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Report on the digital skills of the tourism workforce in Greece

Crucial issues and policy responses

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Ministry of Tourism of Greece

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Introduction

Digital transformation affects all components of the tourism value chain, from the decision-making process of the visitors and the way tourism businesses communicate with their clients to the distribution of the tourism products, the offer of innovative tourism services and the work organization at company level.

An important part of this impact concerns the digital skills of the tourism human workforce, both at employee and manager level, required for running tourism businesses. In many tourism sectors the nature of work is changing. New skills are required from the extant workforce and new specialties need to be introduced in the labor market, changes that affect the workforce entry conditions in the labor market by creating opportunities but most importantly challenges.

These changes seem to be accelerating due to the new conditions created in the tourism market by the current pandemic, which reinforces the need for evidence-based and effective policy interventions. The ongoing debate at international and European level on the digital transformation of the tourism businesses (for example the discussions in the framework of the European Tourism Forum that took place in October 2019 and the 104th OECD Commission) intensifies due to the new conditions created by the pandemic.

The present research is attempting to examine these issues by taking stock of the current situation in our country and by assessing the views of the stakeholders on this issue. The research was conducted from August to November 2020 by the Department of Research for Research Studies and Documentation of the Directorate of Research of the Ministry of Tourism, on the occasion of a wider research conducted by the OECD with the title “Preparing the tourism workforce for the digital future”.

We would like to thank all the stakeholder representatives from the tourism sectors, the education institutions and policymakers that participated in the research. Without their valuable contribution and views the research could not have been completed.

1. Research outline

1.1. Subject and purpose of the research

The present research is attempting to fill the gap of the existing literature concerning the impact of the digital transformation in the human workforce of the tourism sector on Greece and the need to upgrade the digital skills of the workforce in the Greek tourism sector.

1.2. Research questions

The main research questions are the following:

- Which is the impact of digital technology in the work carried out in the tourism sector?
- Which are the digital skills required both by employees and managers for the digital transformation of the tourism sector? (digital and soft skills, for example, communication, problem solving, data processing)
- Which are the necessary policy interventions?

1.3. Research methodology

In order to conduct a comprehensive assessment of the subject, the combination of secondary and field research was chosen.

1.3.1 Secondary research

In order to establish the main parameters of the subject, a review of the english and greek academic literature on the impact of the digital transformation of the tourism sector was conducted. The literature focuses on subjects that are related to the impact on the digital transformation in the tourism value chain, the development of applications for the smart destination management, the creation of innovative products and the adaptation of SMEs in the digital era. **The impact of the digital transformation in the tourism human capital has not been extensively studied** and it is a question that mostly arises in the context of the difficulties that tourism SMEs face in integrating digital technologies.

The academic literature review was complemented by the review of recent studies by international bodies on the digital transformation of the tourism sector, the impacts of the current crisis and the needs for strengthening the tourism workforce skills (OECD 2020a, OECD 2020b, European Commission 2019, EPRS 2018, Dredge et al. 2018). The secondary research included the monitoring of the public debate in the framework of international and European organizations in issues that concern the digital transformation of the tourism sector (for example: European Tourism Convention 2020, 106ⁿ Tourism Committee OECD,

OECD Forum 2020 virtual events 15/12/2020¹, European Tourism Forum 2019). In this way, the main themes of the international debate on the subject were identified.

The secondary research showcased the lack of information and knowledge on the subject of the digital skills of the workforce in the Greek tourism sector. The field research attempts to offer a better understanding of these issues.

1.3.2. Primary research

Four focus groups were organized in July and August 2020, as follows:

1. Discussion with representatives of tourism education institutions (3.8.2020).
2. Discussion with tourism shareholders representatives, in two stages: a) representatives of the accommodation, food, travel agencies, tourism guides and conference sectors (25.08.2020) and b) representatives of the tourism transport sector (car rental services, passenger shipping, cruises, air transport) (1.09.2020).
3. Discussion with policy making institution representatives (25.08.2020)

The method of focus groups was chosen in order to highlight the opinions of the shareholders on the subject and gather primary data for the existing situation, the difficulties and the proposed policy interventions. A total of 29 key informants participated in the focus groups (Table 1). The discussion took place by videoconference. The content was recorded and later analyzed with the method of content analysis.

The questions discussed were based on the overview of the english academic literature and the policy reports of European and international organizations on the digital transformation of the tourism industry. Discussions evolved in three rounds:

1st round: What is the impact of digital transformation on the tourism workforce?

- In what way does digital transformation affect the nature of work in your subsector?
- Does it create new jobs?
- Are there job losses?
- Are there particular implications according to the size of tourism businesses?
- Are there particular implications related to COVID-19?

2nd round: How would you assess the digital skills of the tourism workforce in Greece and what are your policy recommendations?

- What are the skills shortages for employees and managers alike?
 - Shortage of specialized workforce in the labor market
 - skills gaps of the extant tourism workforce
- Can you describe any best practices for upskilling and reskilling the tourism workforce?
- Suggest any policy measures that you consider appropriate.

¹ OECD Forum 2020, *Covid-19: The Great Digital Acceleration*, διαδικτυακή συζήτηση που έλαβε χώρα στις 15/12/2020, διαθέσιμο στο [Sessions \(oecd-events.org\)](https://www.oecd-events.org).

3rd round: What is your opinion on tourism education in Greece?

- What are the strengths of tourism education in Greece?
- What are the main challenges?
- Does it respond to market needs?
- Does it succeed in developing entrepreneurial skills (practical knowledge, technical expertise, soft skills)?

The third round aims at taking stock of issues concerning the challenges that public tourism education faces in Greece, its strong points, if it meets the labour market demands and subsequent policy recommendations.

In the following sections the main findings of the literature review and the field research are summarized.

