AEGEAN UNIVERSITY

SCHOOL OF INFORMATION AND COMMUNICATION SYSTEMS ENGINEERING

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JOINED MSc

DIGITAL INNOVATION AND STARTUP ENTREPRENEURSHIP

"Creating, Communicating, and Connecting:

Digital technologies in Destination Tourism Management and the new perspectives in tourism".

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AKNOWLEDGMENTS

A wonderful, 2 years journey comes to an end along with the experiences and moments that we all shared through special circumstances such as those of the COVID-19 outburst era.

What was initially meant to be an academic struggle for the completion of the MSc in "Digital Innovation and Startup Entrepreneurship", lead to an unexpected personal upgrade and transformation.

Through the whole process of studying, researching, developing and creating team projects under the guidance and consulting of the professors' team of the two faculties, many friendships and professional connections were created with impressive results and new ideas.

So, on my part, a huge "thank you" to each one of our professors as a minimum appreciation for their effort to deliver in the best way and under a challenging academic environment due to the consequences of the early and most hard periods of COVID-19 in Greece.

A thought of appreciation and a farewell to all my fellow co-students who provided the necessary team effort and extreme willingness to help and complete all the challenges in our way with the best possible result.

I am sure that our roads will definitely cross in the near future and the ideas and projects that we all created with enthusiasm and ambition will become the first step to enter the challenging world of business and innovation in Greece.

ABSTRACT

This paper builds on previous definitions of digital transformation and the changes it brings about in the way of operation, the division of roles and the business approach, through the adoption of new technologies in organizations, enterprises and the wider business environment. This paper presents the impact of technology in the main representers of Destination Management in Tourism with a simultaneous analysis of the advantages resulting from the absorption of new technologies by organizations and businesses as well as examples of the use of new technologies in services and products.

Chapter 1 presents the emergence of digital technologies and its significant impact on destination tourism management, particularly for small and medium-sized enterprises (SMEs) operating in this sector. Additionally, reveals the emergence of new business models in destination tourism management due to the new digital technologies.

In Chapter 2 the research presents and analyzes two of the most significant initiatives, as methodically selected, for the promotion and support of digitalization in entrepreneurship. EIC and Aegean Startups acceleration projects are the core subjects with significant impact on the creation and development of digital SMEs both in the international and regional levels.

Chapter 3 reveals the results of digitalization in destination tourism management through the cases of the digital back office platform "Kleesto" and the development of the digital nautical tourism platform "ROTA", product of the students of Aegean University.

In Chapter 4 the change in business culture and behavior from the side of SMEs is being analyzed along with the challenges that every company faces in HR and the impact of the digitalization to the public.

Finally, Chapter 5 closes the research with certain conclusions regarding the advanced pace of technology in tourism and the governmental reflexes on the subject of adjusting and supporting the proper political and social context.

INTRODUCTION

The digital revolution brought radical changes in terms of perception and experiences. New forms of technology and their introduction into everyday life has transformed even the simplest processes and reached almost every aspect of modern life. For example, Internet of Things technology brought a variety of devices into our homes such as thermostats, washing machines, televisions, laptops, tablets and many others, surrounding us with lots of "smart" things and changing our home to a "smart" one. New digital technologies have introduced major innovations in factories, hospitals, hotels, cities and regions and signal the end of established standards.

One of many direct consequences of the technological development, is that researchers, institutions and also citizens who must all adapt now to those constant and complicated changes, need to observe the phenomenon through a different perspective and new standards. One of the main sectors of economy, the tourism sector, an important part of the social and cultural identity of each region, is hugely involved in digital transformations, taking on new properties and designations such as Tourism 4.0 or Smart Tourism.

In particular, the field of Destination Management Tourism, due to the complexity and the variety of roles that the actors involved are required to play, has lot to gain from the benefits provided by new technologies and their combination in order to create sophisticated services and useful management systems.

In the competitive field of tourism, any provider like region or industry who would like to prevail and exceed the competition should become either a learning region or a learning industry. Even more, emerging alternative tourism has to engage the element of culture, which gains in importance and has to be continuously transformed (Stamboulis, 2003).

TERMINOLOGY

Business model is the architecture for how a business creates, delivers and captures value. It refers to the internal organization and the links and relationships to external entities.

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).

A **Destination Management Organization (DMO)** includes a set of entities involved in the tourism industry of a destination and have a legitimate interest in optimizing the overall promotion and service delivery. The main responsibilities of a CSP include the qualitative determination of the destination, its geographical boundaries, its dynamic promotion in the world market and the determination of the added value attributed to the specific destination. (McLeod, 2017)

Destination Management Company term, includes all those service companies that have extensive and specialized knowledge of a particular destination, high expertise and appropriate resources and specialize in planning and organizing of its events, activities, tours, transport and functions supply chain.

ICT, or information and communications technology (or technologies), is the infrastructure and components that enable modern computing. The universal definition of ICT, is generally accepted to mean all devices, networking components, applications and systems that combined allow people and organizations (i.e., businesses, nonprofit agencies, governments and criminal enterprises) to interact in the digital world.

LITERATURE

To date, CET has received little attention in the marketing literature. Mitchell and Mitchell (2001a) have evaluated the content of such tourism sites. Further, these same authors have evaluated the phenomenon in the food and beverage industries (Mitchell and Mitchell, 2000), the nonprofit sector (Mitchell and Mitchell, 2001b), and the overall economy (Mitchell *et al.*, 2001). Mitchell and Mitchell (2002) have proposed a format for academics to evaluate local interest in such facilities in their local service areas. The topic is often included briefly in discussions of integrated marketing communications but has received limited direct research attention (Mark A. Mitchell, 2002).

The introduction of the creative tourism concept, in theory and practice, is a manifestation of a general "creative turn" in society and marks a breakthrough in tourism studies highlighting a shift from mass cultural tourism (Jelinčić, 2009; Richards, 2011; Richards and Wilson, 2006).

The heightened momentum of a new economy largely driven by knowledge and creativity is the overarching economic context of the development of the creative turn. Notwithstanding critique (Peck, 2005), Florida's (2002) "creative class" approach is frequently the basis for creativity being cited as a principal driving force in the growth and development of cities, regions and nations (Anne de Bruin, 2016).

Nevertheless, the value of the creative economy is not unquestioned, and this is so especially in relation to its part in a broad new economy narrative and a neo-liberal sell-out (Garnham, 2005). Despite scepticism and suggestions that we might be entering a period "after" the creative industries (Banks and O'Connor, 2009), fallout from the 2008-2009 Global Financial Crisis has sharpened the focus on opportunities afforded by the creative economy.

Popularity of national, regional and local initiatives to capitalise on creativity remains strong (de Bruin and Noyes, 2015; UN, 2010). Tourism is often an integral part of these initiatives, although the growth of creative tourism per se has been viewed as a response to the creative turn in everyday lives (Jelinčić, 2009). However, as Richards (2011, p. 1227) highlights, the creative turn can be seen not merely as a general trend "but also as a broader instrumentalization of culture and creativity" affecting tourism.

Digitalization 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 organizations (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 technologiesand leverage advanced capabilities.

METHODOLOGY

The present research is based on the "core sources" methodology through which the most importnat sources of information and data were chosen among several relevant topics.

In a thesis, the "core sources methodology" refers to the approach used to identify and select the most important and relevant sources of information for the research. The goal of this methodology is to ensure that the sources used in the thesis are of the highest quality and relevance, and that the research is based on a strong foundation of established knowledge.

The core sources methodology typically involves a comprehensive review of the literature on the topic of the thesis. The researcher identifies the most authoritative and influential sources of information in the field, such as key textbooks, seminal research articles, and important scholarly journals.

To ensure that the sources are of high quality, the researcher may use criteria such as the relevance of the source to the research question, the credibility and authority of the author or publisher, and the rigor of the research methods used in the source.

Overall, the core sources methodology is a critical step in the thesis writing process, as it provides the researcher with a solid foundation of established knowledge and ensures that the research is grounded in the best available evidence.

The specific topics of the present research were chosen due to their relevance and importance in their field of specialty. From the field of innovation initiatives, Aegean Startups Accelerator from Aegean University in Greece was selected and from the field of digital platforms "Kleesto" SaaS for tourism SMEs and "ROTA", a nautical tourism project are presented.

Aegean Startups case was selected as one of the most significant and influential initiatives from Aegean University in the innovation sector of digital transformation based on the academic and business environment in Greece.

The quality and presence of Aegean University as a digital accelerator for entrepreneurship has proved as, in relation to the rest of the Greek Institutions, ranking 2nd in terms of the research index and 1st in terms of funding sources from private bodies (Times Higher Education (THE) Young University Rankings, 2022).

Aegean Startups Accelerator has significantly contributed to a significant number of initiatives, through mentoring, assistance and connection between startups and angel investors, many of which where produced and formed by students and members of Aegean University.

