those in eastern and southern Europe. The same research found that tourism SMEs lagged behind large enterprises. While basic e-marketing and e-commerce were widely adopted, advanced technologies such as data analytics, cloud computing and geotagging had received only limited uptake (Dredge et al., 2018). With consumers increasingly using digital technologies to search, plan and book travel, it becomes increasingly important for tourism businesses to incorporate digital technologies and leverage advanced capabilities.

> ### Box 2.2. Understanding business models, value chains and ecosystems
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> A **business model** is the architecture for how a business creates, delivers and captures value. It refers to the internal organisation and the links and relationships to external entities.
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> **Value chains** are vertical linkages in the production-consumption process that describe how private sector firms in collaboration with government and civil society receive or access resources as inputs, add value through various processes (e.g. planning, development, financing, marketing, distribution, pricing, positioning) and sell the resulting tourism products, services and experiences.
>
> **Global value ecosystems** refer to a highly distributed, fluid and dynamic set of technology-mediated relationships and exchanges between those that create, consume and share value in tourism. This includes interactions between living and non-living entities (e.g. consumers, producers, governments, communities, nature, digital technologies and infrastructures).

Despite the uneven uptake of digital technologies by tourism SMEs, the digital transformation has, and will continue to have, a profound impact on tourism. The digital economy is transforming the process of communicating with tourists and marketing tourism services, and opening up new and highly creative ways of delivering tourism services and enhancing the visitor experience. It is changing the way work is organised and services delivered, and also presents opportunities to take advantage of digital advancements to handle transactions, capture and process information and data on tourism supply and demand, and improve and connect operations along tourism value chains and ecosystems.

The World Economic Forum (WEF, 2017), has estimated that in the decade to 2025, digitalisation will create up to USD 305 billion of additional value for the tourism sector alone through increased profitability, while around USD 100 billion of value generated in the sector will transfer from traditional players to new digital competitors with innovative business models and value-producing capabilities. The digital transformation is also forecast to generate benefits valued at USD 700 billion for customers and wider society, through reduced environmental footprint, improved safety and security, and cost and time savings for consumers.

On the demand side, this will be driven in part by the consumption habits of Millennials (born in the early-1980s to mid-1990s) and Generation Z (born in the late-1990s to early-2010s), who along with other emerging generations will comprise the bulk of domestic and international tourists by 2040 (OECD, 2018a). Gen Z and the Millennials are digital natives and having grown up with quick and direct access to information enabled by digital technology, the way they use and what they expect from technology will continue to influence how tourism services are delivered. Trends include: increased use of online sources and mobile platforms to source information in the planning stage (e.g. websites, social media), combined with decreasing use of offline sources (e.g. visitor information centres, print media, hotel concierge); a propensity to stay online/connected in the destination to search and explore, share experiences and get updates in real time; and an increase in the use of e-commerce payment methods over the use of cash. Furthermore, Millennials and Gen Z have embraced sharing over ownership more than previous generations, and as such have higher levels of engagement in the sharing economy (accommodation sharing, ride sharing, currency swap and crowdsourcing).

While many of the challenges and opportunities for tourism SMEs are similar as those for SMEs more generally, tourism is a unique proposition for several reasons. For example, the tourism sector is highly fragmented and heterogeneous and covers a wide range of industries with many demonstrating a dual structure characterised by a very small group of large businesses combined with a large group of SME/micro-businesses. The sector is also 'information intensive', which means many tourism services are ripe for digitalisation. Understanding digital uptake by tourism SMEs is particularly relevant as around 85% of those enterprises with a major role in the delivery of tourism services in OECD countries are SMEs (e.g.

accommodation and food services, travel agencies, tour operators), compared to roughly two-thirds for the wider economy. Although they constitute the majority of tourism businesses, SMEs and micro-companies face more difficulties to vertically integrate than larger companies (such as hotel chains in the accommodation sub-sector) and to reach potential customers.

Another particularity of the tourism sector is that tourism enterprises operate in a global market place while delivering at the local level, as part of a unique tourism destination offer. The geographical distribution of businesses is limited only by the attractiveness and accessibility of destinations. Digital businesses such as online travel agents and accommodation platforms, have transformed tourism by connecting tourism products and services with customers anywhere in the world in real time, as well as significantly increasing market visibility for tourism SMEs. As a result, many tourism SMEs are at least partly dependent on larger intermediaries, while at the same time being under pressure from increasing consumer demands for quality and efficiency (e.g. the best service possible at the lowest price possible).

As is the case for many sectors, lifestyle and micro-enterprises in the tourism sector have a reputation for being focused on business survival, and being risk averse with limited appetite for innovation, technology pervades through most aspects of modern tourism businesses. Technological developments are progressively changing tourism value chains and the position of SMEs within them, enabling business models to evolve, and offering new ways for SMEs to collaborate and network with potential partners (e.g. to present seamless integrated visitor experiences). Tourism value chains have transformed into global value ecosystems as consumers can now have direct access to the businesses in charge of delivering the final tourism good, service or experience (Box 2.1). Informed by digitally derived data, tourism products and services are evolving toward hyper-personalisation and customisation (Skift and Adobe, 2018; Visa, 2017).

Automation and robotics are a key trend in tourism with applications developed for physical tourism businesses as well as online. For instance, many tasks that were once handled by humans now being taken over by robots or automated systems such as chatbots. These have fallen into widespread use across the industry and are designed to help people find and book tours, transport and accommodation by asking a set of questions. More sophisticated examples might include the robot "staff" used by some hotels to run the reception desk or even serve food and drinks. While robots have advanced in their abilities to provide products and services, industry, government and consumers have not entirely figured out how to integrate these into the economy (Ivanov and Webster, 2019).

The development and adoption of new technologies is expected to continue at pace in the future, driven by the cumulative nature and exponential rate of technological change, the convergence of technologies into new combinations, dramatic reductions in costs, the emergence of new digital business models and declining entry costs (UNCTAD, 2018). Previous OECD work on enabling technologies shaping the future of tourism highlighted the need to develop a better understanding of the challenges and opportunities arising from these technological advancements to inform the development of appropriate policy responses (OECD, 2018a; OECD, 2019a).

The shift to a digital economy offers opportunities for tourism enterprises of all sizes including access new markets and bringing new tourism services to consumers globally, and improving competitiveness, performance and productivity. For SMEs in particular, it can improve access to market intelligence, enable businesses to achieve scale without mass, and facilitate access to global markets and knowledge networks at relatively low cost (OECD, 2017b).

However, digitalisation of SMEs has been identified as a particular challenge in relation to productivity in micro and small business that are often resource-constrained (European Commission, 2017; OECD, 2019a). OECD data shows that while the gaps in the uptake of digital technologies between large and small firms have narrowed in most countries in terms of simple connectivity and web presence, these gaps remain more important for more advanced technologies.

In an effort to help bridge this gap, the European Commission developed the Digital Tourism Network, an informal and flexible forum designed to bring relevant public and private stakeholders around the table to discuss common challenges and opportunities associated with the EU tourism industry's digital transformation, and exchange good practices for boosting the innovation capacity of tourism entrepreneurs, especially SMEs. With the help of the Digital Tourism Network, the European Commission conducted a targeted stakeholder consultation on tourism and digitalisation in 2016. A 2018 report of findings delivers recommendations on enhancing the uptake of digitalisation of tourism in the EU. As a follow-up to this work, the Digital Tourism Network focuses on the issues of higher–level digitalisation of tourism in the EU, through stakeholder discussions and events.

Realising the benefits from the digital revolution will depend on a combination of investment in digital infrastructure, as well as the skills development of human capital and innovation in business models and processes (OECD, 2019d). Such investment will be key to opening up the opportunities from the digital transition for tourism SMEs. This requires investment in the skills and technical inputs needed to facilitate the adoption and effective use of new technologies, but also in organisational change, process innovation and new business models, otherwise referred to as 'knowledge-based assets' (OECD, 2018c). However, in some countries (e.g. Denmark) widening gaps have been identified in the investment of tourism enterprises in digital technologies compared to other sectors.

While the extent and implications of the digital transformation in tourism are difficult to assess in the absence of comprehensive data, available evidence suggests that the adoption of digital technologies in the sector has been inconsistent, and there remains much that governments can do to support the digital transition. Data and findings from other sectors also point to potential gains relevant for tourism: data-driven management enhances decision-making and increases productivity; technology, and particularly the interoperability of systems, can significantly reduce costs; and automation increases the efficient of sales processes (OECD, 2017a; Brynjolfsson et al., 2011).

Policy will have a significant impact on the pace of transformation and the extent to which positive social, economic and environmental benefits will be able to scale (WEF, 2019). Facilitating the adoption of new technologies in tourism SMEs, empowering tourism SMEs to keep pace with evolving consumer demands, and supporting the digitalisation of marketing channels and business models and processes in tourism SMEs are important priorities for the sector.