Table 1: List of participants in the focus groups

List of key informants		
type	key informants	code
educators	Hellenic Chamber of Hotels, CapsuleT	KI01
	Ministry of Tourism, Higher School of Tourism Education in Crete	KI02
	Ministry of Tourism, Institute of Professional Training, Anavissos	KI03
	Ministry of Tourism, Directorate of Education, internship supervisor	KI04
	Cyclades Chamber of Commerce, President of the Tourism Department	KI05
	Hellenic Open University	KI06
stakeholders	Hellenic Hoteliers Federation	KI07
	Hellenic Association of Hotel Managers	KI08
	Hellenic Association of Professional Congress Organisers	KI09
	Hellenic Association of Travel and Tourist Agencies	KI10
	Institute of the Greek Tourism Confederation	KI11
	General Pan-Hellenic Federation of Tourism Enterprises	KI12
	Association of Licensed Tourist Guides	KI13
	European Federation of Tourist Guide Associations	KI14
	Confederation of Entrepreneurs of Greek Tourism Enterprises	KI15
	Greek Association of Car Rental Tourism Companies	KI16
	Hellenic Professional Yacht Owners Association	KI17
	Hellenic Association of Airline Representatives	KI18
	Association of Passengers' Shipping Companies	KI19
	Hellenic Air Carriers' Association	KI20
	Greek Marinas Association	KI21
	Union of Cruise Shipowners	KI22
policy makers	Ministry of Tourism of Greece, Directorate of Education	KI23
	Greek Ministry of Education and Religious Affairs, Directorate of Lifelong Learning	KI24
	Ministry of Labour and Social Affairs, Directorate of Employment Inclusion	KI25
	Labour Market Diagnosis System	KI26
	National Institute for Labour and Human Capital, Directorate of Vocational Training	KI27
	Organisation for Labour Force Employment, Directorate for Initial Vocational Training for Adults	KI28
	Hellenic Chamber of Hotels	KI29

2. Literature review

2.1. The digital upskilling of human resources

The tourism sector has undergone dramatic changes with the advent of the internet since the mid-1990s. The digitization of services **affects all stages of production and distribution of the tourist product**, changing the way businesses communicate with tourists, creating innovative tourism products and enhancing the visitor experience. At the same time, it forms new business models, by modifying the organization of business operations and giving the opportunity to companies and organizations to use information and data on tourism supply and demand (OECD 2020a, Milne and Ateljevic 2001: 383-384).

In terms of tourism product distribution in particular, the internet allows tourism businesses **to bypass strong traditional intermediaries** such as international tour operators and Global Distribution Systems (GDS) and market the tourism product through a business website (Hjalager 2010: 3). At the same time, however, new powerful online mediators have emerged, the online platforms (OECD 2020a, Navio-Marco Navarro et al. 2018, European Commission 2017).

According to data from OECD member countries, the tourism sector surpasses all sectors of the economy in online sales in all countries except Canada, Finland and the UK (OECD 2020a). But the picture is reversed when it comes to the adoption of advanced technologies: according to OECD data, less than 20% of European companies in the accommodation and catering sectors used cloud services and large data series in 2018. In the period between 2013 and 2015, tourism was ranked among the sectors with a low degree of digitization in the global economy (Calvino et al. 2018: 30-31).

These changes are modifying the landscape of the tourism labor market, as they require new skills for both employees and business owners (Oberländer et al. 2020). Human resources issues are of strategic importance for the quality and competitive development of the sector in the long run (Stacey 2015: 21): tourism depends on whether there is an offer of suitable human resources to form a competitive tourism product, capable of responding to the changing preferences of visitors and the wider changes of the external environment.

The following are the key parameters of the impact of digital transformation on the tourism labor market, both on the nature of employment but also on workforce skills.

Box 1 - The digital business ecosystem in tourism: digital travel platforms

In the age of digitalization, value chains are being replaced by the **digital business ecosystem**, in which, through digital technology, loose networks of businesses, consumers and organizations with global reach are formed, which are not governed by hierarchical relations but by cohabitation, cooperation. and competition (Kelly 2015: 5).

Instead of companies obtaining a ready-made product package, or combining the products and services they buy from more than one supplier and reselling them to the consumer, or the consumers choosing and combining the products themselves from the market, the consumer has the opportunity to choose from a finite set offered by the company that functions as an orchestrator of the ecosystem, choosing the products and services, setting the conditions under which the additional goods can be offered, without necessarily owning them, deciding who can be included and investing the necessary capital for the coordination and operation of the system. On the consumer side, digital business ecosystems offer the desired variety and security, while on the business side, they are exempt from production and ownership costs.

In tourism, **digital platforms** are a typical example. The platforms externalize the production (inverted firm) as they coordinate and sell the value produced by the users (WEF 2019: 8-9). In the case of TripAdvisor, for example, or UBER and Airbnb, users create value for other users, thus attracting even more end users, which increases the value generated and attracts ever more users, and so on. Instead of creating barriers for entry, like other companies, digital platforms reward and empower their users as they continue to create value and are forced to distribute value so that all parties benefit. In addition, due to the modular structure, new service providers can at any time, easily, adhere to the system and add value (Gretzel et al. 2018).

Box 2 - The degree of digital transformation in the tourism sector

The tourism sector has features that facilitate the integration of its businesses in a digital ecosystem:

- Information has a high added value in tourism and therefore a user community can more easily share value. Information grows and disseminates at zero cost.
- Tourism products (eg a stay, a ticket, a tour, renting a car, visiting a cultural monument) are distinct units that can be easily combined with each other by a third party. It is also easier for users to evaluate quality.
- The industry is not burdened by strict, restrictive regulations.
- The industry has extra capacity that isn't being used. Creating a new market can enhance the efficiency of unused resources. Many people, for example, own cottages, inhabited only a few days a year.

This approach, however, does not take into account the difficulties faced by SMEs in their cooperation with the platforms. By externalizing production in this way, digital platforms have zero marginal production costs and are growing faster than traditional companies in the industries in which they operate, depending on how quickly they can attract new users (OECD 2020a: 18, WEF 2019: 8- 9).