Kleesto is a relatively new player in the digital tourism space, having launched in 2019. As such, it represents a contemporary example of how digital technology is being used in the tourism industry.

Kleesto has a unique business model that sets it apart from other digital tourism platforms. For example, it offers a pay-as-you-go pricing model, which could be of interest to researchers examining pricing strategies in the tourism industry. Kleesto's platform is designed to be user-friendly and intuitive, which could make it a useful case study for researchers investigating user experience (UX) design in digital tourism.

Overall, while the decision to select Kleesto as a core source case for research in digital tourism ultimately depends on the research questions and objectives, Kleesto's unique features and positive user feedback suggest that it could be a valuable case study for researchers investigating the use of digital technology in the tourism industry.

ROTA nautical tourism digital platform is a project created and developed by students of the joint MSc in Digital Innovation and Startup Entrepreneurship from Aegean University and National Technical University in Greece.

The aim of the specific MSc is to provide specialized training in startup firms management through both theoretical and applied topics in contemporary e-commerce applied in a variety of sectors such as retail, tourism, e-gov and many more.

ROTA project was selected as a representative result of the process of creation and development of a project in Destination Tourism Management through the academic environment and business accelerators provided by institutions such as the Aegean University with innovative action and presence in digital transformation in Greece.

CHAPTER 1: DIGITAL TECHNOLOGIES IN DESTINATION TOURISM MANAGEMENT

GENERAL

The destination tourism management industry is characterized by many differences and the complexity of the organizational, business, and also operational relationships between the involved parties such as the Destination Management Organizations and Companies (DMOs and DMCs) as well as the entire network of partnerships connected to the specific sector. These relationships involve complex internal and external interoperable services and commercial transactions in a highly competitive sector.

In order for the several entities to be able to respond to such a competitive environment and manage to adapt to the challenges that occur, the use of evolved forms of technology is more than required. The need for immediate and evolving provision of high-level services also arises from the requirements of the modern traveler who, as the final recipient, has increased demands for variety, accesibility and speed (Melnychenko, 2010; Melnychenko, Mazaraki, & Tkachuk, 2019).

Modern technology and the extended use of it will provide the appropriate framework so that the direct stakeholders of the DTM, such as the DTOs and the DTCs, can be connected in an efficient and fast way with the vast number of their indirect partners, such as the airlines, payment providers, large tourist management offices (tour operators), insurance companies, hospitality and catering businesses, government services and many others.

As DTP refers to a holistic approach through coordinated processes where various sectors of tourism are simultaneously covered such as advertising, event creation and management, transport and hospitality, it is the responsibility of each DTO or DTC to provide integrated services to all travelers who addresses (Mariani, 2020).

To complete this task, the DTM industry needs to be involved in coordinated actions aimed at control, promotion and management of the financial, socio-cultural and environmental dimension of the targeted touristic area. The use of advanced technologies such as processing and management of Information (Big Data mining – management), the Internet of Things

(Internet of Things), Virtual/Augmented Reality (VR/AR), Artificial Intelligence (AI), Blockchain technology, etc., are considered necessary for the sustainable development and management of the BTI of each place.

THE IMPACT ON SMEs

The main objective of any DTM is to leverage digital technologies to achieve sustainable and inclusive tourism development, ensuring that the benefits of tourism are shared equitably among all stakeholders, including local communities, businesses, and tourists.

It aims to optimize the use of resources and enhance the quality of tourism services, while minimizing negative impacts on the environment and cultural heritage. The ultimate objective is to ensure that tourism contributes to the overall development and well-being of the destination and its people.
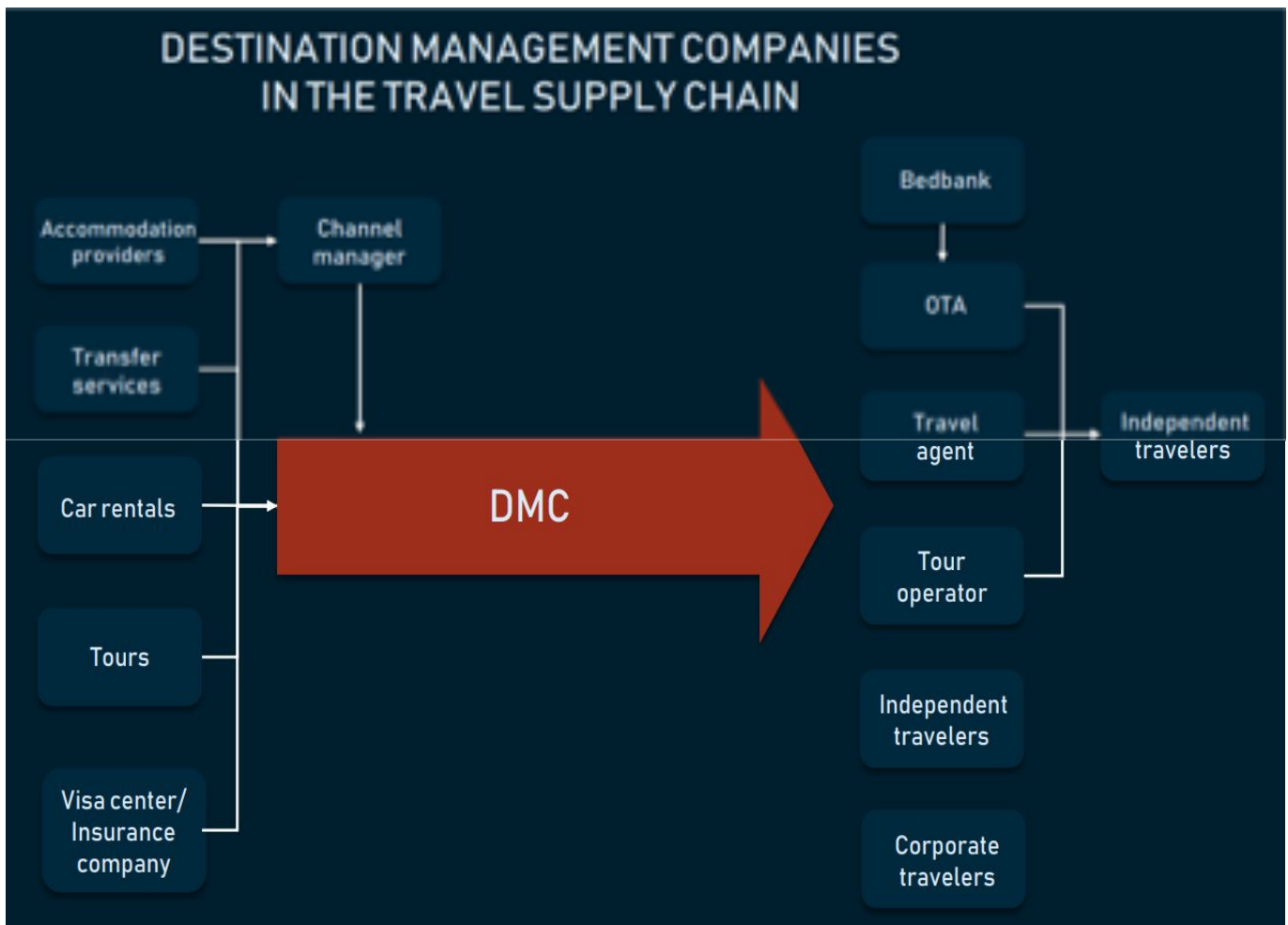

Figure 1. **DMO's supply chain**

The acknowledgment of the value that is co-created and shared between multiple collaborating stakeholders in the tourism sector, is important in unlocking the expectations and high targets of the digital economy. For instance, social media platforms, including photo or video sharing and journey tracking apps allow travelers to share geotagged information with friends and 'followers'.

They also add value to SMEs in a destination who can use this high-quality material at low cost to promote 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 museums, parks, sites and public streets or buildings are contributing to upraise the value of a destination, then some of the financial profits should return to maintain and regenerate those assets.

BUSINESS MODELS AND DIGITAL ENVIRONMENT

Digitalization is transforming traditional business practices in a variety of sectors such as customer engagement, marketing, business management, business planning, product development, service delivery and many more. The implications of such transformation for SMEs in tourism are significant because digitalization pushes the supply chain of visitor experiences from linear value chains to value ecosystems (Kelly, 2015; WEF, 2019).

While there are several advantages to be derived from expanded markets and productivity gains from such value adding, like the increased information and enhancing visitor's awareness, the very same complexity of the marketplace needs higher control systems and management from tourism organizations in order to exploit all those advantages of a destination.