Yet, minimal barriers to entry and low marginal costs of participating in the digital economy mean that tourism SMEs are able to participate and take advantage of innovation occurring at the ecosystem level (European Commission, 2017; OECD, 2017a). Governments have an important role in shaping the conditions for the digital transformation of tourism SMEs, as well as supporting these businesses to adopt and adapt to digitally-enhanced business models and integrate into digital value ecosystems. An understanding of these drivers and trends, and the challenges for tourism SMEs in particular, provides the foundation for developing appropriate and effective policy responses. A key challenge for policy makers is how to unlock these opportunities while ensuring that no one is left behind.

Technologies enabling the digital tourism economy

Technological advancements are having a deep impact on the tourism sector. These innovations range from business management technologies (e.g. mobile technologies/cloud computing, automation and advanced robotics, blockchain, data analytics, cloud computing), to technologies that produce innovative tourism products, services and experiences (e.g. virtual/augmented reality, Internet-of-Things), and technologies that assist, understand and connect with markets (e.g. data analytics, cloud computing, and artificial intelligence) (OECD, 2017c) (Box 2.3).

Box 2.3. Enabling technologies shaping the tourism ecosystem

Mobile technology/cloud computing. Cloud technologies, Wi-Fi and international mobile plans make mobile devices increasingly pervasive and important travel aids, including for accessing destination information in real time, online booking, mobile payment. Cloud technologies allow SMEs to manage their business from anywhere high speed internet is available.

Data analytics. In the digital era, consumers and businesses alike are in perpetual generation of new data. The capacity of businesses to use data drives new business models and productivity. Data analytics can predict customer preferences and channel consumer purchasing behaviour. It is also used for revenue management and to employ dynamic pricing. Employees of SMEs must develop skills to be part of this data driven ecosystem and issues of privacy, data sharing are key concerns of government.

Artificial Intelligence (AI). Artificial intelligence, chatbots, and voice technology enable customers to undertake internet searches, digital check-in, access digital concierge services, voice assistants and smart rooms. This technology offers personalised, customised, on-demand service that facilitate seamless travel.

Internet of Things (IoT). IoT can fuel a data rich tourism sector and support smart tourism by making cities more efficient. The interoperability of sensors, data, and automation produces real time insights and information for marketing and managing tourism, for improving visitor experiences, increasing operational and resource efficiencies while also reducing environmental impacts.

Augmented reality/Virtual Reality (AR/VR). Augmented reality systems show virtual objects in the real world. Uses in tourism can include replacing paper-based marketing and advertising materials, gamification and augmented visitor experiences in the destination, and travel assistants that guide users through complex public transport systems in real time.

Blockchain. Smart contracts, based on blockchain, can be used across the supply chain. Future gains would see user-friendly apps tailored for wide diffusion to tourism businesses of all sizes to enhance end-to-end user transparency.

Due to the information-intensive nature of tourism services, the breadth of information available on the internet, and ease of booking, tourism outperforms other sectors when it comes to the share of businesses making online sales in the 28 OECD countries for which data is available, with the exception of Canada, Finland and the United Kingdom (Figure 2.1). OECD (2019f) data show that on average 77% of the accommodation and food and beverage service businesses in OECD countries have a website or homepage and 70% use social media. The tourism sector has embraced e-commerce, as online platforms and payment systems have changed the way people buy travel products.

A report on electronic commerce (e-commerce) in the EU highlights that over 70% of internet users made at least one online purchase of goods and services over the previous 12 month period for private use. Of that group, over half (54%) purchased travel and holiday accommodation, behind only clothes and sports goods, which were purchased by around two-thirds (65%). E-shoppers in the 25-54 age group were most likely to purchase travel and holidays (57%). The findings also indicated that the proportion of e-shoppers varied considerably across the EU, ranging from 29% in Romania, to 91% in the United Kingdom (Eurostat, 2020).

Figure 2.1. Share of tourism businesses making e-commerce sales, 2018 or latest year available
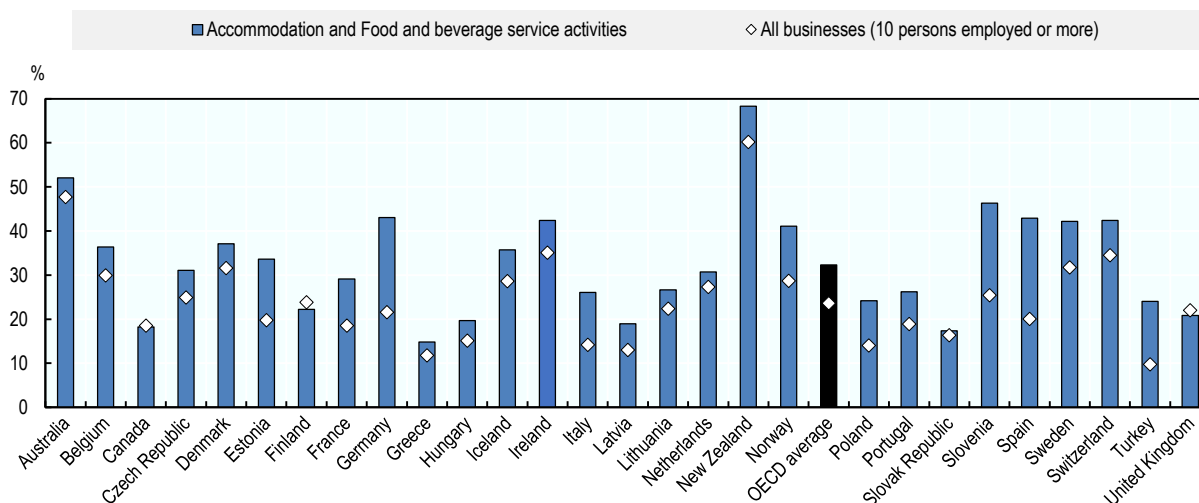
Note: Accommodation and Food and beverage service activities as a proxy for tourism sector
Source: OECD (2019f).

While the digital transformation progressively touches all sectors in the economy, it does so with differing speeds and extents. Recent OECD work (Calvino et al., 2018) assesses the digital intensity of sectors by looking at the technological components of digitalisation (tangible and intangible ICT investment, purchases of intermediate ICT goods and services, robots), the human capital required to embed technology in production (ICT specialist intensity), and the ways in which digital technology impacts how firms interface with the market (online sales). In a taxonomy of sectors by digital intensity (Table 2.1), accommodation and food service activities is ranked low for digital intensity, while arts, entertainment and recreation activities are ranked medium-high based on seven different metrics (OECD, 2019c).

These results highlight that tourism businesses have significant untapped potential when it comes to the adoption and application of digital solutions, although they may benefit from ICT investments in other sectors through the outsourcing of certain business activities (e.g. sales and online advertising).

Table 2.1 Taxonomy of selected sectors by digital-intensity, 2013-15

ISIC Rev.4 industry denomination	Quartile intensity
Advertising and other business services	High
Administrative and support services	High
Telecommunications	High
Wholesale and retail trade, repair	Medium-high
Arts, entertainment and recreation	Medium-high
Human health activities	Medium-low
Transport and storage	Low
Accommodation and food service activities	Low
Real estate	Low

Note: Calculations are based upon businesses with 10 or more employees
Source: OECD, 2019, adapted from Calvino et al. (2018)

Unlocking the potential of the digital transformation for tourism SMEs

Some of the most innovative and high-value digital businesses operate in the tourism sector although most have considered themselves tech start-ups, not tourism businesses (Airbnb, Uber, Booking.com, HomeAway etc.). These digital giants are tech-driven, have global scaling capabilities, can attract venture capital, and therefore differ significantly from traditional tourism SMEs in terms of their growth trajectory. They operate alongside a 'long tail' of existing tourism businesses with complex challenges in their digitalisation journey (OECD, 2019; PATA, 2018), which in turn gives rise to different rates of innovation and competitive advantage. For example, accommodation-sharing platforms can use technologies to efficiently scale at marginal cost and gain a market advantage to quickly become dominant players in the accommodation sector.

Unlocking the potential of digital technologies and digitalisation in tourism therefore requires a nuanced approach that responds to the unique challenges experienced in different parts of the tourism sector, and in different types of tourism businesses. Addressing the challenges that tourism businesses face in their digitalisation journey can vary significantly depending on:

- Type, size and characteristics of the tourism business, and the subsector they belong to (e.g. transport, accommodation, personal services) (Calvino et al., 2018; OECD, 2019).
- Access to technologies, information, expertise, advice, mentoring and other resources and support (European Commission, 2017).
- Management and strategy-making capabilities, which shape the extent to which business owners sense opportunity, perceive risk and are motivated to seize opportunities (Rachinger et al., 2018).
- Location of the business, the social and economic context, and the access and availability of digital technologies (Dredge et al., 2018).

Country inputs to the survey undertaken to support this chapter reveal the challenges to digitalisation of tourism SMEs. These along with corresponding policy initiatives are clustered in five interrelated categories, with survey results summarised in Table 2.2:

- **Uptake of technologies**: Barriers to uptake revolve around access to digital infrastructure, such as high-speed internet and Wi-Fi networks, which are necessary to access more advanced technologies such as cloud computing and data analytics. Internet speed impacts booking services, marketing and other business operations. Austria, Chile, France, Greece, Spain and Sweden, among other countries note that SMEs and microenterprises tend to have lower levels of uptake, which affects business visibility and reputation. The in-situ production of visitor experiences may require high-speed mobile broadband. Innovative walking tours, for example, might rely on Wi-Fi access to cloud services, geotagging, and augmented reality to bring to life historical visitor experiences and simulations such as those curated by the Heritage in Motion initiative. Local governments are increasingly providing Wi-Fi in public areas to support the delivery of seamless visitor experiences, evidenced in Korea (Box 2.5).