2.1.1. Changing the nature of work

Digital transformation is changing the nature of work in most industries.

Repetitive, coded, low-skilled tasks are gradually being replaced by automated mechanism. Automation changes the internal organization of work in the company, allows the simplification of the internal work of the company, the optimal organization and increases productivity. For example, systems for managing the daily routine of hotels from cleaning to welcoming tourists (Property Management Systems / PMS) increase productivity and optimize the organization and coordination of work (NTG 2019: 33-34, EPRS 2018: 3). In aviation, the adoption of automation mechanisms for check-in and bag drop reduced waiting time and congestion, simplified the process and operated in parallel with the provision of services by physical presence of employees and with the enhancement of their productivity. (OECD 2020b). Chatbots, moreover, help automate customer information (Zsarnoczky 2017: 87, 89).

Automation also leads to **increased productivity** in labor-intensive activities, such as tourism services. Catering companies use mobile applications and automated ordering systems to increase productivity per table (OECD 2020b). Automation of operations is

considered positive by companies in the catering and hotel sectors, as it is characterized by consistent quality and low operating costs (OECD 2020b). However, this tendency is often met with cultural barriers such as the opposition of consumers themselves.

However, even with the development of artificial intelligence, many tasks that require emotional intelligence are difficult to integrate into automated systems. Therefore, tasks that require persuasion, negotiation, or caring for others are considered unlikely to be radically influenced by technological developments (Arntz M., et al, 2016). In addition, it should be noted that OECD pre-pandemic research, which covers most areas of economic activity, has shown that although job automation is to be expected, it will not be as extensive as initially expected: routine tasks may be affected by 47%, while they will be completely replaced at a much lower rate of 15% (Nedelkoska and Quintini, 2018).

At the same time, new digital tools will be increasingly used in existing professional environments. This means that technology will affect more professional specialties by changing the way tasks are performed and enhancing their complexity (NTG 2019: 39). The use of technology will not replace these specialties, but will now require a combination of ease of use of technological means and old skills and expertise for the service offered (CEDEFOP 2020).

Box 3 - Property Management Systems (PMS)

Property Management Systems are designed to effectively manage transactions with the public (reservations, check-in / check-out procedures, room rate management, charges). In recent years, these systems include work related to catering, building maintenance and cleanliness, sales and revenue management, multi-channel distribution, and customer data management to create personalized experiences. There are systems suitable for SMEs but also for large companies.

Today, there are many PMS platforms for hotels that use cloud services and are available for mobile. The hotel staff uses mobile devices (tablets and smartphones) which facilitate customer service. For example, when a customer checks in early, housekeepers can be alerted by the system in real time to tidy up the room, or welcome guests at the door, or in other cases upload photos of a technical problem for the maintenance service to repair it. These systems are becoming increasingly important as they facilitate business' online presence and online bookings as well as improve customer service.

Source: NTG 2019

2.1.2. The necessary upgrading of skills

These changes require new skills from tourism business employees and an appropriate adaptation of tourism studies in order to produce staff suitable to promote the digital transformation of the sector.

To some extent, the impact of digital transformation on human resource skills will be commensurate with changes in other sectors of economic activity. **Most jobs now require basic skills in the use of new technologies.** The results of the latest CEDEFOP survey on employee skills in Europe² showed that around 85% of all jobs require general, basic digital skills, as well as digital skills related to the job.

So-called **soft skills** are also required. According to the above research, staying in the job market requires combining digital skills with cognitive skills such as problem solving, creativity, the ability to learn, but also emotional intelligence skills such as communication skills and the ability to collaborate. These results do not refer only to highly specialized work but also **to standard work that requires communication with the public, something that characterizes tourism employment.** The study of

²European Skills and Jobs Survey (ESJS), <https://www.cedefop.europa.eu/en/events-and-projects/projects/european-skills-and-jobs-survey-esjs>.

the Next Tourism Generation Skills Alliance (2019: 51) concludes with similar results, which emphasizes the importance of digital skills together with analytical skills and collaboration and communication skills as employees in the travel agency and hotel sectors will be increasingly called upon to process the data in order to understand the profile of the visitors and to form personalized experiences.

These developments involve **the convergence of skills required by the tourism sector with the skills and knowledge that characterize workers in other sectors** (e.g. cloud service handling, large data processing) (OECD 2020b). New specialties will need to be employed in tourism as the tourism experience grows more and more. Data analysis is necessary in order for businesses and destination management agencies to provide personalized services tailored to the visitor profile. Travel agencies and destinations will try to offer a taste of the pre-trip travel experience, taking advantage of the possibilities of augmented reality and virtual reality and creating games. In all these cases, no tourism studies are required, but ICT specialization is. Digital platforms such as Booking.com do not require their staff to study tourism, but to specialize in ICT (NTG 2019: 40). These developments may lead to competition in the labor market between graduates of tourism schools and employees in other sectors (OECD 2020b) and at the same time force tourism companies to compete with IT companies in attracting employees (NTG 2019: 40). They also raise questions about the content of tourism studies in the future.

The changes brought about by the digital transformation require **greater ease and digital readiness from the managers of the tourism enterprises**, mainly the SMEs (CEDEFOP 2020: 15). Business owners and managers are called upon to recognize the need for digital solutions and to make decisions about their adoption and staff training (OECD 2020b). A report from the European Commission (as cited in OECD 2020b) points out that business leaders need to ensure that on one hand their digital skills are in line with their respective tasks and on the other hand manage their employees so that they can work in a digital environment. This role requires constant effort throughout their careers and an adaptability that many do not seem to have. According to a study by the World Economic Forum (2018), tourism executives are not yet ready to lead the digital transformation of their businesses and therefore need to upgrade their digital skills.

Box 4 - Digital skills today and in the near future

A study by the Next Tourism Generation Alliance (NTG 2019), based on extensive literature review of studies by national and international bodies on the necessary human resource skills in tourism, describes the digital skills of employees required today and identifies the key changes which are in progress and will create new requirements for digital skills in the near future.