Several modern initiatives such as support for business mentoring, experimentation through living labs, workshops and online courses provide an opportunity to become more familiar with these new types of value creation and capture. Such initiatives encourage SMEs to reassess their business models and make key changes to both strategy and practices. Israel has established a tourism accelerators program 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.
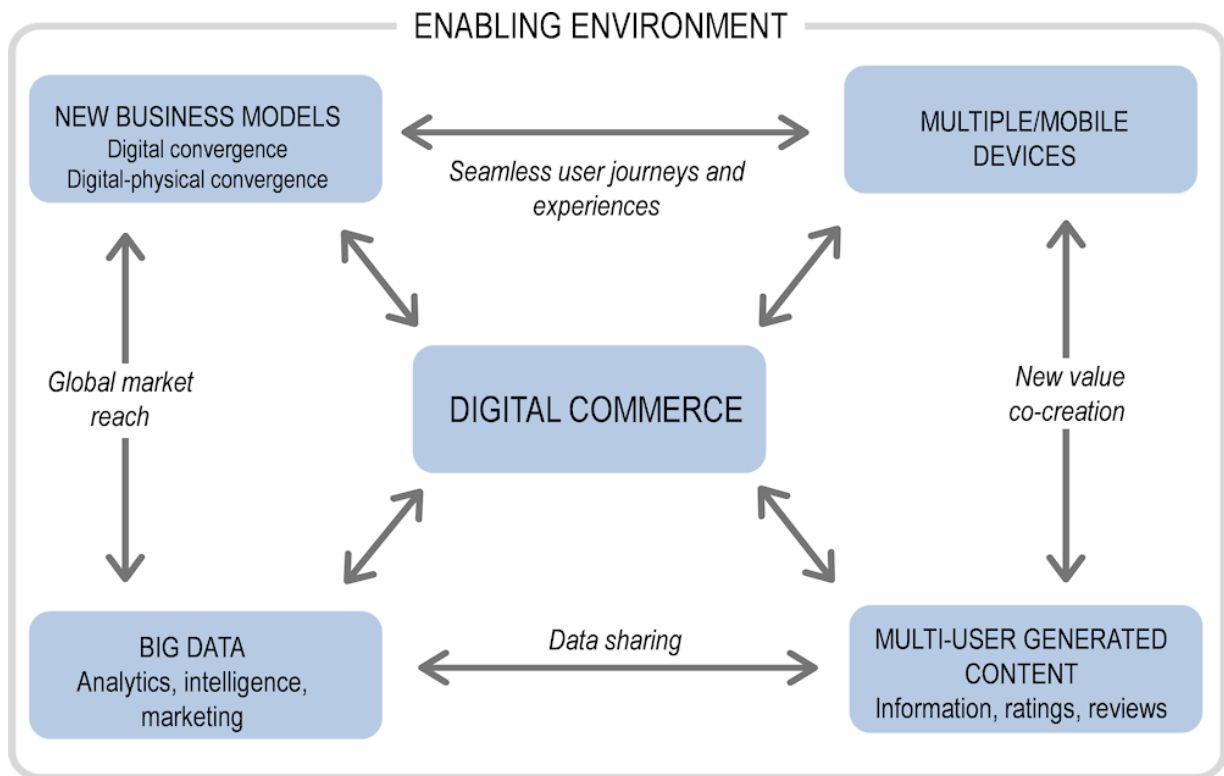

Figure 2. **Convergence of technologies to create the enabling digital environment**
Source: OECD

As digitalization evolves, emerging technologies are combining in novel ways to push digital transformation in new and often unpredictable directions (OECD, 2018c). In tourism sector, this type of convergence is happening in two important areas: the merging of numerous digital technologies, and the adjustment of digital technologies 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. For example, after a certain activity is booked, travelers can receive automated suggestions based on their previous behaviors for all other

sided selections like transfers, accommodation and other activities to select in the chosen destination. With a minimum number of clicks, a car is booked, hotel check-in completed, a restaurant table is reserved and tickets to a show are 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 favor certain suppliers, customizing and bundling products and prompt customer engagement before, during and after travel.

The challenge for any SME in tourism is to comprehend, engage and form a certain strategy in order to upgrade their presence in the 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 customization 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 in the proper way and with specific assumptions across cities, regions or a country, smart tourism establishment and further development is possible.

CHAPTER 2: CREATING INNOVATIVE INITIATIVES

GENERAL

Google statistics indicate that every potential traveler performs almost 400 search queries when the next travel is planned. This valuable data is used by travel companies to influence our booking decisions and persuade us to choose specific routes, companies and services. Results show that almost 74% of travelers worldwide plan online the full schedule of their next trip. That's why Turkey, for example, has announced plans to develop their latest concept which is named "Tourism 4.0". The country is planning to make a significant investment in the development of digital marketing for the tourism industry (First Line Software, 2017).

In Asia, an expanded region with several different destinations, tourism also generates significant revenues for the local economies. As such, the governments of Asian countries are managing digital transformation initiatives at the state level and in June of 2019 Sri Lanka announced the launch of a large-scale digital promotion of the country as an attractive tourist destination. The country's governmental goal is to attract more than 2.5 million tourists in 2020.

Indonesia's answer to the worldwide expansion of hosting platforms like Airbnb is to launch its own booking platform for guest houses and villas. Named Indonesia Travel and Tourism Exchange, it is supported by the government and already hosts more than 2,000 houses for rent in the platform inventory.

Additionally, there are hundreds of tourism startups around the world, and each one of them brings original ideas and business models to the market. Cambodian platform CamboTicket recently received additional funding to expand their platform which helps travelers book seats several public transportation means like buses, ferries and taxies in Cambodia, Laos, Vietnam and Thailand.

Thai startup Local Alike is bringing the new concept of local tourism through Thailand to the rest of the world. With its digital platform, the company hopes to connect local people across Southeast Asia with travelers from all over the world who are interested in community-

based tourism experiences. Recently Local Alike was named 1 of the 10 startups selected to participate in Booking.com's accelerator program in June in Amsterdam.

1. Paris, France (Welcome City Lab, 2019) Welcome City Lab

2. Lyon, France (European Capital of Smart Tourism, 2019) Smart Tourism Award at the ONLYLYON Tourism Fair

3. Helsinki, Finland (MyHelsinki, 2018) MyHelsinki - testing ground for open innovation, Startup community Maria 01

4. London, UK (London Councils, 2018, Trampery, 2018) London Office of Technology and Innovation, Traveltech Lab

5. Dublin, Ireland (Kitchin, Coletta, & McArdle, 2017) Programmable City project - development of open data portals

6. Italy (Italian Tourism Startup Association, 2019) Italian Tourism Startup Association

7. Barcelona, Spain (Mobile World Capital Barcelona, 2019a; Seggitur, 2019) Innovation Hub Travel Edition, SEGITTUR - national agency for the development of tourism innovation

8. Vienna, Austria (WienTourismus, 2014) "Open Innovation Process" - Vienna 2020 Tourism Strategy

9. Lisbon, Portugal (Fábrica de Startups, 2018) Fábrica de Startups

Table 1: List of open innovation projects in world travel destinations and countries
Source Organization / Project / Initiative

It's not easy for all those startups created and addressed in tourism to find their own niche market; for example in gastronomy or medical tourism. Spanish platform Tripnparty connects travelers with locals who can introduce them to the best local bars or pubs which are well known by locals, not tourists. So far, the startup has collected data for several major European cities and has approached a wide audience.

Earlier in June, Bali held a tourism startup contest – Startup Weekend Bali – where the best ideas for startups were chosen. The winners list includes: [Botol Wisata](#) (a platform that lists Indonesian hotels offering refillable water bottles to its guests), Finger Farm (an app to connect local farmers with travelers interested in farming), Travelis (an app to connect travelers with local guides and taxi drivers on Bali) and so on.

The most ambitious project in our selection of examples of tourism-focused digital transformations came from Finland. [Service Space Nation](#) wants to popularize space tourism by offering the first trip to the International space station. One of the project marketers is genius Peter Vesterback who helped Rovio to make Angry Birds one of the most popular games in the world.

Space Nation is also coming up with a game that includes virtual reality elements (special equipment will be delivered to the International space station in 2018 by one of the cargo spaceships from NASA). The company promises the game will be fun, interactive and useful. That's it for the coverage of this month's topic – digital tourism!

EIC ACCELERATOR PROJECT

EIC is a collaborative project that will develop a network of incubators & accelerators, start-ups, SMEs and financiers to form a European community committed to promoting knowledge-sharing, the use of technology and collaboration across borders for sustainable tourism, while helping the companies address common challenges.

EIC main objective is to support the creation, business development and scaling-up of companies in the sustainable tourism sector. This effort will come to a success through several projects like incubator and accelerator supports, integrating creativity with cutting-edge technology, science and other relevant expertise.

The network of EIC partners brings together a wide range of experience in creation and development of tourism enterprises across Europe aiming to stimulate their creations in order to grow and become international. EIC aims to provide incubation & acceleration support to sustainable tourism start-ups and SMEs to grow and scale. It helps SMEs to generate new

products, services and business models, facilitate access to finance and new markets, while also helping them build new skills and resilience.