- **Access to resources**: Lack of access to finance, information, knowledge networks, skills and time can be barriers to digital transformation (OECD, 2019d). Tourism SMEs may lack capital reserves, have difficulty qualifying for traditional loans or credit, or perceive the investment too risky. This limits the willingness of SMEs to invest in digital technologies when SMEs are anxious about return on investment. To overcome these barriers, programmes such as Scotland's Digital Development Loan or Spain's Digital Agenda offer funding support to encourage investment. Skills gaps and lack of access to initial and on-going training and business support is also an issue, while limited time, awareness and knowledge among SMEs may contribute to low levels of participation in such initiatives. In response, for example, Norway offers a one day training session for tourism professionals to improve digital skills at beginner and expert levels (Digital Competence 2.0). The

shortened format is a good way to encourage upskilling while taking into account the limited time and resources of tourism SMEs.

- **Information exchange, learning and research**: Direct information, communication, booking and check-in channels have reduced the need for certain types of frontline jobs and led to a displacement of traditional employment relationships by more precarious independent contractor arrangements in, for example, transport and accommodation. It has also generated demands for different skill sets and new types of jobs.

    According to the United Nations World Tourism Organization (UNWTO, 2019a), the most demanded profiles by companies in the tourism sector over the next five years are expected to be: digital/IT, customer focus, data analytics, operations, commercial, leadership/management and administration/finance. Yet, tourism businesses may not have the financial or management capacity to employ tech experts or invest in workforce training. They may instead rely on consulting services which can be expensive and ad hoc, and higher education institutions are often not incentivised to engage in small practical capacity-building projects. The Austrian government has addressed this gap by establishing the Research Expertise for the Economy programme in co-operation with the Austrian Research Promotion Agency (FFG) to support digitalisation of the economy including tourism businesses.

- **Business innovation**: Business models, practices, cultures and strategy all influence the openness and willingness of tourism SMEs to undertake digital transformation. With the help of new technologies, the traditional cost of doing business has decreased significantly, allowing some businesses to grow at an unprecedented pace (UNWTO, 2019b). Many lifestyle and micro-enterprises in the sector are focused on business survival, are risk averse and have little appetite for innovation, while large firms have the capacity, financial and otherwise, to make significant investment.

    Also, differences between the fundamental nature of some tourism business subsectors such as the accommodation, transport, reseller industries greatly influence their capacity and speed to adapt to the digital ecosystem.

    These trends have contributed to a productivity gap between traditional tourism SMEs and their digitally enabled counterparts. Incubators, accelerators and labs that encourage partnerships between tech and tourism companies may improve openness to innovation and knowledge exchange. However, these current supports often focus on the start-up tech dimensions, such as business model innovation, attracting venture capital investment, and do not address the challenges existing tourism businesses face in going digital.

    While these supports have launched high value companies in ride-sharing and accommodation-sharing, existing accommodation SMEs, for example, may have problems in appropriating value from these kinds of programmes. The objectives of such incubators, labs and accelerators should be carefully articulated to reflect needs on the ground.

- **Perceptions of risk and benefits**: A lack of resources, uncertain benefits and fear of the unknown were widely identified in survey responses as being barriers to tourism businesses adopting advanced, costly or novel digital technologies, such as cloud computing services.

    Changing privacy requirements on data protection across the globe can complicate data collection, analytics and storage while private decision makers face competing priorities between capital investment in technology and operational expenditure. Although, companies that are data-driven can make better decisions (Brynjolfsson et al., 2011).

Table 2.2. Barriers and opportunities for digital transformation of tourism SMEs

Issue	Barrier	Opportunity
Uptake of technologies	Lack of access to digital infrastructure can slow digitalisation processes Lack of availability of high speed broadband in regional and rural areas can impede business operations Lack of availability of high speed Wi-Fi connection can impede visitor experience innovation	Innovation and customisation of products, services and experiences increases visitor satisfaction Increased connectivity facilitates scaling, market reach, product and service innovation
Access to resources	Lack of access to capital or eligibility to apply for traditional loan products Absence of skills and expertise and lack of resources to support skills development and training	Co-operative funding initiatives reduce initial costs and reduce perception of risk Policy supports where technologies can be trialled, costs shared and network support developed
Information exchange, learning and research	Restructuring of workforce – fewer frontline jobs and demand for ICT expertise growing Demand for new skill sets may not be available and SMEs may not have resources to employ experts and consultants	Collaborative programmes incentivise universities to work with business and government toward digital transformation Technologies enhance production of data driven business planning
Business Innovation	Business models, culture and practices influence willingness to transform Data Protection Regulations (e.g. EU) and privacy requirements exacerbate the challenge of data collection, analysis and storage Lifestyle and micro-businesses tend to be risk averse	Incubators, accelerators labs that encourage collaboration between tech and tourism companies improve openness to innovation Enhancing the focus on travel-tech as opposed to the process of building a start-up will benefit tourism
Perceptions of risks and benefits	Uncertain benefits, fear and anxiety of the unknown in relation to costly or novel technologies Demands of day-to-day operations take away from strategic management and create time pressures	Demonstration projects that provide hands-on awareness raising of the benefits of digital technologies Timely and evidence-based decision-making from enhanced data collection and analytics

Source: OECD country survey results; Dredge et al., (2018); European Commission (2016).

Distinguishing between digital native and traditional tourism businesses

When considering the impact of new technologies in tourism it is important to distinguish between so called "digital native" firms and traditional firms, as the irregular uptake of digital tools is largely an issue of 'who' is participating and 'how'. Table 2.3 summarises the differences between these business models.

Digital firms in tourism tend to be young and global in terms of users and product delivery. They often do not have a pre-digital footprint. Digital native firms are customer-facing businesses, often delivering value to two or more customer groups (i.e. multi-sided).

Table 2.3. Typical differences between digital native and traditional tourism businesses

Digital native enterprises	Traditional businesses
No pre-digital footprint (founded in the digital era) No or limited physical assets Likely to have a more fluid business structure Customer-facing, often to two or more customer groups Works in agile ways and innovates rapidly Use a combination of technologies to leverage market advantage that make it easy to scale Global value chains and ecosystems	Established prior to digital era Often have physical assets which are resource intensive Grounded in a physical location Product-facing, focused on production and distribution and matching to customer needs Relies on traditional production, sales and marketing supplemented with digital technologies Smaller (often local) value chains and ecosystems

They tend to disrupt traditional business models and combine different technologies (e.g. a digital platform, social marketing, data analytics, automation and relationship management) to increase efficiencies, extend their distribution channels to global markets, and develop economies of scale (WEF, 2019). They are also able to scale up rapidly, access new markets, build complex products, and have few physical assets, while data and talent are important assets and different kinds of intangible value such as loyalty and trust are co-produced with users (Gal and Witheridge, 2019; WEF, 2017).

Well known examples of digital native firms include meta-search engines (e.g. Skyscanner, Kayak, Trivago), and online travel agents (OTAs) (e.g. Expedia, Opodo) and booking platforms that aggregate and curate third-party products and services (e.g. Booking.com, Priceline, Agoda), as well as collaborative platforms like BlaBlaCar, HomeAway, Airbnb and Lyft. Small tourism businesses are also developing business models which are digital at the core (Box 2.4).

Box 2.4. Digitally enhancing tourism business models

Adrenaline Hunter – an online adventure sports booking platform acting as an intermediary between end users and the activity providers. Financial support from the Bpifrance Tourism Investment Fund allowed the founders to accelerate the development of the business and strengthen the performance of its platform. Equity investment of EUR 2 million enabled the development of a product roadmap, enhanced the automation of the reservation process, improved the back office and openness to providers, and developed business software for providers.

Skydiving Kiwis – software developed by skydivers for skydivers to manage scheduling, safety and accounts. It is designed to be sufficiently agile to evolve as the business grows and develops. Specialist digital marketing targets the Chinese market and the business now has presence on WeChat, the website has Chinese translation and Ali Pay is used to facilitate payment from China.

Walks – a redesigned concept of how tour guides meet clients and deliver services. Beginning as two tour guides in Rome, the founders created an extensive platform, using 28 technology products and services including Google Analytics, WordPress, and Vimeo to aggregate and sell walking tours by tour guides in popular cities. Walks took advantage of wider market potential to extend its network and operate across 13 cities in Europe and North America.

VenueLytics – a mobile app start-up that created a software integrating guest engagement and a digital concierge platform using AI and machine learning. "Digital concierges" are technologies that can have an impact on small hotels as they reduce human resource needs. The software replaces the front desk and acts as a hotel guest services platform using mobile, voice, chatbot and Wi-Fi, processes guest hotel requests, two-way chat, provides hotel information, check-in/check-out features, acts as a digital concierge and promotes hotel offers.