The table summarizes the main results of the NTG survey on the key digital skills required at the time of the study for four tourism industries:

	<i>tourist offices</i>	<i>DMOs</i>	<i>accommodation (1)</i>	<i>food and beverage (1)</i>
use of computers and mobile devices χρήση	+	+	+	+
MS Office	+	+	+	+
databases	+	+	+	+
Internet	+	+	+	+
e-mail, digital communication	+	+	+	+
GDS	+			
other electronic booking systems	+	+		
social networks (marketing, content processing)	+	+	+	+
key issues of digital security	+	+	+	+
POS			+	+
PMS			+	

(1) At the time of the survey, the hotel staff involved in maintenance and cleaning as well as restaurant staff often did not need digital skills. Here we note the requirements for companies that had adopted digital solutions. Accommodation staff working in sales and marketing need similar skills to those working in travel agencies.

Interestingly, even before the acceleration of the digital transformation due to the pandemic, the report points out that key changes in the nature of the tourism product (dominance of experience tourism) as well as the growing proliferation of digital tools in businesses require upgrading digital skills of employees in all tourism sectors. Existing jobs will become more complex and new technical jobs will be created.

For all the above sectors, required actions include:

- Higher level of education.
- Ease of use of digital tools, including basic skills and internet marketing, internet distribution and data analysis.
- Digital innovations will constantly bring about change and cover a wide range of skills and knowledge, so that it will not be possible for someone to be considered adequately educated. For this reason, the ability to continuously learn, as well as skills of self-assessment, will be the most important for staying in the job market.
- Personalized experiences are increasingly placed at the core of tourism services. Therefore, the ability to create experiences, both in the real and virtual world, with the use of augmented and virtual reality (AR, VR) and games becomes important.

2.2. Difficulties for tourism SMEs

One issue that concerns international and national actors is the position of small and medium-sized tourism businesses in this changing environment.

Both policy studies and the academic literature highlight the **opportunities** offered to the media by the digital transformation of the tourism value chain. The speed, transparency and direct exchange of information that characterize the digital world are considered to work for the benefit of the media (Bocarando et al. 2017). In addition, the digital transformation allows smaller players to access remote markets at low cost (OECD 2020, Dredge et al. 2018: 19, Hjalager 2010: 3). E-commerce facilitates sales growth, saves time, improves customer service and enhances productivity (Bocarando et al. 2017: 436). Analyzing the content of customer posts on social media makes it easier for entrepreneurs to understand their visitor profile, tailor their services accordingly, and manage their business reputation (Simeon and Martone 2016: 685). Online banking, flexible work from home using cloud services and online collaboration tools, as well as online transactions with management and government agencies help small businesses save money and time and improve cost-effectiveness (European Commission 2017).

However, despite the opportunities, **tourism SMEs are lagging behind in the digital age** (OECD 2020, Dredge et al. 2018: 18, European Commission 2019, and European Commission 2017). For example, a long-distance separates SMEs in the accommodation industry from large hotel chains and digital platforms, as many small accommodations still have limited-function websites with no online sales (NTG 2019: 31). In

general, while the digital divide between large and small businesses is narrow in most countries in terms of simple services such as internet connection and presence, the differences remain strong when it comes to adopting advanced technology (Dredge et al. 2018: 18). Also, a survey on behalf of the European Commission in European tourism SMEs showed that companies with a low degree of digitization perceive the opportunities of digital transformation mainly as opportunities to retain customers, organize business operations and improve the quality of services, while companies with a medium degree of ownership of digital technology are more interested in business development in the global market (Dredge et al. 2018: 19).

The ability of tourism SMEs to embrace digital transformation depends to a large extent on the digital skills of the human resources employed in them. Intrinsic characteristics of the tourism enterprises, such as **small size and ownership**, but also structural peculiarities of the tourism sector, such as **fragmentation**, (i.e. cooperation of companies of different sectors for the production of tourism product), and seasonal fluctuations of demand, form an environment that hinders efforts to upgrade human resource skills and innovation. In the following section, we will summarize the main constraints faced by small and medium-sized tourism companies on the road to their digital transformation, as they are outlined in international literature and institutional studies.

2.2.1. Restrictions arising from business size

The small size of tourism businesses implies **limited resources in terms of capital, workforce and time**. Tourism SMEs usually do not have the necessary capital for investment and feel that technological solutions are too expensive or that investing in new technologies will not bring significant benefits due to seasonality (OECD 2020, European Commission 2017: 58, Najda - Janoska and Kopera 2014: 194, Hjalager 2010: 7). They usually have a limited number of adequately trained staff (European Commission 2017: 58), as **low wages and seasonal employment** make it difficult to hire and retain skilled staff. This undermines the ability of tourism media to recognize, assimilate and use new knowledge (Najda - Janoska and Kopera 2014: 192). The high rate of staff turnover implies a low degree of know-how (Mistilis and Gretzel, 2013: 43), reduces the incentives for learning and accumulation of knowledge in the company (Dredge et al 2018: 20). On the one hand, employees have limited ICT skills in relation to the complexity of new technologies, on the other hand, SMEs do not have the means to train them (OECD 2020). In order to fill the gap in digital skills, tourism media often showcase their increased potential for interpersonal communication with the visitor, flexibility and the provision of personal services (NTG 2019: 31).

2.2.2. Limitations arising from the business model

For the most part, the SMEs follow the traditional business model according to which the **owner is also the manager of the business** (Najda - Janoska and Kopera 2014: 192). An important part of the literature points out characteristics of this model that make it difficult to adopt new technologies. In general, these companies are considered to avoid risk and do not realize the importance of innovation (European Commission 2017: 58, Martínez-Román et al. 2015: 130). They are mainly engaged in daily routine work rather than long-

term strategic planning (OECD 2020). Moreover, the limited resources of SMEs force them to focus on their daily work and take small steps to deal with the volatile conditions that characterize the sector and the internal boundaries of SMEs (Najda - Janoska and Kopera 2014: 192).