Furthermore, EIC helps SMEs address challenges such as the expansion of tourism season in each region, harnessing technology and creativity, as well as integrating sustainability as a part of their USP. The project activities are specifically tailored to drive start-ups and SMEs whose products, services and business models are ecologically sustainable, economically viable, as well as ethically and socially equitable.

AEGEAN STARTUPS

Aegean Startups is a digital accelerator of innovation and entrepreneurship created from the University of Aegean. Through a digital platform, competitions that take place and complementary actions, Aegean Startups promote and support ideas for start-ups but also for actions with a social impact, with an emphasis on the Aegean area.

43	328	83	26	15
Business Ideas	Members	Mentors	Companies/Organizations	Supporters
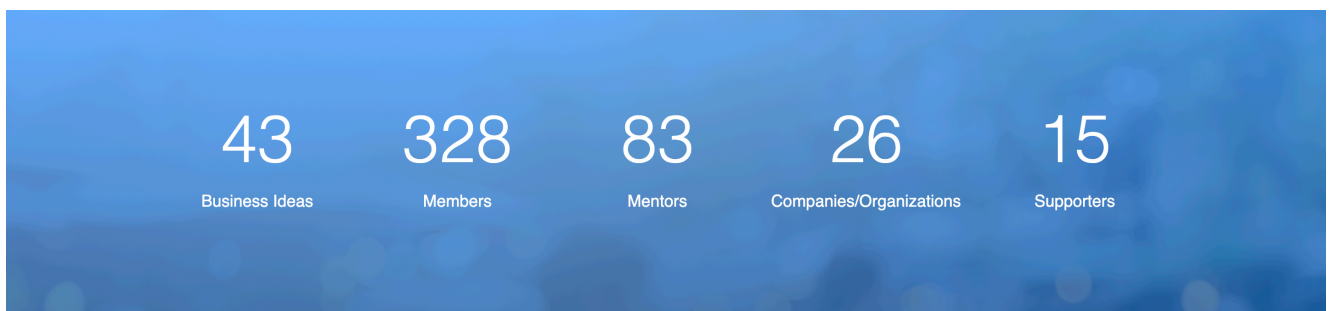
Aegean Startups is promoting entrepreneurship and innovation in the Aegean area. By involving students, graduates, staff, and citizens, the project is creating a collaborative environment that can lead to the development of original and socially impactful ideas. The focus on the UN Sustainable Development Goals is particularly important, as it ensures that the ideas generated by the project will have a positive impact on the environment and society.

Moreover, the support provided by the platform to start-ups is not only focused on awards but also on systematic assistance and finding resources for their development over time. The opportunity for early-stage financing through angel investors, venture capital, and crowdfunding is also an important aspect of the platform, as it can help promising start-ups to grow and succeed.

The community

Member	Mentor	Angel	Supporter - Sponsor	Aegean Business
The members have skills and can be natural persons from Greece or from another country. A member can submit an idea, in the context of a competition or outside it.	The mentor is an unpaid assistant in shaping an idea. The mentors provide business experience and come from the University of the Aegean community or they are external.	An angel is a private investor or business that supports an idea, financing it or providing an important service or resource for its implementation, at a very early stage.	Supporters and sponsors are individuals or organizations inside or outside the University of the Aegean community that may support an idea or competition.	Entities or companies based on the Aegean islands that participate in the activities of Aegean Startups and state needs that can potentially be met by start-ups.
See the members	See the Mentors	See the Angels	See the Supporters	See the Needs

The connection of distinguished groups and ideas with incubators and entrepreneurship accelerators in Greece, Europe, and the USA can provide additional opportunities for start-ups to develop and expand their businesses. Aegean Startups is a valuable initiative that can contribute to the economic and social development of the Aegean area, as well as to the promotion of innovation and entrepreneurship more broadly.

The project collects the needs of local enterprises and organizations so that the candidate start-ups respond to demand (demand-driven entrepreneurship) and achieve instant market traction. Also, through the platform, an open database is offered full of information for the economy of the Aegean islands and educational material for start-up entrepreneurship, specially designed for small and very small businesses in the Aegean.

The Panhellenic Innovative Entrepreneurship Competition AEGEAN Startups 2021-2022 that took place last year, ranked the best business plans in thematic categories related to the priority sectors of the Aegean. The categories were mainly in tourism, culture, environment, rural development and IT.

The participation exceeded the 50 plans and the proposals were submitted to the competition, which were later shaped into business plans with the cooperation of mentors from the University of the Aegean and the market. The final that took place on March 19, 2022, included the 10 best business plans as they emerged from the stages of the competition.

The presented proposals were as below:

- **The Perfect Farm:** Model for setting up an autonomous farm
- **ROTA:** Creation of personalized nautical routes through an "intelligent" platform
- **MyMedGuard:** Remote assistance system in case of emergency
- **RideAway:** Network of shared routes within cities between citizens
- **Cultural Fox Tales:** Application of a smart tour to every archaeological site of the Aegean
- **Litter mapping in coastal zones:** Drone systems platform for waste mapping in coastal zones
- **ECOCup:** Digital platform that aims to incentivize the use of reusable cups.
- **GEIA (Go Everywhere In Aegean):** Online agency providing tourism services.
- **TouteRout:** A platform that will promote tasting routes to all the Aegean islands based on traditional Greek products.
- **RePlace:** Application that combines green education and entertainment with the aim of promoting users' environmental awareness

COMMUNICATING THE SERVICES

Digital marketing has become a crucial aspect of the travel agency service industry. Travel agencies have realized the importance of having an attractive online presence to reach a wider audience and promote their services.

Social media platforms like Instagram, Facebook, and Twitter have become important tools for travel agencies to showcase their services and engage with potential customers. In addition, online reviews and ratings play a crucial role in influencing the travel decisions of potential customers.

In the digital age, travel agencies have to adapt to new marketing channels and technologies to remain competitive. Digital marketing allows travel agencies to reach a wider audience and engage with potential customers in a more personalized and targeted way. It also enables them to provide valuable content and information to their audience, build their brand and reputation, and ultimately increase sales and revenue.

Digital marketing strategies used by travel agencies include social media marketing, search engine optimization, email marketing, content marketing, and online advertising. With the growing use of smartphones and tablets, travel agencies are investing in developing mobile applications that provide a seamless booking experience for customers. By cutting out middlemen and providing direct online services, travel agencies are looking to increase their profit margins.

There are several new strategies of digital marketing that are being used in the travel industry, including:

- Personalization: Personalized marketing uses customer data to create targeted marketing campaigns that are tailored to the individual customer's interests and preferences. This approach can be particularly effective in the travel industry, where customers often have unique preferences and interests.
- User-generated content: User-generated content is content created by customers, such as reviews, photos, and videos. Travel companies can use this content to create more authentic and engaging marketing campaigns that are likely to resonate with potential customers.
- Social media marketing: Social media platforms like Facebook, Instagram, and Twitter provide travel companies with a powerful way to reach potential customers. Travel companies can use social media to showcase their products and services, share user-generated content, and engage with customers.

- Influencer marketing: Influencer marketing involves partnering with social media influencers to promote a travel product or service. This approach can be particularly effective in the travel industry, where customers often rely on the recommendations of others when making travel decisions.

- Augmented reality (AR): AR technology can be used to create immersive experiences that allow customers to preview a destination or hotel before they book. This approach can be particularly effective in the travel industry, where customers often want to know as much as possible about a destination before they make a booking.

The travel agency industry is expected to continue its shift towards digital platforms, as more and more customers prefer the convenience of online booking and the ability to research and compare services online.

CHAPTER 3: CONNECTING THE NEW WORLD

GENERAL

Digitalization combines 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 fragmented about the uptake of different technologies and the barriers and opportunities experienced in different sectors, countries and organizations (PwC, 2016).

Several recent types of research held by the European Commission found major differences in the use of digital technologies in tourism across Europe. For example, nordic countries, like Sweden and Norway, showed higher use of digital technologies than those in eastern and southern parts of Europe. The same research found that tourism SMEs strive 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.

DIGITAL PLATFORMS RESHAPE TOURISM

Digital platforms nowadays are changing the way the tourism sector is offered from end to end—impacting several actions like the way destinations facilitate tourism, the development of new products, data gathering, remote access in the markets, and methods of attracting visitors. This digital disruption has ripple effects across the tourism industry, making it challenging for low-income markets to leverage tourism for development impacts. A question for the sustainability of SMEs in tourism is how can the World Bank Group, international partners, country leaders and businesses work together to include digital transformation for SMEs and their further development in emerging markets.

Sustainable tourism should be a tool for development, benefiting countries and communities around the world. When managed in the proper way, tourism can contribute to national economic development, leverage human capital, improve livelihoods, particularly for women and rural entrepreneurs, support cultural heritage and resource protection, and promote international understanding.