TouristWise – a tourism app with scalable properties that can be used by tourism organisations to develop, manage and grow visitor experiences, enhance engagement through AR, gamification, language translation, promotion and ticket sales. Data analytics and tracking also enhance destination management and scale up visitor attractions and experiences into journeys.

As a result of their capacity to scale up quickly, the absence of proprietary physical infrastructure (e.g. beds and cars) and global operations, many tech-driven digital native firms have been able to make use of gaps in planning, safety and labour laws and other regulations. Governments have struggled to address the discrepancies in the way laws and regulations are applied leading to a situation where digital native firms often enjoy a competitive advantages over traditional tourism businesses.

Traditional tourism businesses, in contrast, often have a pre-digital footprint and maintain physical infrastructure (e.g. hotel buildings), are product-focused and tend to rely on traditional production models

(e.g. personal paper-based communication and inventory) which is difficult to scale (McKinsey, 2014). They also tend to operate within smaller, more defined value chains. They often have closer relationships with their customers and are able to provide personalised service due to repeat interactions.

The disruption created by new digital platforms has stimulated transformation in many tourism subsectors, and led to the development of hybrid business models. Traditional tourism businesses have pivoted storefronts and face-to-face service away from the street and created a presence online servicing expanded markets. Travel agencies, tour operators, destination management organisations and other traditional tourism businesses often work a dual model by maintaining their own internet webpage and social media marketing, while simultaneously offering their products and services on global platforms. This hybridity can lead to more complex and costly operations that many SMEs would struggle to afford (e.g. post innovation costs such as maintaining servers) is traded off against expanded markets and the capacity to access data and global value chains (OECD, 2018c).

Policy approaches aimed at supporting digitalisation in tourism should consider the different challenges and issues faced by traditional incumbent tourism businesses and digital native firms, as well as hybrid business models. Policy initiatives that share knowledge and grow sustainable tourism ecosystems, such as New Zealand's *Lightning Lab Tourism,* a three-month business acceleration programme focused on building a sustainable innovation ecosystem for the future of tourism in New Zealand. The programme brings together early-stage ventures and project teams from the tourism industry to address productivity, cultural, environmental and social challenges for the sector, and helps to break down the silos between digital companies and tourism SMEs, thus assisting the digital transformation processes.

Creating value through digital innovation, disruption and transformation

Understanding how value is co-created and shared between multiple collaborating stakeholders is important in unlocking the potential of the digital economy. For instance, social media platforms, including photo sharing and journey tracking apps allow travellers to share geotagged photos with friends and 'followers'. They also add value to SMEs in a destination who can use these high quality photos at low cost to market their products and services. For governments, the challenge is to ensure that SMEs are part of these new value ecosystems, and that the value generated by these new digital businesses can be scaled, captured and shared by all those that contribute value. For example, if local community assets such as parks, gardens and public streets are contributing value, then some of the value captured should go back into maintaining and regenerating those assets.

Digitalisation is transforming traditional business practices with transformation occurring on a number of fronts including customer engagement, marketing, business management, business planning, product development and service delivery (Table 2.4). The implications of transformation for tourism SMEs are significant because digitalisation moves the production of visitor experiences from linear value chains to value ecosystems (Kelly, 2015; WEF, 2019). While there are advantages to be derived from expanded markets and productivity gains from value adding, such as increased information enhancing visitor awareness, the complexity of the marketplace reduces the control that tourism organisations have over the curation and presentation of the destination.

Capacity building initiatives such as support for business mentoring, experimentation through living labs, workshops and online courses provide an opportunity to experiment with these new kinds of value creation and capture. Such initiatives encourage SMEs to reassess their business models, and make key changes to both strategy and practice. Israel has established a tourism accelerators programme to support new business creation and expansion of existing tourism businesses, as well as encouraging the adaptation of tourism products and services for international markets. Local authorities can also participate in these accelerators, to identify tourism policy solutions to emerging challenges.

Table 2.4. Creating value through digital transformation in tourism

Issue	Traditional business	Digital business	Implications
Customer interaction and engagement	Face-to-face product facing selling strategies	Customer-facing tools and technologies facilitate a seamless customer journey with multiple customer touchpoints and customer-led interaction	*Customers* - enhanced visitor experiences through mixed face-to-face and digital interactions *SMEs* - reduced transaction costs, real time engagement
Market analysis and marketing	Market projections, segmentation	Data analytics, intelligent decision-making, real-time customer data and data-sharing	*Customers* – customised products, experiences; data privacy concerns *SMEs* – increase product-customer match; data security and privacy management
Business management processes	Management cycle (annual, quarterly, monthly)	Process automation, increased efficiencies, adaptive management	*Customers* – price reductions, product improvements *SMEs* – management efficiencies and timeliness, increased cost efficiencies
Business planning	Business projections and strategic planning	Adopt continuous improvement; rapid testing; real time feedback and decision-making	*SMEs* - management efficiencies and timeliness, increased cost efficiencies, production innovation
Product development	Led by product investment and financial assets	Customer-led and driven by information assets and co-creation and collaboration	*Customers* – greater choice, customisation, satisfaction *SMEs* – increase competitiveness, cost efficiencies, reduced risk in new product development
Business models	Traditional business-as-usual, supplier and customer roles clearly defined	Collaborative, networked commerce, open architectures, multi-sided platforms blur roles of consumers-producers (prosumers).	*Customers* – greater choice, seamless experiences, increased satisfaction *SMEs* - management efficiencies and timeliness, increased cost efficiencies

Building a smart tourism approach

As digitalisation evolves, emerging technologies are combining in novel ways to push the digital transformation in new and often unpredictable directions (OECD, 2018c). In tourism, this convergence is happening in two key areas: the coming together of digital technologies, and digital technologies merging with the physical world (e.g. wearable technologies, AR, image recognition, etc.). Digital convergence is when one or more digital technologies come together to operate in sync, where data and information are shared, new innovations emerge allowing for seamless interactions across the full visitor journey. After transport is booked, for example, travellers can be sent automated suggestions based on their previous behaviours for transfers, accommodation and things to do in the destination. With minimal clicks, a car is booked, hotel check-in completed, a restaurant reserved and tickets secured. Automation, artificial intelligences and big data analytics facilitate the interoperability of booking systems but pre-existing partnerships can also lock in customer choices to preferred partners and lock out SMEs offering alternative products and services. Data analytics and algorithms can work to favour certain suppliers, customising and bundling products and prompt customer engagement before, during and after travel. The challenge for SMEs is to understand, engage and strategize so they can assert a presence in these digital networks as customers can choose the convenience of a suggestion over doing their own research. Dynamic data collection and analytics refine knowledge about the consumer, facilitate customisation and enhance visitor satisfaction (WEF, 2017).

In tourism, digital-physical convergence is demonstrated by augmented reality, wearable technologies, and the Internet-of-Things to generate new hybrid products, services and experiences. Examples include e-bikes, e-scooters and e-cars which can be accessed anywhere, anytime with a mobile app, reducing the need for a front office presence and staff, to potentially be replaced by tech support and maintenance facilities. When scaled across cities, regions or a country, smart tourism development is possible.

> ### Box 2.5. Leveraging enabling technologies to develop smart tourism
>
> **Korea:** Korea has five objectives to its National Tourism Innovation Strategy, one of which is to create a smart tourism ecosystem. Korea's Smart Tourism Strategy began by creating the infrastructure for smart tourism. This comprehensive approach includes a platform of integrated online tourist information, free Wi-Fi at major tourist attractions and big data analysis for future reference and improvement. The platform provides tools while traveling such as (AR/VR) chatbot service message-based communication on translation, tourist information, and tourist complaint services. While the Tourism Big Data Platform is in use, it accumulates and shares the data gathered about the tourist with local governments and the private sector to better inform tourism stakeholders.
>
> **European Union:** Following EU wide competitions, two European Capitals of Smart Tourism were selected for 2019 (Helsinki and Lyon) and 2020 (Gothenburg and Malaga). The European Capital of Smart Tourism is an EU initiative, which recognises outstanding achievements by European cities as tourism destinations in four categories: i) sustainability, ii) accessibility, iii) digitalisation, and iv) cultural heritage and creativity. The action promotes the development of smart tourism in the EU by showcasing exemplary practices by cities as tourism destinations. The aim of the initiative is to establish a framework for the exchange of best practices between cities and to create opportunities for co-operation and new partnerships. The compendium of best practices implemented by cities also raises awareness of smart tourism tools, initiatives and projects, and strengthens peer-to-peer learning and innovative development of tourism in the EU. The initiative is managed by the European Commission, the Directorate General for Internal Market, Industry, Entrepreneurship and SMEs, and originated from a preparatory action proposed by the European Parliament (www.smarttourismcapital.eu).

The aim of smart tourism is to develop information and communication infrastructure and capabilities to facilitate innovation, improve the visitor experience, and manage and collaboratively govern tourism more effectively (Gretzel et al., 2015). The technologies that facilitate convergence have been identified as the major source of value creation, innovation and productivity for the future of tourism (APEC, 2019). In recognition of the transformational economic and social power of smart technologies, countries such as Croatia, Korea, Portugal and Spain have introduced programmes to support the development of smart tourism destinations (Box 2.5).