This business model is also associated with a culture of distrust towards cooperation, a trend exacerbated by the fragmented nature of the sector, which is made up of many small and medium-sized enterprises of different industries, and a trend which increases transaction costs for consolidating cooperation networks. (European Commission 2017: 60). However, setting up collaboration and communication networks is vital to raising resources for education and disseminating information among SMEs (Shaw and Williams 2009: 330-331).

2.2.3. Dependence on external sources of knowledge

Tourism SMEs do not have the necessary means for innovation, consequently depending on external sources of knowledge (Martínez-Román et al. 2015: 121, 129, Hjalager 2010: 4). **Digital transformation intensifies dependence on external factors**, such as technology development companies (Femenia-Serra and Ivars-Baidal 2019: 2, Gretzel et al. 2015b: 185), at a time when ready-made technological applications are not available on the market in affordable prices (Dredge et al. 2018: 20).

The transfer of knowledge to the tourism media is facilitated by **intermediaries such as government agencies** (Shaw and Williams 2009: 331). For example, a survey in the Spanish region of ComunitatValenciana (Femenia-Serra and Ivars-Baidal 2019: 2) showed that destination managers recognize the benefits of digital transformation and call for the establishment of appropriate bodies to lead the adaptation. In this context, the empowerment of tourism SMEs to adopt new technologies is a strategic priority for international actors, who formulate policy directions for the interconnection of partners in information and communication networks, for training policies for both employees and managers. executives and business owners, as well as for the access of tourism media to the processing of large data sets (OECD 2020, Dredge et al. 2018).

In conclusion, the knowledge base of tourism media is very limited for a number of reasons: staff with limited technological skills, traditional business model, limited collaborations between tourism businesses but also between tourism businesses and universities and research institutes (Camisón& Montfort- Mir, 2012), difficulties in transferring knowledge from public bodies to the private sector due to the fragmented nature of the sector (Blake et al., 2006), limited access to information networks.

2.2.4. Difficulties due to the external environment

The external environment in which tourism SMEs operate poses obstacles to their digital transformation. The **absence of a fast broadband network**, especially in rural areas, reduces the competitiveness of businesses because it makes it difficult to make online reservations, access to cloud services (Gretzel 2018: 177, European Commission 2017: 59). After all, access to fast and reliable wireless network is necessary for destinations to develop

innovative tourism products, such as augmented reality tours, and to ensure the seamless experience of the traveler.

The obligation to adapt to the institutional framework of personal data protection is an additional burden for tourism SMEs, which inhibits their digital transformation. Personal data of customers interested in tourism businesses, such as the location of tourists, demographics (age, gender, level of education, professional profile), their interests and views on business and tourism destination, constitute a huge amount of information which can be provided to businesses with the consent of visitors or may arise from the analysis of data. Additional information is provided by the so-called digital fingerprint of visitors which can be automatically extracted via technological means (Kontogianni and Alepis 2020: 8-9). All these possibilities offered by the use of technology raise questions about the protection of personal data, especially in terms of the ability to identify individuals through large collections of anonymous data, the automatic collection and storage of information without a specific purpose, controlling the exchange of information between service providers (Crowe 2020, Gretzel et al. 2015: 184, Buhalis and Amaranggana 2015: 383-384). Ultimately, the issue is related to building a relationship of trust with the customer, without which visitors are discouraged from using digital media (Navío-Marco et al. 2018: 463). For their part, tourism businesses are required to remain aware of the changing regulatory environment in which they conduct their business and to comply with the General Data Protection Regulation (Kontogianni and Alepis 2020: 9, European Commission 2017: 60).

In conclusion, **the access of tourism media to current and relevant data is not guaranteed.** They usually do not have the necessary capital to outsource data collection and processing to external partners, while digital platforms often make it difficult for businesses to access data about their customers and their transactions (Dredge et al. 2018: 29-32). One solution would be to manage the data through collective bodies (European Commission 2019, Gretzel et al. 2015: 45).

2.3. The impact of the pandemic crisis on the digital transformation of tourism businesses

After a long period of continuous growth, **the tourism sector is facing the external blow of the pandemic crisis**, which has curtailed both leisure and business travel. As many of the jobs in tourism are related to physical proximity (such as waiters, receptionists, tour guides) and at the same time a small percentage of employees in the sector can complete their work remotely, tourism faces suspension of activities with direct consequences for employment (CEDEFOP 2020: 10-11).

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CEDEFOP (2020: 12) further distinguishes two parameters that increase the risk for employment in tourism in the conditions created by the pandemic: on the one hand the extent to which a country's tourism economy depends on inbound tourism, on the other hand the percentage of small and medium tourism enterprises. By these criteria, Greece is

one of the European countries most at risk of a pandemic crisis, along with Malta, Croatia, Cyprus and Austria.

In the ongoing debate in the context of international and European bodies, the digital transformation is brought to the fore and is highlighted as a **necessary condition for the resumption and recovery of tourism**. Both the European Tourism Convention 2020 and the 106th Tourism Committee of the OECD³ devoted a significant portion of their discussions to the digital transformation of the sector. According to the ETC conclusions, digital transformation is a prerequisite for the resilience and sustainability of tourism⁴. The importance of cooperation between the private and public sectors for data sharing and the need to upgrade digital skills both within government agencies and in tourism SMEs are emphasized. To this end, the need to finance the training of human resources for the development of digital skills was also highlighted. Accordingly, among the topics discussed at the 106th Tourism Committee of the OECD was the acceleration of the digital transformation of tourism required to deal with the effects of the pandemic crisis, and consequent policies for their upgrade were presented.