But digital transformation comes with disadvantages as well or at least with a toll as disrupts established norms. This disruption has ripple effects across the tourism industry and affects low-income markets striving to leverage tourism for development impacts. Two obvious examples are the digital platforms that facilitate peer-to-peer accommodation and user-generated content, which have shifted the power away from media companies and hotels or other formal types of touristic accommodation into the hands of the consumers.

The peer-to-peer accommodation economy is growing six times as fast as other forms of accommodation. Peer reviews and other user-generated content (UGC) facilitated by digital platforms have become the fastest growing and most important sources of travel information—more important than tourism board and traditional coverage.

But the consequences of this disruption may present an opportunity for emerging markets to benefit from lower barriers to entry, increased access to market and data, new accommodate inventory. On the other hand, these changes and new way of things in tourism can also marginalize those less digitally able and concentrate power in a few monopolistic platforms (The World Bank, 2018).

KLEESTO SOFTWARE

The features and benefits of Kleesto as a cloud-based except of booking is also ticketing, and intangible booking software for travel agents and businesses providing tourism activities. The platform can help resolve ordinary problems that businesses face, such as communication difficulties with partners and customers, and help them optimize their operations. The main features are:

- real-time booking management
- multi-channel payment control
- attractive online presence
- resource management
- communication functions.

The real-time booking management feature of the platform can be especially useful for businesses as it allows them to quickly manage bookings and reservations in a centralized location. Additionally, the multi-channel payment control feature can make it easier for businesses to manage their finances and ensure timely payments.

The attractive online presence feature can be an important aspect of the platform for businesses looking to expand their online presence and attract new customers. The resource management feature can also help businesses effectively allocate their resources and maximize their efficiency.

Furthermore, the platform's communication functions can help businesses keep in touch with their partners and customers in real-time, which can help them to better serve their customers and improve their customer service.

Finally, the Tour Operator Software solution can be a game-changer for business owners, as it allows them to manage bookings in a simple dashboard, saving them valuable time and increasing their productivity. Overall, Kleesto seems to offer a powerful set of tools that can help businesses in the tourism industry streamline their operations and grow their revenue.

Booking Engine & B2B Booking Portal

Equipment, Fleet & Team Organization

Supplier & Reseller Connectivity

Accounting & Payments Tracking

Kleesto's main objective is to provide valuable know-how to small and medium-sized tourism businesses, so they can improve their online presence and expand their channels beyond Greek borders. By doing so, these businesses can increase their revenue and customer base, which can help them grow and succeed in the tourism industry.

Expanding the target market to include tour operators, DMCs, or hotels that operate or manage tours, activities, transport, rentals, etc. is a smart move, as it allows Kleesto to offer its benefits to a wider range of businesses in the tourism industry. By doing so, the platform can help eliminate common problems that these businesses face, such as misunderstandings, lack of trust, overbooking, double bookings, bad B2B offers, or bad B2C reviews and ratings.

Overall, it seems that Kleesto's cloud-based booking, ticketing, and intangible booking software can be a valuable tool for businesses looking to improve their operations, expand their online presence, and increase their revenue. By providing businesses with the necessary tools to manage their bookings, payments, and communication with customers and partners, Kleesto can help them optimize their operations and provide better service to their customers.
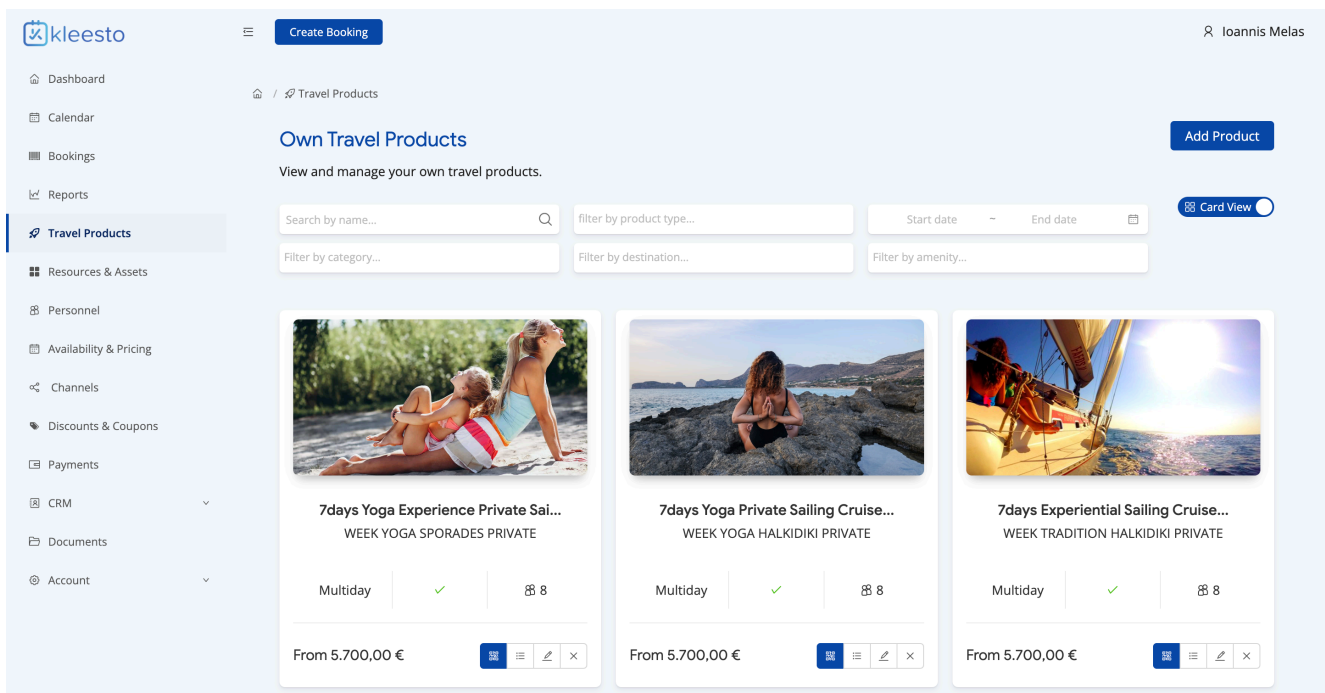
A platform that allows the user to organize and expand his network by leveraging all the available tools he needs, addressing to several types of tourism businesses as:

- travel agents
- hotels
- offline desks
- marketplaces
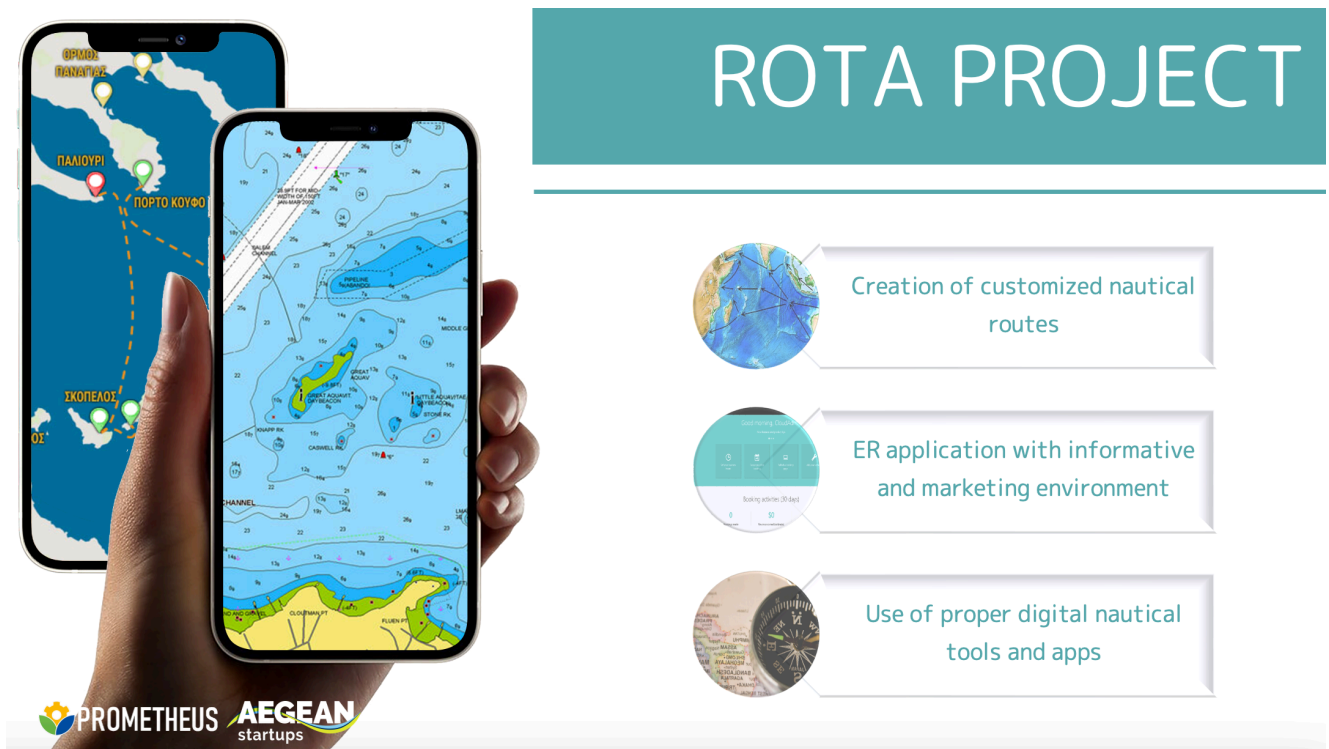- visitor information centers

"ROTA" DIGITAL PLATFORM

ROTA is an innovative project, created by students of Aegean University during their Master in "Digital Innovation and Startups" and participated in the Aegean Startups contest, which took place in 2022. "ROTA" took first place among more than 50 proposed projects and has won the attention and interest of the academic and business world as well.