An example of smart tourism in action at the destination level can be found in the smart wine tourism initiative by wine producers in the Napa Valley, United States, which utilises Wi-Fi, the Internet-of-Things, and geolocation software to target nearby tourists in a destination, and invite them to enjoy a wine experience during their visit. Facilitating such visits to wineries and other tourist attractions by providing internet access and geotagged digital directories (e.g. TouristWise) in popular tourism areas and along popular tourist routes will only become more important as destinations seek provide a seamless journey and enhance the visitor experience in an increasingly competitive marketplace.

When digital technologies are employed within innovative business models, the dynamics of competition, innovation and investment can change dramatically (OECD, 2016; Rachinger et al., 2018). The convergence of digital technologies creates a dynamic innovation system. This is illustrated in Table 2.2.

New business models, digital devices, content generated by multiple users, big data and digital commerce all work to create and share new value, to expand and reach global markets, and to create seamless visitor journeys and experiences. For example, a decade ago sharing accommodation platforms emerged as an innovative business model. However, with enabling technologies increasing accessibility across multiple devices for multiple users, and the co-creation of diverse value by these users have had disruptive and innovative effects on many destinations over this time. The case of Iceland between 2008 and 2019

illustrates the role that sharing accommodation platforms have had enabling tourism growth by filling a gap when there was a shortage of hotel infrastructure. In the pursuit of smart tourism, the challenge for governments is twofold: to engage the long tail of tourism SMEs with low levels of digitalisation to boost digital uptake and inclusion within digital business ecosystems; and to support innovative digital companies that energise business ecosystems. Policy initiatives can be targeted towards the creation of technology-enabling and business innovation environments and to encourage widespread participation in the co-creation of value. For example, in the UK, the Explorer's Road tourist route north of London has been developed to engage with local SMEs and build their digital visibility and capacity along the way (Box 2.6).

Figure 2.2. Convergence of technologies to create the enabling digital environment
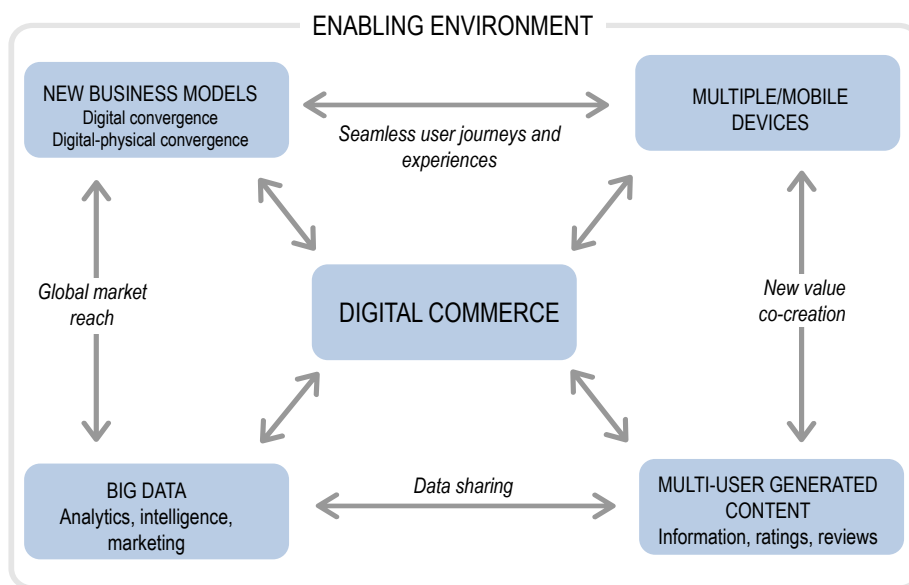
Promoting digitally-enhanced tourism business models and ecosystems

Digitalisation has expanded the number of stakeholders and the diverse kinds of value that can be co-created in tourism in digitally-mediated global networks. The extent and fluidity of these business ecosystems can, for example, help innovate products and services, improve efficiencies, increase access and market reach. Policies that support the development of business model innovation and regulatory systems that accommodate new business models and structures are important.

Business models have always been an important lever for growth, innovation and competitive advantage. To date, the digital transformation witnessed in tourism has been driven predominantly by new and innovative business models exploiting data analytics (i.e. by the digital natives turning data into intelligence), or through the adaptation and evolution of existing business models and value chains.

Facilitating digital innovation in tourism

The uptake of digital technologies at the operational level and the adoption of digital business strategies have been uneven, and the gap between innovative digital companies and traditional tourism SMEs with low levels of digitalisation is growing (WEF, 2017). Large organisations benefit from standardisation and economies of scale when adopting digital technologies and are more likely to have access to finance and resources to invest in digitalisation. This, in turn gives them an early adoption advantage. Tourism SMEs

are often heavily dominated by micro-entrepreneurs and small businesses, which often have limited access to skills and knowledge, finance, infrastructure and business support (European Commission, 2017; OECD, 2017b).

**Box 2.6. Engaging SMEs through the Explorer's Road, United Kingdom**

The Explorer's Road is a new 300-mile touring route that stretches the length of England with the intention to highlight parts of the country that rarely get attention from international travellers and produce a new internationally viable tourism product targeting the travel trade and consumers in Germany, the Netherlands, North America, China and Australia. A key distinction of the programme is the extent to which SMEs along the route are supported to take part in this Smart Ecosystem, with a focus on small businesses who want to operate online and have an ambition to reach new international markets. Equipping SMEs with digital tools and training, including, dedicated one-to-one support to develop booking functionality and help businesses take advantage of new distribution channels, the route currently showcases 118 businesses, 19 destinations and 9 counties.

The route has required investment, participation and support, from destination managers and tourism businesses to tour operators, travel agents, media partners and destination management companies. In addition, it has sought to develop relationships with a range of suppliers with expertise in areas including design, print, training, and photography. Social media has also been used to support the partnership between destinations and businesses along the route. Marketing activities have included engaging with bloggers (including three with a combined reach of 634 000) and social media influencers to showcase the route to online audiences. The Explorer's Road web portal promotes all associated destinations and businesses and provides a means for independent travellers to contact operators directly (www.theexplorersroad.com). Based upon this initial success, the programme designers are planning to apply this approach to the development of new bookable products to other regions or countries.

Research into business ecosystems reveals companies pursue digitalisation along two dimensions: i) to know more about their customers and market more effectively; and ii) to use technology to operate more effectively in the digital ecosystem or along value chains. Four archetypes of the digitally enhanced business model are identified (Figure 2.3):

- **Vertically integrated businesses** - These businesses 'own' the customer relationship and know their customer well. They collect and analyse data inside the channel, offer multiple products, and have a highly integrated value chain. Examples include Disney and global cruise operators.

- **Multi-sided ecosystems** – These customer-facing branded platforms collect and share data to improve the customer experience. They offer plug-and-play, or ready to use, third party products. Examples include Booking, Priceline, Uber, and Airbnb.

- **Modular products/supplier businesses** - These businesses sell through other companies and platforms, have limited direct connections with consumers, and are often low-cost producers. They may have good knowledge of their own customers, but may rely on other companies to connect and learn about the wider consumer trends. Examples include Airbnb Handsfree, key concierge services and equipment rentals.

- **Reseller businesses** - provide plug and play products and services, adapt to different ecosystems, and constantly innovate in products and services. Modular packages such as car hire or accommodation offered at the end of a sale on an airline site are examples.

Figure 2.3. Types of digitally enhanced business models in tourism
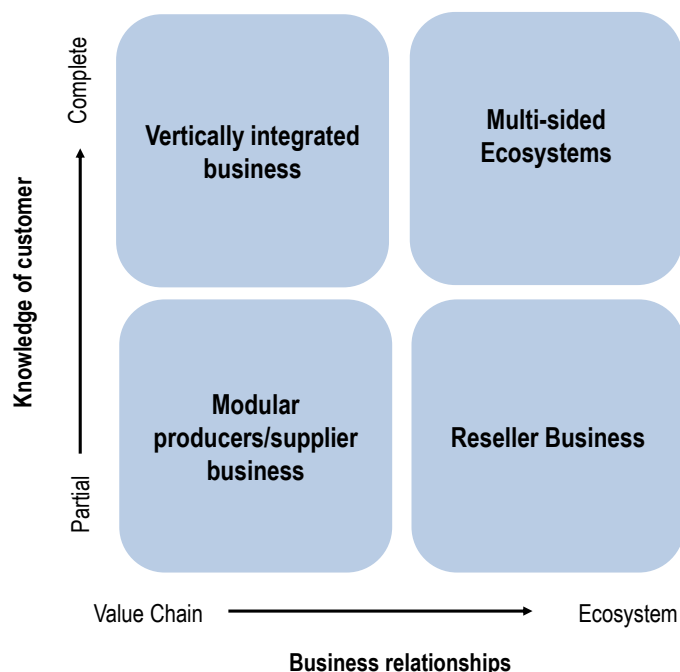
Source: Adapted from Weill and Woerner (2015); OECD (2018b); Hagui and Wright (2015)

A number of common findings have been identified in research on digital business model innovation that may help tourism SMEs concretely consider their business model innovation:

- **Know your market** – Customer-facing businesses that put the customer (not the production process) at the centre have been shown to perform better. Research also indicates that companies that derive more than 50% of their income from digital ecosystems understand their customer better, and have higher revenues and profit margins (Weill and Woerner, 2015).