Already, developments in the tourism market show the effort to adapt businesses to the new reality. The conditions created due to COVID-19 have brought in a short period of time a **series of changes and innovative solutions in their operation**. Many tourism companies are reacting by strengthening their online and contactless services, services that seem to have come to stay after the crisis (OECD 2020b, Willems 2020). For example, the suspension of business travel has led to the use of online tools for organizing meetings and conferences, a trend that is expected to continue as online meetings are considered safer, cheaper and more flexible solutions and therefore will change the operation of conference tourism. (CEDEFOP 2020: 13). In addition, remote work solutions are adopted where possible, which reduces the operating costs of businesses by reducing physical facilities and enhancing the outsourcing of work.

The pandemic crisis reinforces and accelerates previous trends in automation of repetitive and codifiable services in both tourism and the economy (OECD Forum 2020). As automation intensifies, **many specialties in tourism will be affected to a greater extent and in a shorter period of time** (CEDEFOP 2020: 13). Therefore the demand for digital skills will increase as hotels, for example, will promote online check-in and check-out, while catering businesses will support online ordering and the management of catering operations via mobile POS (from the registration of the order by the waiter or the customer himself with a tablet until its transfer to the kitchen, payment management and production of analyzes for the business) requiring digital skills from waiters and chefs and enhancing the demand for program development specialties (CEDEFOP 2020, NTG 2019). Finally, great importance on the road to recovery is given to the sharing, processing and analysis of data, so that partners and destination managers have a clear picture of tourists and their preferences as they change due to the habits we develop in the midst of a pandemic. (e.g.

³ Both discussions took place in October 2020.

⁴ [EUROPEAN TOURISM CONVENTION - Streaming Service of the European Commission \(europa.eu\)](https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&plugin=1)

travel closer to home) and adapt accordingly⁵. These developments are increasing the demand for analytics workers.

To survive, SMEs will have to review the organization of their work and network. SMEs need support to adopt the new working model. In this context, training programs are needed to reduce the digital divide (Willems 2020, OECD Forum 2020).

Enhancing the use of digital media due to the pandemic widens concerns about the use of personal data (OECD Forum 2020). Even before the pandemic, the need to train employees in digital security, personal data protection and compliance with legal requirements for privacy was identified, especially for those involved in internet marketing (NTG 2019: 29). Employee training should also address software protection and secure data management (OECD, 2020b).

⁵[EUROPEAN TOURISM CONVENTION - Streaming Service of the European Commission \(europa.eu\).](#)

3. Key findings from the consultation

3.3. Changing the nature of work in tourism

3.3.1. Differences among tourism branches

The research showed that most branches of the tourism economy in Greece put emphasis on the promotion and distribution of services via the internet (KI05, KI07, KI08, KI11, KI12, KI16, KI17, KI21).

The degree of digital transformation differs among various branches of the tourism sector. **Some branches of the tourism economy, such as aviation and cruise companies have long adjusted their work to digital technology.** For instance, Greek aviation companies have fully digitalized all procedures since the nineties to be able to connect to the Global Distribution Systems (KI18, KI20). This is a prerequisite for all companies to enter the market. The same applies to the cruise industry, where large cruise ships are also fully digitised (KI22). Similar are the market conditions in the cruise industry, where big cruise ships have fully digitalized their procedures (KI22).

On the other hand, **congress organizers** have, for some time now, been using virtual participation as an alternative (KI09). Convention tourism exhibits a high degree of digital transformation, as digital tools are considered necessary to attract and organize large international conferences. During the pandemic, congress organizers were digital ready to turn from physical to virtual conventions and conferences. However, the branch representative suggested that the market is not ready yet to accept and assume the full cost for the services required to organize a virtual global or panhellenic conference (KI09).

3.3.2. Disparities due to the size and spatial distribution of tourism businesses

The direct sale of services via tourism companies' websites constitutes a key parameter for the disintermediation of the tourism value chain, especially for tourism SMEs, which, in this way, acquire an additional distribution channel and source of income. The research showcased that the Greek SMEs, especially in the accommodation sector, **give more and more emphasis on the sale of their products via their websites and the social media** (KI05, KI07, KI08). In this context, multi-channel management applications are necessary for the accommodation sector, since they balance out the dependency of hotels from online platforms (KI 29).

Automation contributes to the simplification of company internal procedures and the increase of productivity. Nevertheless, automation systems such as Property Management Systems are used by a small number of large hotels in Greece. Informants highlighted the fact that small high-end boutique hotels have the same management requirements and need to provide high quality services as bigger establishments (KI07). Nevertheless, they remain to a large extent family run businesses, therefore the degree of digital

transformation depends, in large extent, on whether the manager is a first- or second-generation entrepreneur (KI07).

Larger travel agencies constantly invest in new tech solutions, while smaller businesses rely on the digital literacy of their owner (KI12).

Industry stakeholders also acknowledge spatial disparities in the degree of digital transformation (KI07, KI11). Travel agencies in rural areas have already turned digital to face difficulties due to remoteness. Nevertheless, businesses in regions with low quality internet are lagging.

It was also noted that in smaller islands businesses are mostly owned by locals, a trend that prevents incoming knowledge flows from newcomers (KI07). Insufficient know-how obscures the gains to be made by the digital upgrade of the tourism product (KI09).

3.4. Implications for the tourism labor market

3.4.1. Job losses

Overall, participants noted that there have **not been many job losses in the tourism sector due to digital transformation**. Any job losses registered were mostly the outcome of poor upskilling and due training and should not be attributed to digital transformation itself (KI11). Below we present the main trends in the subsectors:

- **Hospitality subsector:** informants point out that many technical specialties that used to work relying only on practical expertise, now need to gain ICT expertise to be able to stay in business (KI05, KI07, KI08). Provided that employees are properly trained they will stay in the labor market. This is the reason why not many jobs have been lost (KI07).
- **Travel agencies:** digital transformation has turned many travel agencies to online operators. Some jobs have therefore been lost. However, several agencies have decided to keep their staff and train them to work online (KI10, KI12).