It is a digital platform that offers great help to those that are not familiar with organizing a sailing excursion but they are eager to do so. "ROTA: answers all those questions created when someone wants to experience a sailing trip to a new destination such as "what type of yacht do I use?", "which destination is best for my family?", "what options do I have there?"

and many more. It also provides ready packages for sailing routes and creates experiences that combine elements from the local natural, cultural and social environment.

Through the "smart" platform, travelers of all ages can now create their personalized cruise and include all the options offered in each destination. It's also a dynamic online shop with many potentials for the traveler as below:

- All information gathered about the offered products/services of each region
- Traveler creates a personalized sailing itinerary, choosing between a variety of destinations and activities
- Participation in ready-made packages of interactive, sailing tourism
- A reliable guide as the app also works as a handy nautical route tool for those who own a boat and sail in the app's coverage area


The platform also provides detailed information about the destinations, including popular attractions, cultural events, local cuisine, and other useful information to help the traveler make informed decisions. The traveler can also customize their itinerary by adding or removing stops, changing the duration of each port of call, or modifying the activities included in the trip.

To ensure the safety and comfort of the traveler, the platform only offers yachts that meet the highest safety standards and are maintained in excellent condition. The crews are experienced and trained to provide a high level of service and ensure that the traveler's needs are met throughout the trip.

By providing digital representations of each point of interest, along with photos, videos, and detailed information, the traveler can get a better understanding of what to expect and make informed decisions about where to go and what to do.
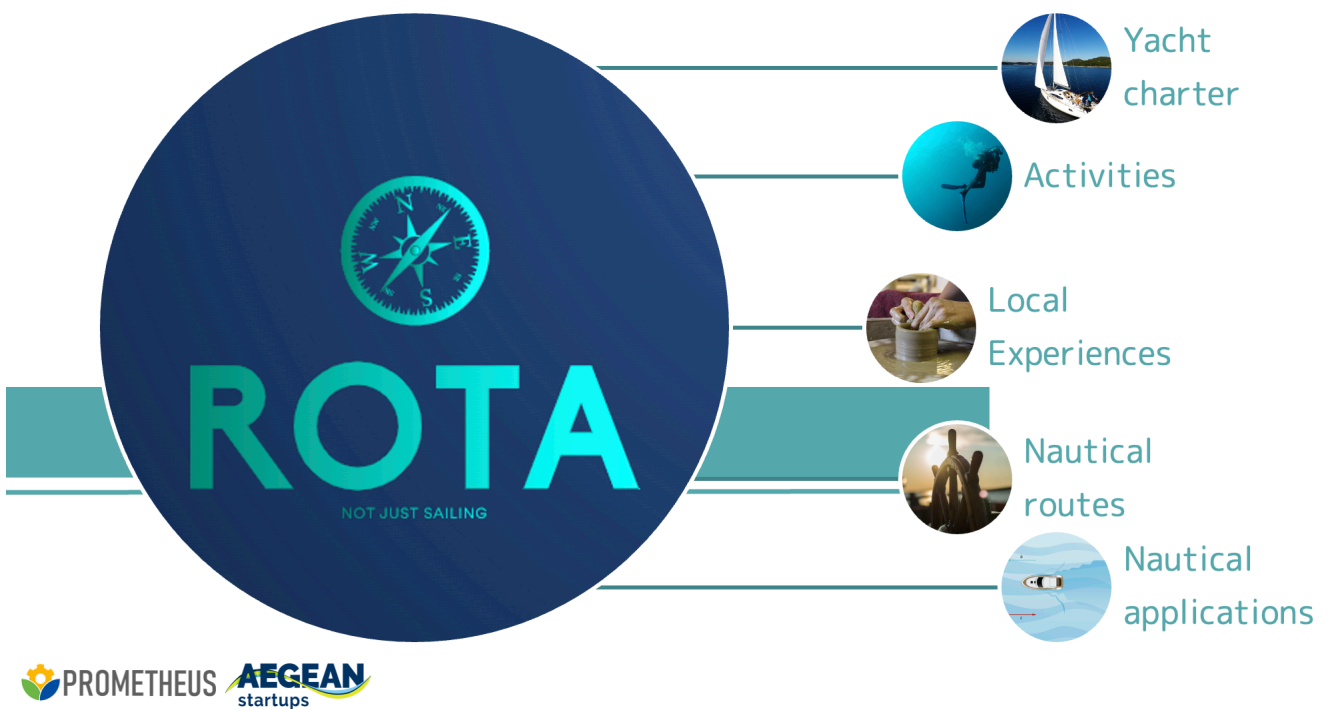
In addition, having all the necessary information from the nautical navigation charts (portolans) in digital form can make it easier for the traveler to plan their route and navigate safely through the area. The ability to create a customized nautical route and add activities through a shopping basket can also provide a personalized and convenient experience for the traveler.

The platform is also offering an app designed for smartphones and tablets to provide travelers with useful information and easy access to maps and points of interest. By using the GPS feature on the mobile device, the app can also provide information related to the traveler's current location, which can be very useful for planning and navigating their sailing itinerary.

In addition, the platform can play an important role in promoting alternative tourism and mobilizing the existing tourist potential of the North Aegean region. By offering a user-friendly and customizable experience, the platform can attract more sailors to the area and help them discover its beauty and unique cultural offerings.

Effective communication strategies can also be important in making the wider area of the North Aegean attractive for sailors. By promoting the region's natural beauty, rich history, and cultural heritage, the platform can help to generate interest and excitement among travelers, and encourage them to explore and discover all that the area has to offer.

The proposed plan has a focus on innovation and the use of smart technological means to promote nautical tourism in the North Aegean region. By creating an innovative product that meets the needs and desires of modern travelers, the region can attract more visitors and strengthen its position as a quality destination for sailing tourism.

In addition, the creation of new thematic tourism products in every part of the coastal zone of the region can provide a diverse range of experiences for travelers and support the development of local businesses and agencies. By promoting these tourism products and services through the platform of the proposed plan, more travelers can discover the unique offerings of the North Aegean region and contribute to the local economy.

The expected results of the implementation of the proposed plan can include:

- Increased tourist arrivals and overnight stays in the North Aegean region, leading to economic growth and job creation.
- Enhanced international position of the North Aegean as a quality destination for sailing tourism, leading to increased awareness and interest among travelers.
- Development of new thematic tourism products and services, providing travelers with unique and diverse experiences, and supporting the local economy.
- Improved tourism infrastructure and services, leading to an enhanced overall tourism experience for visitors.
- Creating a comparative advantage for the promotion of the North Aegean initially at national and international level, so that it is chosen as a maritime travel destination.

CHAPTER 4: NEW PERSPECTIVES IN TOURISM INDUSTRY

GENERAL

Despite the difficulties and uneven uptake of digital technologies by tourism SMEs, digital transformation has and will have a profound impact on tourism. The new digital tools are transforming and upgrading the communication processes between tourism services and visitors. They also lead to sophisticated ways of promoting and offering tourism services with the purpose to elevate the visitor's experience.

The new methods of digital transformation are also changing the way work is organized and services delivered, and also present 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 estimations of the World Economic Forum (WEF, 2017), show that in the decade to 2025, digitalization will create up to USD 305 billion of additional value for the tourism sector alone through increased profitability. Also, 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.

Other benefits of the digital transformation are expected to generate USD 700 billion in favor of visitors and wider society, through reduced environmental footprint, improved safety and security, and cost and time savings for consumers (OECD, 2020).

Automation and robotics are also a significant trend in tourism with applications developed for physical tourism businesses as well as online. For example, many tasks that were once handled manually, are now being taken over by robots or automated systems such as chatbots. These became pretty popular across the industry and are designed to help people find and book tours, transport and accommodation by asking a set of questions.