- **Cater to multiple users** – Multi-sided companies deliver value for two or more user groups and have been shown to perform better than businesses based on binary producer consumer relationships. These business models build in different value creation mechanisms, financial and non-financial (e.g. reviews, reputation and ratings), and are more resilient to digital disruption and change (Skog et al., 2018). Available data suggest that such platforms accounted for around 7% of the global accommodation market in 2018, with a projected yearly growth rate between 2013 and 2025 that is six times faster than the projected annual growth rate of traditional accommodation providers (World Bank, 2018).

- **Drive economies of scale through demand** – Business ecosystems driven by demand tend to perform more strongly than the product-driven models that characterise traditional firms. In demand-driven models, users create diverse kinds of value for other users through a range of mechanisms (e.g. sharing goods, accessing idle services, ratings that generate trust, and so on). Instead of generating products and then trying to sell it as an industrial firm would do, digital firms shift production to the outside (i.e. they outsource to the apartment owner who wants to share their accommodation). Digital networks enable the scaling of production outside the firm shifting from traditional vertical integration to demand-product matching.

Supporting innovation is a key concern for all governments, and policy initiatives fostering innovation in general are widespread. In tourism, production systems are difficult to define, making targeted policy responses difficult. Not only are producers and consumers globally dispersed, but there are a growing

number of online intermediaries, and the production of tourism products and services can be quite complex. There are also many subsectors with different digitalisation challenges and opportunities.

Policy initiatives that support innovation more broadly are often not sufficiently targeted to deal with the particular barriers, opportunities and operational characteristics of tourism SMEs (Table 2.2). For instance, initiatives such as incubators and accelerators are often tech-centric and not necessarily focused on tourism. They might disrupt tourism markets and traditional business models but may not contribute to wider tourism development goals such as enhancing visitor experiences, destination sustainability, and community wellbeing. Airbnb, for example, initially viewed itself as an online marketplace, however it has more recently acknowledged a wider role in visitor experiences (Airbnb Trips).

This suggests that there is opportunity to position incubators, accelerators and other policy supports to develop tourism business models and value ecosystems that not only achieve tech-centric objectives but also benefit tourism SMEs, destinations, and the sector. Global companies such as Amadeus have programmes to support SMEs to digitalise (e.g. Amadeus for Startups) and large travel companies may provide partnership opportunities mentoring and investment opportunities, while universities may also have a role in supporting such initiatives. For example, TourismX was launched in Denmark in 2018, with the purpose of strengthening innovation in Danish tourism enterprises. The project links tourism business growth ideas with the latest research and knowledge in order to develop new innovative products and services within the tourism industry. The project is being implemented in a partnership between national tourism development organisations and universities.

Many countries responding to the survey, including Greece, Austria, Israel, Iceland, Spain, Denmark and France, have introduced hubs, incubators and accelerators targeting supports to the digital transformation needs of tourism businesses. The France Tourisme Lab is a national network of thematic incubators and accelerators specialised in tourism, which aims to boost innovation, promote new ideas and increase the visibility of innovative companies in the sector. The Lab caters to the specific needs of tourism start-ups, and promotes the development of the tourism offer in the destination: urban tourism, slow tourism, connected tourism, tourist mobility. While in 2018, the European Commission supported the first European network of incubators in tourism. The Creative Accelerators for Sustainable Tourism (CAST) Network aims to provide incubation and acceleration support to sustainable tourism start-ups and SMEs to grow and scale. Activities include helping generate new products, services and business models, facilitate access to finance and new markets, while also building new skills and resilience. The CAST consortium consists of partners from 8 countries: Ireland, Cyprus, Spain, Italy, UK, Belgium, Germany and Denmark (www.castnetwork.eu).

These initiatives are largely focused on supporting new digital start-ups and developing the wider digital ecosystem for tourism, however in some cases they also encourage digital entrepreneurship among existing tourism businesses. In Iceland, for example, the Iceland Tourism Cluster and the Innovation Center Iceland have partnered to create an incubator for established business owners, Ratsjáin, which focuses on improving the digital capacity of business managers and the use of data analytics for strategic decision making. The Icelandic Tourist Board is also in the starting phase of creating a Test Lab, Sandkassinn, in order to match tourism companies with tech companies and thereby lower the barriers between these two players.

In a few cases, these incubators and accelerators are one element of wider efforts to support the digital transformation of the sector. In Portugal, for example, Tourism 4.0 aims to build a digital ecosystem to support start-ups, promote entrepreneurship and foster innovation in tourism. Turismo de Portugal provides finance, training and advisory supports to tourism SMEs, and partners with a network of incubators and accelerators to support the development of new business models in tourism.

Concerns in the sector are raised as current supports to SMEs are often focussed on tech service providers. Certain types of businesses, such as small hotels, travel agencies, and activities providers may have difficultly qualifying to participate in labs, as these support measures do not typically assist existing

SMEs modify business models to participate in the digital ecosystem. However, by definition, existing businesses will also have to undertake digital transformation, and to do so they will need support to ensure they have the opportunity, and the tools necessary to reach their digital potential.

Designing regulation for the digital tourism economy

The rapid pace of change in digital transformation has created challenges for policy makers. The existing policy environment and processes have struggled to keep up with rapid change and restructuring of business models and ecosystems, work, and global investment. Existing policies and regulations have also at times stymied innovative solutions and adaptation of traditional businesses, while global digital platforms have avoided local regulations designed for the pre-digital era. This has given rise to an uneven playing field, and the inequitable application of existing policies and regulations on place-based businesses.

The UNWTO (2019b) examined the challenges and complexity associated with enforcing existing rules and regulations in a review of new business models in the accommodation sector. The review highlighted that implementation is often hindered by lack of capacity, clear division of responsibilities and co-operation between the different responsible entities. Some governments, such as Australia, Austria and Switzerland have undertaken inquiries into these issues and have sought to develop more agile, flexible and responsive solutions. For example, Australia examined the policy responses to digital disruption finding that governments must enable the creation and take-up of digital opportunities without favouring particular technologies; governments should review their institutional and regulatory arrangements ensuring new technologies can compete for market share; standards should support interoperability; and investment in infrastructure can help with technological diffusion (Australian Government, 2016).

The size and revenue earning capacity of tourism technology companies like Booking Holdings, AirBnB and Expedia enable these companies to develop new technologies and improve service offerings to travellers, and the intensely competitive nature of the sector will drive ongoing development. Facilitating access to low cost technology and digital solutions to enable uptake would help create the level playing field and fair competition crucial to SMEs and essential to the development of the digital ecosystem.

International exposure has been recognised as an important factor in competitiveness, allowing regions and countries to benefit from the gains of globalisation (OECD, 2013). In many industries, benefits from globalisation come from factor cost differences (primarily labour) or from differences in availability of specific resources, leading to relocation of activities. In tourism, many activities in the value chain are locally anchored.

The policy challenge is predicated on a two-pronged approach: to address the challenges and opportunities inherent in the existing policy environment; and to introduce new measures that enhance digital innovation, take up, and integration of tourism businesses into tourism value chains and ecosystems. Governments may wish to consider the impact of existing policies and work to reduce any barriers that may impede the digital transformation of tourism SMEs, including macro-economic issues, consumer protection and privacy issues, competition and regulation issues, information and education, and taxation.

Integrating traditional tourism businesses into digital ecosystems

In tourism, digital platforms have attracted much attention due to the innovation inherent in their business models. Online shopping has disrupted business to consumer practices because of its strong influence on customer shopping decisions and the incentive it gave to traditional "brick and mortar" shops to reshape their business models (OECD, 2019). These business models are often characterised by high productivity as a result of innovations in the way they have engaged multiple customer groups, co-create content, collect and use data to engage and expand markets, access underused resources, and share value across

multiple users or customers (Autio, 2017). While these firms represent the innovation frontier of digital tourism businesses, traditional tourism SMEs must find a place within these ecosystems, adapt and evolve their business models accordingly, or find their own path to the frontier. Support that governments provide SMEs to innovate new business models need to take into consideration the complex challenges that SMEs face, including:

Building and retaining human capital and digital capacity

Building human capital and digital capacity involves attracting talent, building expertise, implementing new technologies, understanding and exploiting opportunities offered through converging technologies and technologies and objects. It can extend to developing capabilities in e-commerce, social media and data analytics, as well as more advanced technologies. This includes businesses taking inventory of the digital capabilities of the current workforce and being open to adapting work practices. In other cases, it requires reviewing the local infrastructure to assess whether there is the possibility to increase digital capability, such as access to high-speed internet. For example, in Canada, the Universal Broadband Fund will support broadband projects across the country. Making high speed available internet for all Canadians will allow rural and remote tourism companies to extend their reach and potentially find new tourism companies.