A major issue that was acknowledged by many industry stakeholders was the **small number of people willing to work for tourism in general**. In part this is due to cultural reasons: Greek families do not encourage their children to work for the tourism sector (KI07, KI18). A considerable number of people working in tourism do not appreciate their jobs and, therefore, will not engage in continuous training (KI18). Stakeholders propose that entrepreneurship and tourism services should be introduced in secondary education, a period when young people decide on their career, to provide motivation (KI07, KI11).

3.4.2. Skills shortages and gaps

Industry stakeholders also put forward the need for **managers and staff to embrace the full range of digital technologies**, which should not be limited to digital

marketing and web presence (KI01, KI07, KI29). For example, business managers may be familiar with the use of social media but they have no knowledge of the importance of cloud services for their business (KI07). Limited digital awareness obscures the gains to be made by digital transformation (KI07).

The focus groups have provided an opportunity to track any skills shortages and gaps in the Greek tourism labor market. Regarding the **lack of properly trained employees**, the following shortages have been detected per tourism branch (KI01, KI20, KI21, KI25, KI29)⁶:

- In **hospitality**, there is inadequate supply of specialties like sustainability managers, revenue managers, yield managers and experts on handling reservations via booking engines (KI01). Other skills that are needed in the hospitality subsector are skills concerning the safety and maintenance of software, as well as data handling and keeping (data safety and protection) (KI29).
- **Air carriers** have also put forward the need to provide courses on cyber security (KI20).
- **Marinas** also require sustainability managers and experts in digital marketing (KI21).

On the other hand, businesses no longer seem to require staff to develop software, as they prefer to use ready-made software and applications from the market (KI25, KI29).

Regarding skills gaps detected in the extant tourism labor force, stakeholders noted that practical training should be provided in digital tools used by the tourism market globally, i.e., GDS (Global Distribution System) and PMS (Property Management Systems) (KI01, KI20). In travel agencies, gaps have mostly to do with the ease to operate electronic systems (KI12). Training in digital marketing remains important for the accommodation subsector (KI29), as online visibility enhances direct online sales, decreases SMEs dependence on online travel agents and enables SMEs to access distant markets and market niches at low cost. Moreover, the shortage of digital training in the hotel workforce is obvious, since start-up companies that develop technological solutions for the tourism sector are forced to provide the necessary training so that managers and employees can comprehend the function of the product offered as well as the needs it meets (KI01).

It is interesting to note that during the interviews, a representative of the National Institute of Labor and Human Capital presented the first results of a wider qualitative survey conducted by the National Organization on the Certification of Qualifications and Vocational Guidance on the way Greek business owners assess the digital skills of their workforce (KI27). Regarding the tourism sector, the survey included travel agencies and restaurant

⁶ During the focus groups were also presented the first results of an ongoing empirical research from the Labor Market Diagnosis System, which focuses on the digital readiness of Greek companies. More specifically for the Greek tourism sector, the first results showcase that they is shortage of security and software maintenance skills as well as data protection and safety skills. Those skills are considered extremely valuable for the tourism industry. On the contrary, tourism businesses from the entire tourism value chain are not interested in data development skills, since more and more companies use applications that are already available in the market.

owners. On the whole, results show that professionals feel that the level of digital skills is adequate. Travel agents, for example, consider digital skills as very important and acknowledge that the digital skills of their employees are adequate and relate to the needs of the tourism market. Results are similar for restaurant owners, who consider that digital skills are important for waiters and believe their level is satisfactory.

3.4.3. The importance of soft skills

Continuing the presentation of the first results of the National Organization on the Certification of Qualifications and Vocational Guidance survey, we must note that in answer to the question “which do you think are the most important skills that their workforce need to possess” the travel agents and restaurant owners ranked first the so-called soft, horizontal skills, such as communication skills, cooperation skills as well as the ability to work in teams. Sufficient technical specialized expertise on their field is the second top priority for the above-mentioned businessmen.

Similar are the results of the present research. Industry representatives pointed out that the hospitality and tourism industry are about personal contact, an element that cannot be replaced by automation (KI16, KI22, KI27). Stakeholders agreed on the need to provide adequate training on customer service and face-to-face contact (KI22, KI16).

3.5. The impact of COVID-19

The stakeholders’ opinion on the impact of the COVID-19 pandemic on the digital transformation of the greek tourism sector is rather ambivalent. The COVID-19 pandemic is generally considered as an opportunity, a disruption that has accelerated the course of events and **has helped implement changes that were lingering for years** (KI12, KI25).

It has also revealed **weaknesses** during a difficult conjunction for greek tourism. For example, employees were asked to rotate and take turns to work from home to avoid crowding in the office. However, rotation could not be successfully implemented when employees did not share the same degree of digital skills (KI16). Hotels, for example, must operate certain tasks, such as handling bookings, remotely to ensure safety for travelers and to keep their employees, that would look for employment opportunities in other sectors (KI25).

Furthermore, **before COVID-19 small businesses could continue business as usual** and, on the whole, ignore the need to follow digital trends. Nowadays digital transformation has become a must if they are to survive (KI12).

Nevertheless, **in certain branches the use of digital technologies did not offer solutions for dealing with the challenges of the pandemic**. Tourist guides have been using virtual tours for some time to attract clients. Amid the pandemic, virtual tours have been used to substitute for real visits. However, the attempt has not been successful and tourist guides are facing unemployment due to the pandemic (KI13, KI14). More successful has been the use of digital tools for remote, real time tours at the time when tourists visit tourist attractions (KI14).

3.6. Strengths and weaknesses of tourism education in Greece

The stakeholders acknowledged the importance and the high quality of the public tourism education. In the following, we briefly summarize the main strengths and weaknesses of tourism education in Greece as pointed out by stakeholders. The main **strengths** are:

- Practical training and internships (which are not offered for free in the ministry's tourism schools) are considered a major asset by industry stakeholders (KI07, KI11, KI12, KI23) since they connect training with the tourism market.
- The fact that the Ministry's schools are housed in hotels, so that students use fully equipped and professional laboratories for their everyday training (KI23).
- Teaching provided by both academics and professionals in tourism post-graduate courses: recently, postgraduate courses have been organized on aviation and the port industry that combine theoretical knowledge provided by academics and practical insights into the industry provided by professionals invited by the universities (KI06, KI20, KI22).