A certain example of the use of robots and automated systems is by some hotels that provide certain services such as reception services, food and drinks services and guiding ones for the visited region. But, while robots and automatic systems have advanced in their abilities to provide products and services, on the other hand, tourism industry, governments and consumers are not yet accustomed with the skills in order to integrate these new services into the economy (Ivanov and Webster, 2019).
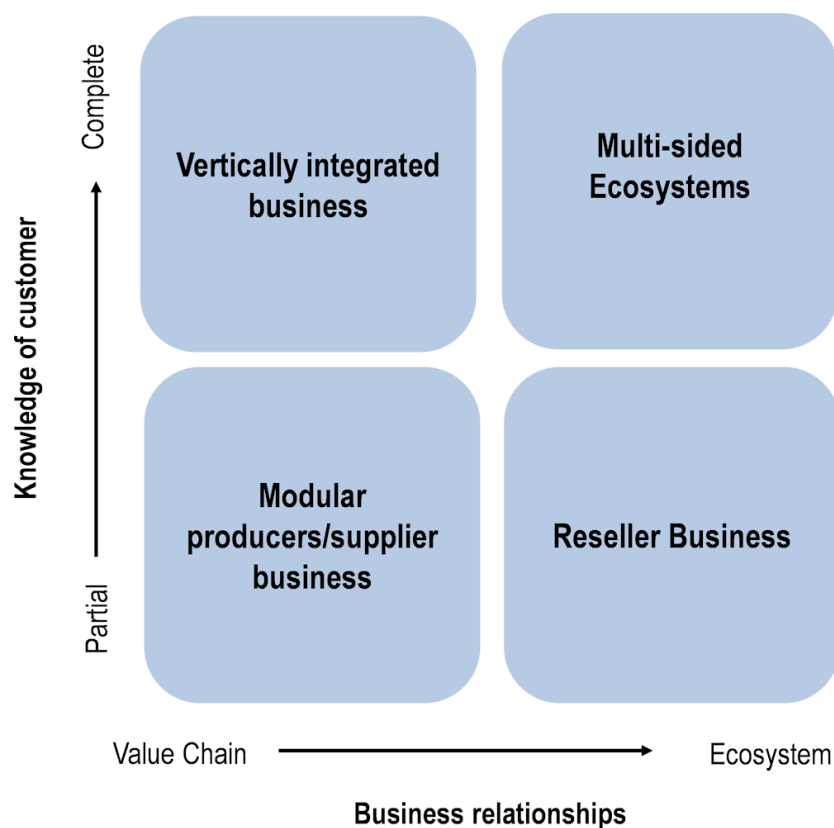
Figure 3. **Types of digitally enhanced business models in tourism**
Source: OECD (2019)

Additionally, the shift to a digitally transformed economy offers great opportunities for all types of tourism enterprises which includes access to new markets, a global distribution of services and products, improvement of competition and improvement in performance and productivity. Particularly, for SMEs, digital transformation can provide easier 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, the digital transformation of a large number of SMEs is often challenged as a particular obstacle when it comes to productivity issues in micro and small businesses, usually resource-constrained (European Commission, 2017; OECD, 2019a). OECD data from recent research show that while the distance in the absorption of digital technologies between large and small firms has narrowed in most countries, in terms of simple connectivity and web presence, the distance remains at a significant level when in terms of advanced technologies.

The implementation of proper policies in the tourism sector will play an important role in keeping the right pace of adjusting all transformations in the operations and strategies of SMEs. From such matching of governmental directions with business development many benefits will arouse such as positive social, economic and environmental growth (WEF, 2019). Facilitating the adoption of new technologies in tourism SMEs, empowering tourism SMEs to keep pace with evolving consumer demands, and supporting the digitalization 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.

HOW ENTREPRENEURS CHANGE WAY OF APPROACH

This new digital platform approach to booking and package tour experiences already exists and is contributing at a high level to the accommodation and food sectors. Any innovative digital communication and marketing effort like Kleesto has plenty of room to attract tourism businesses to implement new practices, based on a digital model.

However, major obstacles to this effort are the reluctance of old companies, or new companies run by older people, to change their policies and be persuaded to adapt new technologies for their digital presence in the market.
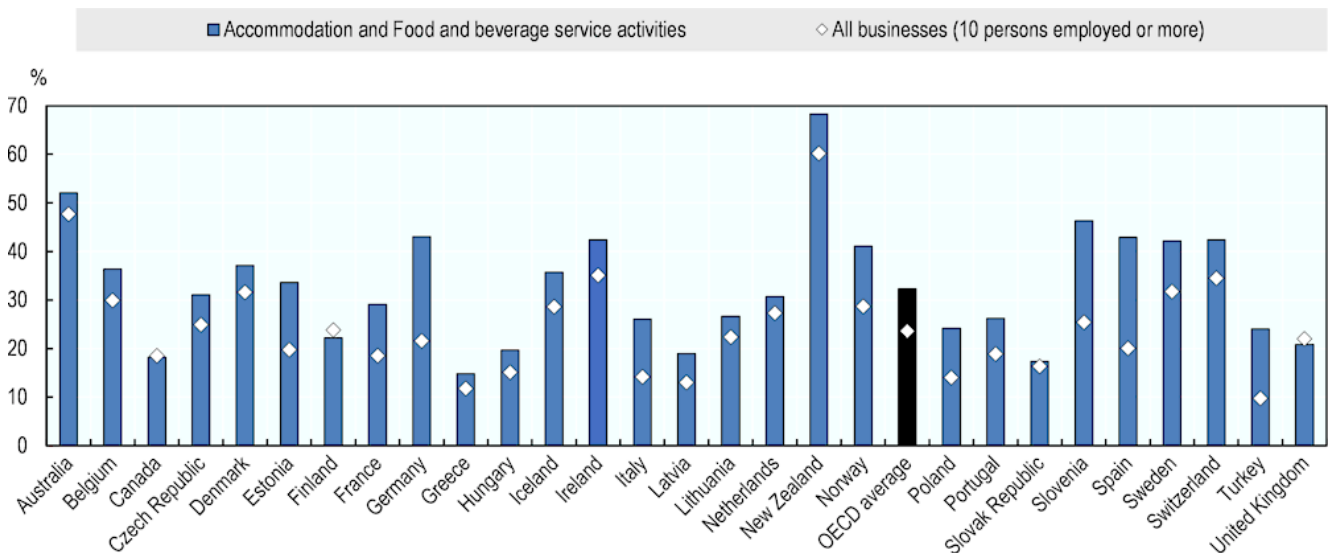

Figure 4. **Share of tourism businesses making e-commerce sales, 2018 or latest year available**
Source: OECD (2019).

Many of those people who are responsible for media are used to operating on the "field" and are not digitally oriented and this is something that makes things more difficult and more complicated for them in terms of implementing digital practices. Of course, things improve when transformation meets younger people who are more open and familiar with the digital world."

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 characterized 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 digitalization. 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 major part of tourism sector in business, SMEs and micro-companies tend to face much more difficulties in their struggle to integrate the modern evolution than larger companies (such as hotel chains in the accommodation sub-sector) and to reach potential customers.

Another special feature of the tourism industry is that most of the tourism enterprises operate in a global marketplace to approach and sell their services while delivering the very specific experience 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 agencies and accommodation platforms, have transformed and upgraded tourism to a global level as they now address tourism products and services to customers and networks anywhere in the world in real-time. Their achievement is also the significant increase of the market visibility worldwide for the majority of tourism SMEs.

As a result, a large number of local tourism SMEs are up to a certain level dependent on larger intermediaries, while at the same time, the pressure for maximum quality with lower prices from the side of consumers is constantly increasing. 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 as they now offer new ways for SMEs to collaborate and network with potential partners (e.g. to present seamlessly 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).

CHALLENGES OF HR IN DIGITAL TOURISM

In this context, tourism companies should synchronize with this ever-changing environment and comprehend the value of human resources in the success of the entire - digital- venture. Their corresponding preparation and management of any human-related project should be a high priority for the companies themselves. At the same time, it is more than necessary to implement a series of changes in order to further promote their digital journey.

Business executives should strengthen their teams with the appropriate knowledge for the overall support of their digital strategies, but also of wider experimentation with various ways of organizing their work. After the explosion of remote working worldwide, companies need to adapt and create new forms of cooperation in order to make the most of the non-traditional pools of talent and potential new partners. They should create a diverse, digitally "smart" team that will be able to inspire flexible and adaptable ways of working.

In conclusion, business leaders must increase the degree of productivity and flexibility, asking how their organizations will be digital by definition, ensuring skills and abilities, but also the required talent that in turn will lead to the coveted pursuit of innovation, building tomorrow's workforce!

The traditional way of working in previous generations defined that the employee usually spent an entire career in a single organization, under a physical roof and interacting with their colleagues on a daily basis. Employees shared common difficulties and experiences and had a similar idea of the identity and culture of the organization. Consequently, the sense of collective identity they developed strengthened both the work identity and the mental health of the employees.