In Chile, a key challenge to encouraging tourism businesses to adapt their business models for a digital tourism economy is a recent finding that 70% of tourism SMEs report having no need for digital technologies. In response, Chile has implemented a suite of measures to raise awareness of the benefits of digitalisation, and support tourism businesses to adopt and use new technologies. The Digitalise Your SME initiative, for example, encourages tourism SMEs to adopt digital technologies and train businesses in the many different aspects of digital marketing and management. It is complemented by a Tourism App for consumers, the Connect Tourism programme focusing on the digitalisation of the product across the entire country, and the wider Transform Tourism initiative which together seek to build the enabling environment for the digital transformation of tourism businesses.

Developing skills and training the workforce is also a critical issue in order to effectively use and finally adopt new digitally-enhanced business models. In this respect, the Ministry of Tourism of Greece has accordingly adapted tourism education provided by its institutions. Secondary schools specialised in Tourism Education and Institutes of Vocational Training, education curricula comprise courses dedicated to ICT in general and to systems used by hotels and accommodation units for data management, booking, organisation and management of food services. From 2019 onwards, Institutes of Vocational Training will comprise the specialty of "Management and Tourism Economy Executive", training students to the use of all essential travel market digital applications.

Developing value ecosystems

The development of tourism business ecosystems involves taking a strategic approach to building networks and relationships though which products and services, and customer relationship management takes place over the customer journey including searching, booking, preparation, travel, arrival, destination while in the destination, and post-trip engagement. The shift has been from traditional product-facing, profit-oriented approaches of doing business towards user-facing digital models that produce and deliver shared value. In this shift, value is being generated and shared by consumers, communities, residents, hosts, businesses and governments all working together.

The challenge of developing these ecosystems varies across subsectors and depends on business location and access to technology. Policy conditions that enable increased participation of these businesses into tourism value ecosystems can have important flow on and induced impacts into the broader community and can help tourism transition to diverse, inclusive and green economies.

> ### Box 2.7. Jurni digital tourism visitor information system in South Africa
>
> The National Tourism Visitor Information System has been rebranded and transformed into Jurni, which is an online platform connecting travellers and travel experiences across the country. Jurni acts as a booking tool and business application to help tourism SMEs overcome knowledge and resource constraints to each global markets. It also acts as a central data hub providing insights to inform business strategies and decision-making across the tourism value chain. A consumer-facing app also provides location-tailored information for tourist during their trip, based on geo-localised information, data analytics and artificial intelligence. Jurni is an industry-led alliance between the public and private sector with the aim of transforming the tourism sector in South Africa. With the ultimate goal of collecting and showcasing meaningful travel and tourism data, Jurni aims to support sound, strategic decision-making by providing an unbiased centralised digital data platform and integrated digital solutions. Measures to achieve this include:
>
> - Establishing consolidated, and comprehensive data hub that will deliver credible data that can subsequently be distilled to a local and regional level.
> - A booking tool that is aimed at levelling the playing field for the entire tourism sector.
> - An informative visitor portal that allows travellers to discover South Africa's tourism products and services.
>
> The National Tourism Sector Strategy 2016-26 identified the need to provide critical tourism information for decision makers and to develop a clear picture of the size, nature, and characteristics of tourism sector. Eventually, the Jurni app and website aims to provide greater integration between the Jurni platform, data hub and booking tool, and aggregation and exposure of South Africa's travel and tourism products, services, and experiences, as well as serve as the country's travel and tourism directory.
>
> Source: https://jurni.co.za/

In Finland, a Roadmap for Digitalisation of Finnish Tourism aims to build a nationwide digital tourism ecosystem, to support sustainable tourism growth and to make Finland become a smart and pioneering destination that provides smoothest customer journey. The digital Roadmap is built around 4 pillars to accelerate the digitalisation of the Finnish tourism sector: Data driven collaboration and management, utilising platform economy and developing multi-channel online distribution, promoting responsibility through digital means and scaling up from smaller regional digital pilots to national way of running the tourism business. In South Africa, the Government has taken a leadership role in developing a public-private partnership to accelerate the development of the digital tourism value ecosystem, as well as promoting open data sharing (Box 2.7).

Evolving business strategies and practices

The development of business acumen in the digital economy should be an integral component of SMEs business strategy in tourism. There is a proven relationship between business management capabilities and the capacity of a firm to attract capital investment (Andrews, Nicoletti and Timiliotis, 2018). This suggests that tourism SMEs that receive support to refine and innovate business strategies may be in a better position to raise capital. Traditional scientific management approaches, that see strategy and business planning as separate to the conduct of business operations, are increasingly outdated. Tourism businesses must develop business acumen, new agile ways of working, and undertake dynamic management if they are to compete in the global tourism system. Governments may assist with business strategy innovation and mentoring programmes.

New Zealand has recently completed a pilot initiative in the tourism sector, promoting sectoral partnerships to engage small tourism businesses about the opportunities of digital technologies and encourage their better use to improve productivity in the sector. The initiative aims to build a 'digital mindset' and encourage all tourism businesses to go on a digital journey. A sector-specific toolkit has been developed, to support digital workshops with small tourism business owners and develop a network of trusted intermediaries with tourism and digital expertise. The toolkit is a shared resource to support small businesses wanting to embrace digital tools and start to build professional networks. A key takeaway from the initiative was the importance of trusted intermediaries to accompany businesses on their journey to build a lifelong digital mindset. This is supported by research on SMEs in general, confirming community intermediaries are central to the adoption of critical e-aggregation applications provided by service providers (Lockett and Brown, 2006).

One potential approach to support SMEs may be in the form of a 'Chief Tourism Entrepreneur' to champion the digital transformation. Champions that are trusted intermediaries in the sector that have demonstrated success with digital tools, would have credibility, knowledge, and would likely increase policy effectiveness. For such initiatives to offer long term benefits, it is important that they sit within a broader innovation framework for the digital economy that encourages boundary spanning between tech, tourism and other sectors (Lockett and Brown, 2006). This approach has been successfully applied to support digital uptake more broadly, at the state level in Australia. In Queensland, the office of the Chief Entrepreneur aims to: support the development of the state's start-up ecosystem by working with incubators, accelerators and co-working spaces; connect with regional and remote areas to encourage and foster state-wide entrepreneurship; showcase the state's start-up and entrepreneurial talent; stimulate and attract investment and venture capital; and connecting local entrepreneurs, start-ups, and small businesses with the right opportunities, people, places and spaces to help them grow, scale and create jobs.

Adopting advanced technologies such as meta-search engines, social media, e-commerce, cloud technologies, and the collection, sharing and analysis of data are increasingly important in developing and maintaining competitive advantage. SMEs may lack resources, expertise and skills and must therefore consider in their business strategy making how to address such concerns. Governments may provide such assistance via co-operative funding mechanisms, talent attraction programmes and delivery of expertise through accelerators and incubators.

In Austria, digitalisation is a key part of the new Plan T – Masterplan for Tourism (Box 3.6). Under the Plan, a new central innovation hub has been established to support the development of technological applications and process for tourism enterprise, as well as for regions. The Next Level Tourism Austria hub will act as a future lab to encourage digital and digital-physical convergence. It will serve as an interface between traditional tourism enterprises and the technology sector, and will support the development of new technological applications and processes for tourism enterprises as well as regions.

The convergence of new technologies is having an impact not just on tourism businesses, but also destination. In Switzerland, based on an in-depth analysis of the implications of digitalisation for tourism destinations, highlighted the impact on destination marketing among other things, and this is the focus of the Swiss Innotour project Tourist Office 3.0 is an intra-industry support lab among tourist offices as well as a linkage with external service providers in the digital area. Further key elements are an exchange of experience, an empowerment to increase innovation and professional knowledge management.

In Malta, the Ministry for Tourism and the Malta Tourism Authority has introduced a Digital Tourism Platform to use AI to better target marketing activity and improve strategic planning by combining psychological characteristics with demographic data to enhance personalisation. This will be enhanced by machine learning as the platform matures. These developments are expected to generate positive benefits for businesses, including generating higher value added, improved business activity and cost mitigation through predictive analytics.

The Wallonia region of Belgium has focused on increasing the tourism offer through the use of digital facilitators. Five digital facilitators, each of one covering a part of the Walloon territory have responsibility for raising interest of tourist providers (tourist offices, accommodation providers, tourist attractions) to the use of digitalisation, and to help them to develop new ways of promotion and new quality (and customised) products according to the territory (and also increasing their turnover), in accordance with the digital strategies of Wallonia. The objective is to co-ordinate the administration and mutualisation of touristic information between operators. They aim to federating tourist providers to develop the digital Wallonia of tomorrow.

In Slovenia, a complete package of incentives for the digital transformation of companies is available, including to the tourism sector. Financial incentives are offered by the Ministry of Economic Development and Technology to support the creation of digital innovation hubs, e-commerce supports for companies entering new markets and public supports for the digital transformation of businesses. Digital vouchers of up to EUR 10 000 are a practical tool for use by SMEs to raise digital competencies, developing a digital business strategy, move to digital marketing and improve cyber security. Investment supports are also available.