The following weaknesses were mentioned:

- Stronger coordination is needed among competent bodies, as well as between education providers and the industry (KI06, KI21).
- Entrepreneurial skills and soft skills need to become part of the curricula (KI01).
- Some professionals have pointed out the lack of specialized education and vocational training for certain tourism forms and tourism businesses like congress organizers, car rentals, marinas (KI09, KI16, KI21)
- Tourism schools should be better equipped to help their students become familiar with digital tools used by the tourism market (KI01, KI20).

3.7. Policy recommendations

A major challenge is the ability of the public education institutions to adjust to the changing labor market and develop evidence-based and up-to-date policies (KI23). Stakeholders suggested the need to establish a **permanent network of cooperation** to improve planning tourism education according to market needs (KI11, KI23). To this end, it is of vital importance to establish a permanent network between the Ministry of Tourism, the Ministry of Education and Religious Affairs and the Ministry of Labor and Social Affairs on the one hand, and the Diagnosis Mechanism on Labor Market Needs, that is between public

bodies planning tourism education and the institution that hold the relevant data (KI23). This would result in better policy making and in adjusting and updating curricula to respond to market needs (KI02, KI23).

Industry stakeholders put forward the **role of the state** to digitally upscale the tourism workforce. The cost of training is a burden for businesses of all sizes and branches. Stakeholders have repeatedly suggested that companies should receive state subsidies for training their workforce (KI05, KI16, KI18, KI19, KI20, KI21).

The stakeholders acknowledge the importance of continuous vocational training provided by the state. An important suggestion was that continuous vocational training should be provided not long after graduation, with the aim to constantly keep knowledge and skills updated (KI16). Another important issue is the continuous training of educators themselves (KI23) to ensure the high quality and relevance of tourism education (KI04).

Stakeholders propose that **entrepreneurship and tourism services classes should be introduced in secondary education**, a period when young people decide on their career, to provide motivation and recruit devoted professionals at an early stage (KI07, KI11).

Finally, participants pinpointed **the need to conduct further research**, to explore, for example, less typical forms of tourism businesses, like the sharing economy and its capacity to adjust to changes brought by digital transformation and COVID-19 (KI25).

Box 5 – Good practices for digital innovation: Hellenic Chamber of Hotels, CapsuleT

The Hellenic Chamber of Hotels (HCH) organized in 2019 CapsuleT, the first start-up accelerator in Greece for tourism companies specialized in digital solutions. The main goal is provide education to start-ups that want to implement innovative ideas for the development of digital tools for tourism businesses by promoting the collaboration with the tourism sector and by providing the necessary guidance for the development of their company.

The programme is organized in three-month training rounds and is free for the selected companies. It includes educational seminars, mentoring meetings, visiting tourism companies, networking activities and the participation in trade fairs and delegations abroad.

The research gathered information concerning the profile of the start-up companies that participated in the programme and the participation incentives (KI01, KI29). In most cases, the participating entrepreneurs are people who already work in the tourism sector and have identified a gap in certain aspects of the tourism market such as hotel management or/and destination management. They are self-made entrepreneurs that consider CapsuleT as their home, a place that helps them grow faster, develop links with the market and improve their products in order to access foreign markets.

In September, in the framework of CapsuleT, a new programme was launched, the Idea Platform, in which recent graduates and post graduates from greek universities, young unemployed entrepreneurs as well as companies with technological and business background in the first stages of development, are invited in a period of five days to find business solutions that can solve problems of the tourism sector through the implementation of technological solutions. The awarded ideas could in a later stage be included in the CapsuleT.

4. Conclusions

The findings confirm the concerns expressed during the consultation among the scientific community and policymakers.

- **New digital tools will be used in the existing jobs.** This means that technology will impact the entire tourism work chain. At the same time, although those jobs will not be replaced by technology, tourism employees will need to be able to combine expertise in the use of ITCs and traditional skills to be able to stay in business. Nevertheless, if the tourism employees acquire the necessary skills they will be able to stay in the labor market.
- **The key importance of strengthening the digital skills of the tourism business managers,** especially in the case of family businesses where the owner is the manager, in internationally acknowledged.

When it comes to Greece:

- The following gaps in tourism specialties were identified: a) in hospitality: revenue managers and yield managers, sustainability managers, booking management through booking engines b) at the marinas: sustainability managers, digital marketing experts c) in air transport: advanced cybersecurity knowledge.
- The following digital skills shortages among the extant workforce in the hospitality sector were also identified: training in Property Management Systems (PMS) and Global Distribution Systems (GDS), training in digital marketing.
- The need for the tourism employees and especially **the tourism business managers to familiarize themselves with all the available digital solutions** and not only with digital marketing and online presence. The limited knowledge on the available digital solutions conceals the benefits that the tourism industry can reap from their digital transformation.
- The **key role of the state in the tourism education** in terms of identifying the needs and coordinating the transfer of knowledge between the tourism industry and the education and innovation institutions is recognized. It is also acknowledged that the tourism sector is characterized by fragmentation and includes businesses, many of which are SMEs, from different subsectors.
- The labor shortage: **few are those who are willing to start a career in the tourism industry** and do not consider tourism as an industry offering only occasional employment amid the crisis. On the other hand, the COVID-19 pandemic could result in tourism employees seeking work in other industries.

- The results of the research are in line with the research conducted by the European Centre for the Development of the Vocational Training (CEDEFOP, 2020)⁷, which showcases the **importance of soft skills** in the tourism sector.

⁷Cedefop (2020). Skills developments and trends in the tourism sector. Skills Panorama Analytical Highlights. https://skillspanorama.cedefop.europa.eu/en/analytical_highlights/skills-developments-and-trends-tourism-sector.

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