The digital transformation of the workplace also requires a shift in the organizational culture and leadership styles. Leaders need to adapt to new communication channels and embrace new ways of collaboration and team building. The lack of face-to-face communication and

physical interactions may lead to a decrease in employee engagement and motivation. To counter this, organizations need to invest in new tools and technologies that facilitate virtual collaboration, such as video conferencing, project management software, and instant messaging platforms.

Furthermore, there is a need for a flexible and agile work culture that enables employees to work from anywhere at any time. This requires a shift from the traditional 9-to-5 work model to a more flexible and outcome-oriented approach. Organizations need to set clear goals and objectives for their employees and empower them to take ownership of their work.

Figure 5. **Challenges of the new work experience**

Source: IDC (2022).

The transition to a digital workplace requires a holistic approach that takes into account the technological, cultural, and organizational changes. It is essential to invest in the upskilling and reskilling of employees to ensure they have the necessary knowledge and skills to succeed in

the digital workplace. Companies that can successfully navigate this transition will have a competitive advantage in the digital economy.

New technologies require more dynamic skills and not the traditionally static ones that were based on the linear model of "Education - Work - Retirement". Employees should experience a continuous repetition and rotation of work and training through the lifelong learning model. Digital demands need people who can adapt, learn continuously and combine knowledge and individual skills. In this way, they will be able to utilize the innate human abilities such as imagination, empathy, creativity, critical thinking, etc., which differentiate them from machines.

Remote work creates the need for greater attention and emphasis on creating connections and camaraderie between employees as workplaces become virtual, with casual - temporary collaborators - workers needing to create a shared and strong work culture that will connect the employees of an organization. At the same time, remote work requires the establishment of limits both on the part of the employees and the employer, in order to achieve a legitimate increase in productivity, while respecting the balance between personal and professional life.

In order to attract, develop and retain the workforce of the future, organizations must develop a strong corporate culture that emphasizes diversity and inclusion, includes training programs, actively encourages creativity and initiative, and invests dynamics in the development and training of human resources.

HOW THE PUBLIC CHANGED ATTITUDE

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).

The sharing economy has become increasingly popular with younger generations, and this trend is expected to continue. In addition to sharing economy services such as accommodation sharing and ride sharing, younger generations are also more likely to use

crowdsourcing platforms to fund their travel experiences or to seek out unique and authentic experiences that are off the beaten path. This has led to the rise of niche travel services and platforms that cater to these types of experiences, such as homestays, local food tours, and adventure travel. 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
- an increase in the use of e-commerce payment methods over the use of cash.

Generation Z's consumer behaviour is a key driver to since this demographic group is digital native, and keener to travel with less apprehension than older generations, whose health is generally more at risk. The evidence suggests12 that Gen-Zs along with millennials consider travel experience a priority for 2021.

It can be observed that there is an increasing number of travel tech startups using blockchain tokens to add value to the users' booking experiences, but also to create incentives based on decentralized networks. Blockchain technology has the potential to transform the travel industry by offering a more secure, transparent, and efficient way to store and transfer data, including payments and transactions. Some startups are leveraging blockchain tokens to create loyalty programs, reward systems, and other incentives for travelers, while others are using blockchain to improve supply chain management and reduce costs for hotels and airlines. With the growing popularity of decentralized finance (DeFi) and blockchain-based digital assets, we can expect to see more travel tech startups adopting blockchain solutions to enhance the customer experience and streamline operations.

CHAPTER 5: CONCLUSIONS AND FOOD FOR THOUGHT

TECHNOLOGY IS MARCHING

The pace of technological change is expected to continue to accelerate in the future, with new technologies emerging and existing technologies converging to create new combinations. This is driven by a number of factors, including the cumulative nature of technological change, which builds on previous developments to create new innovations, and the exponential rate of change, which sees the rate of technological progress accelerating over time. In addition, the decreasing costs of technology and the emergence of new digital business models are expected to drive further innovation and adoption of new technologies in various industries, including tourism. (UNCTAD, 2018).

Understanding the challenges and opportunities arising from technological advancements is crucial for the development of appropriate policy responses in the tourism sector. The OECD has previously emphasized this need in its work on enabling technologies that are shaping the future of tourism. This includes analyzing the impact of these technologies on the tourism industry, as well as identifying the potential risks and opportunities associated with their adoption. By doing so, policymakers can design strategies to harness the benefits of new technologies while managing their potential downsides, such as issues related to data privacy, cybersecurity, and digital exclusion. (OECD, 2018a; OECD, 2019a).

Investment in digital infrastructure such as high-speed internet and mobile networks is essential for the adoption and utilization of digital technologies in the tourism industry. In addition, developing the necessary skills and capabilities among the workforce to effectively use and manage these technologies is crucial (OECD, 2019d).

Businesses must innovate their models and processes to fully realize the benefits of digitalization, by embracing new ways of engaging with customers, optimizing operations, and creating new value propositions. 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 organizational 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.

GOVERNMENTAL SUPPORT

Despite the potential benefits of digital technologies in the tourism sector, there are still significant barriers to their adoption, and the extent to which they have been adopted varies widely across the sector. There is evidence to suggest that many businesses, particularly small and medium-sized enterprises, lack the necessary resources or technical expertise to fully take advantage of the opportunities presented by digital technologies.

Additionally, there are regulatory and legal barriers that may be impeding their adoption. Governments can play a role in supporting the digital transition by providing funding and technical assistance, developing appropriate regulatory frameworks, and promoting digital literacy and skills development among tourism industry stakeholders.

Data and findings from other sectors suggest that the adoption of digital technologies can also enhance the customer experience, leading to greater customer satisfaction and loyalty. For example, personalization and the use of data analytics can enable businesses to offer tailored products and services that meet the specific needs and preferences of individual customers. Furthermore, the integration of digital technologies can provide customers with seamless and convenient experiences across multiple touchpoints, from booking to payment to post-travel feedback. (OECD, 2017a; Brynjolfsson et al., 2011).

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.

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.

The complexity of the tourism industry and the diversity of subsectors within it make it challenging to develop targeted policy responses to support innovation. However, governments can support innovation in tourism by creating an environment that enables experimentation, collaboration, and the sharing of best practices.

This can include initiatives such as funding research and development programs, supporting the development of startup ecosystems, and creating policies that promote digital infrastructure and skills development. Additionally, collaboration between the public and private sectors can help identify and address the digitalization challenges facing the tourism industry.

ACCELERATING DIGITAL TRANSFORMATION IN TOURISM

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 supporting innovation in the tourism industry can involve a range of stakeholders and initiatives, including incubators, accelerators, and policy supports. These can be positioned to develop tourism business models and value ecosystems that benefit SMEs, destinations, and the sector as a whole.

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).

Table 2: Barriers and opportunities for digital transformation of tourism SMEs Source: OECD

For example, programs like Amadeus for Startups provide support for SMEs to digitalize, and large travel companies can provide partnership, mentoring, and investment opportunities. Universities may also have a role to play in supporting these initiatives through research, education, and partnerships with industry.

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 organizations 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. These countries have recognized the need for targeted policy responses to support the digital transformation of tourism businesses and have introduced various initiatives such as hubs, incubators, and accelerators.

These initiatives are aimed at providing targeted support to tourism businesses to help them adopt new technologies and innovate in the sector. The France Tourism e-Lab is an example of a national network of thematic incubators and accelerators that specialize in tourism, aimed at promoting innovation, boosting new ideas and increasing 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 such as:

- urban tourism,
- slow tourism,
- connected tourism,
- tourism mobility.

While in 2018, the European Commission supported the first European network of incubators in tourism in 2018. The initiative aimed to provide a platform for collaboration and exchange of best practices among tourism incubators across Europe, in order to support the growth and development of innovative tourism startups and SMEs. The network, called the European Tourism Innovation Network (ETIN), consists of over 30 member incubators and accelerators from across Europe, and provides a range of support services to help tourism businesses develop and commercialize their innovative products and services.

KEY QUESTIONS

As the digitalization of Aviation, Travel and Tourism accelerates, stakeholders within the industry will need to consider important questions about the future evolution of the travel ecosystem, including:

- How can the travel ecosystem incentivize customers to share personal data in exchange for tangible benefits, such as a hyper-personalized travel experience, while ensuring that a consumer's right to privacy is protected?

- Is there a model for forging global collaboration and facilitating the sharing of company assets to unleash the full potential of digital transformation, while also preserving a company's relevance in the battle for consumer mindshare?

- How will the operating models of travel organizations change in a smart and connected world where the lines between online and offline are blurring, and physical assets are becoming digital? How will this change the behaviour of individuals?

- To what degree can personal data be securely and ethically used, and made interoperable across public and private stakeholders, to boost safety and security?

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