Enhancing SME management through data

Data has important consequences for tourism SMEs in terms of how they build awareness, market their products and services, engage with customers, and facilitate purchases across multiple devices and platforms. Research shows that only 11% of small firms perform big data analysis, compared to 33% of large firms, and similarly on average, 56% of large businesses purchased cloud-computing services compared to 27% of small businesses (OECD, 2019b). Privacy and data protection issues can also arise with the collection and use of data by businesses themselves, including in relation to the General Data Protection Regulation (GDPR) in Europe.

Data is a key resource in the digital economy, and the ability of tourism businesses to use data to inform business planning, operations and service deliver is gaining importance. Data is particularly useful for business (accommodation) to enhance revenue management practices and employ dynamic pricing, common in larger firms. One issue for smaller tourism businesses is gaining access to this data, as the larger digital platforms can act as gatekeepers to large amounts of data collected about individual businesses, their customers and market transaction. This is an issue on the policy agenda of many countries, with some exploring ways to collect and share data openly with tourism stakeholders, including:

- In Croatia, the eVisitor system acts as a central platform for tourism data management (Box 1.15).
- In Portugal, a new business intelligence tool, TravelBI, is a data hub for the tourism sector, bringing together traditional data, new data sources, geodata and opendata services, as well as data analytics tools to transform the data into an easily digestible format for tourism businesses.
- In Denmark, the TourismTech Datalake initiative aims to support the development of new tourism business models by collecting and making data available to tourism stakeholders. This initiative is in its early stages, but further pilot projects have been proposed to test data analytics with various IoT solutions.
- In Poland, "Open Data Plus" aims to increase the quantity and improve the quality of open public data, and popularise their use. The project implementation in tourism sector includes: adaptation of registers to applicable law and amending of publicly available online central registers of the hotel and accommodation base, mountain guides, training organisers for Mountain Guides.

Box 2.8. Initiatives supporting the digital transformation of tourism, country approaches

France: France NUMerique is a government initiative launched early 2019 designed to help and support small businesses and SMEs in their digital transformation. It aims to support the digital transformation of micro and small businesses by providing information and tools through an online platform focused on business models, upgrading technology and understanding options for SMEs. An accompanying network - Activators France Num – with more than 1 500 business counsellors spread all over France are already mobilised to advise companies who want to achieve their digital transformation. For tourism, the platform aims to offer an innovative solution to raise awareness of the challenges of digital transformation, obtain targeted recommendations, find tourism-specialised *Activators France Num* advisors nearby, and identify events and meetings organised locally, as well as funding offers. It also provides a self-diagnosis tool for businesses to learn how to digitise their tourism business. Performance of the platform and associated network is being monitored and will inform future improvements to the initiative (www.francenum.gouv.fr/).

Luxembourg: Digitalisation is a major challenge for the tourism industry in Luxembourg; but it is also a huge opportunity. The Government is committed to supporting and promoting the digital transformation of the tourism sector, making use of new technology to enhance the promotion of the country, providing tourists with better information to help informed decisions and improve their experience while visiting. The Ministry of the Economy, as well as Luxembourg for Tourism and the regional tourist offices, analyse ways of digitalising their services on an ongoing basis, including:

- Developing a more efficient digitalised system for registering tourists in accommodation establishments. The new system will make it possible to collect fast and reliable statistical data relating to overnight stays and source markets.

- Planning a single national platform to connect as many services as possible. The platform will provide tourists with information and guidance, making the planning process easier.

The Fit 4 Digital initiative helps tourism SMEs to use on information and communication technology to become more competitive. The initiative provides consultancy, diagnostic services, support in devising and implementing digitalisation-oriented action plans and help with meeting associated costs, thus encouraging enterprises to take a step towards digital transformation. Open to all SMEs, the support includes intervention of a specialised private consultancy company chosen by the participating entity, 360-degree diagnosis of the company's organisation and its processes, definition and implementation of a digitalisation-oriented action plan, and financial assistance for the consultancy costs incurred.

An additional approach has been to aid decision-making by developing diagnostic platforms. Some countries have developed platforms with diagnostic tools to help traditional tourism SMEs determine where and how digital tools can be integrated, such as the "Fit4Digital" initiative in Luxembourg, the "Smart Destinations" Project in Spain, or France NUMerique (Box 2.8).

The "Smart Destination Reference Model" in Spain, for example, has been designed so that tourist destinations and businesses can successfully cope with transformations and challenges derived by the new economic, social and technological environment worldwide. Therefore, it proposes a voluntary procedure of comprehensive diagnosis and planning based on a complex methodology that covers up a set of 400 criteria, 24 fields of evaluation, all arranged under 4-core axis: innovation, technology, sustainability and accessibility.

Furthermore, shifts are occurring in the way consumers search, book, travel and engage in the destinations they travel to (WEF, 2017; García Sánchez, 2019), and governments are taking steps to utilise newly available data to maintain the quality of the tourism offer and market their country as a desirable destination

to visit. Consumer research reveals trends toward hyper-personalisation and customisation of travel products and services (Skift and Adobe, 2018; Visa, 2017). Data analytics, personal assistants and chatbots can make product suggestions in real time, channel digital customers towards preferred suppliers, and remind consumers of their searches and abandoned shopping carts.

VisitEngland, for example, has launched a Digital Marketing Toolkit to help tourism businesses improve their understanding of digital marketing and better promote their business. It also operates the Tourism Experience Great Britain (TXGB) platform, which is a one-stop exchange for tourism suppliers to manage live availability, pricing and bookings across multiple distributors via an online booking system, and connect with new customers. These initiatives will be complemented by the new Tourism Data Hub, which is designed to transform the way tourism analytics and data are used, providing tourism businesses access to data to better know their markets and tailor their products accordingly (Box 1.18).

Path forward for tourism policy makers

Governments have an important role to play in creating the right framework conditions for the digital transformation of tourism business models and the wider tourism ecosystem. Integrated and coherent policy approaches are needed to leverage the opportunities of digitalisation while also addressing challenges and minimising any negative consequences that may emerge. Policy work can also be positioned across a spectrum of tourism businesses (e.g. digital natives, hybrids and tourism SMEs with low levels of digitalisation).

A well-conceived policy approach involves a mix of short and long-term initiatives that foster conditions to increase digital technology uptake; it will encourage SME participation by reducing barriers and enhancing opportunities to digitalisation; and it will encourage new ways of working, new approaches to management and new digital cultures. Efforts can be framed along the following trajectories:

➢ **Actively champion the digital transformation of tourism.** The complexity of the policy environment combined with the unique characteristics of tourism SMEs can adversely affect the uptake of digital technologies, perceptions of risk, trust and confidence. Governments can take a leading role in establishing the framework conditions to support digitally-enhanced tourism business models, value chains and ecosystems. Policy measures might include:

- Support for hands-on innovation and capacity development through travel-tech incubators, accelerators, mentoring opportunities and other non-tech initiatives (e.g. tourism networks) to encourage uptake, catalyse tourism business ecosystems, and promote a digital mindset.
- Build a supportive environment by modernising regulatory frameworks to promote fair competition and encourage innovation.
- Facilitate strategic leadership appointments such as 'Chief tourism entrepreneurs' with specific mandate to evolve tourism business ecosystems and span boundaries between tourism, tech and other sectors. These trusted intermediaries should be strong leaders and strategic thinkers.

➢ **Encourage uptake and investment in new digital technologies** by tourism businesses. A policy environment that supports and enables digital transformation of tourism SMEs and seeks to enhance productivity and innovation could include the following policy measures:

- Enhance access to human resources, skills and information to improve awareness of opportunities and benefits, facilitate uptake of digital technologies, and strengthen capacity to participate in new and emerging digital ecosystems.
- Build the evidence base on the key aspects and impacts of digitalisation for tourism SMEs. Targeted and nuanced approaches to regulation, funding, investment and incentives should be based on a better understanding of the different needs of digital native businesses and traditional tourism businesses with low levels of digital uptake.

- Support accessibility and affordability of digital technologies, tools and solutions for tourism SMEs, including initial investment and ongoing costs.

➢ **Encourage business model and ecosystem innovation** through convergence, interoperability and the adoption of data analytics and other enabling technologies. Innovative business models are a lever to optimise the benefits of digital transformation. Measures that help to innovate business models and management practices, and transform traditional work practices will complement other policy initiatives. A key objective in catalysing digitally-enhanced tourism is to encourage digital-physical convergence and to progress smart tourism objectives. Specific actions could include:

- Facilitate increased access to high-speed broadband and other digital infrastructure for tourism businesses and visitors in cities, regions and rural areas, to benefit the production and delivery of seamless tourism experiences, tourism management, data sharing and analytics.

- Encourage public-private partnerships and collaborations between traditional SMEs and digital native enterprises and education institutions to enhance knowledge sharing, innovation and diffusion.

- Bring together actors with diverse and complementary expertise spanning tech, tourism and other sectors, to create a dynamic digital business environment in which both start-ups and existing tourism businesses can thrive.

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From:

OECD Tourism Trends and Policies 2020

Access the complete publication at:
https://doi.org/10.1787/6b47b985-en