FuTour Report for VET Providers in Tourism and Hospitality: Foundations for a Digital Training Program

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Contents

Introduction

One of the first deliverables we are working on is the review of methods and frameworks, promising practice and actual needs based on literature, media and other resources. The vocational education and training (VET) in the tourism field in the context of sustainable development and digital transformation asks for a well-founded body of accumulated and relevant knowledge. The aim of this deliverable is to summarize the state of innovative research and developments in digitalization and VET programs related to the project's overall topic: Frameworks for the Future Tourism.

The literature review was carried out systematically, using a database search with keyword terms related to the topics of digital transformation of Tourism; digital competencies; training of VET providers; digital education. Final literature report provides an overview of 81 of the most recent academic and professional publications with regard to good practices as well as prospective trends of digitalization in the field of Tourism. At the same time, it identifies focal points and gaps in VET for Tourism in regards to digitalization and provides the basis for VET future improvement towards to more digital and sustainable Tourism.

The following aspects are answered and their meaning for the project are discussed thoroughly within the scope of this paper:

- Chapter 1 and Chapter 2 are investigating how digital tourism penetrates into various activities of travelling and how this penetration is transforming consumer behavior and requirements to service providers in the industry;
- To illustrate a character of digital alterations highlighted and explained in the previous chapters, the real case study of Chapter 3 is describing a series of rapid changes that took place in Gewerkstatt VET School, Germany during the last three years;
- Next two chapters are attempting to answer the question "How to boost innovation and digitalization in vocational education to create modern and high-quality VET system"? Digital challenges and digital competencies of the VET providers in Tourism are analyzed in Chapter 4 in order to understand better how to embrace innovation and digitalization through the teachings and to achieve the critical environmental, social and economic goals that Europe seeks;
- Chapter 5 is proposing directions for potential improvements for the Future of Tourism.

Thus, the briefing can be useful for

- SMEs who are interested in discovering the currents trends and needs in tourism
- VETs who would like to enlarge their knowledge and understanding of how to integrate the innovations and trends in the curriculum as well as cover the knowledge gap

• Students/learners of VET who are involved in the field and would like to get target and topic relevant familiarity.

1. Digital Tourism and its Features

• Digitalization is a model alteration in tourism, with the speedy development of digital tools and practices. Digital transformation has transformed interface with the consumer in the travel industry and has highly affected on the traveler. On the one hand, this has facilitated a modification in consumer behavior and steered to the need to find new answers at every stage of the customer journey. On the other hand, technological alterations can enable service providers to reinforce their competitiveness. Hence, developing long-term digital schemes is critical for implementing the most operative use of technology to promote digital value creation. Impediments often arise in the form of shortage of IT proficiency, time limitations, financial risks, and the approach itself (Thees, H., et. Al, 2021).

• The **factors promoting digitalization** in tourism industry are **demand for digitalization by customers, sharing economy, presence of social networking platforms, use of virtual reality.** Because customers are interested in digitalization, stakeholders will have competitive advantage over their rivals by adopting it. **More personlised offers** through digital technologies will further push digitalization per se, e.g. because tourists can leave reviews on social networking platforms and also use various other digital solutions, businesses are to interact which will increase digital engagement, making it beneficial also for tourism providers as they can acquire new customers. However, the key to make digitalization successful is optimum use of digitization and manpower. Thus, the extent to which the technology will be used should be carefully determined. There should not be any loss in unemployment and use of technology must assist the existing players, not worry them (Kumar, S., 2020).

• The rapidly evolving information and communication technologies alter almost all areas of the digital era together with **Industry 4.0 and globalization**. Virtual tourism is a promotor of sustainable tourism by augmenting the virtual user-friendliness for the disabled or ageing people and by dropping greenhouse gas releases. (Valentina Ndou, et. Al, 2022).

• Digitalization enables to better apprehend varying customer needs and offer more operative consumer explanations. Thus, technology can profoundly alter the means to cope tourist movements and practices. **Smart technologies and personal mobile gadgets** offer new touchpoints. Subsequently, touchpoints have a multi-vector **impact on buying choices and also facilitate direct interface** (Thees H., 2021, p 5).

- Another advantage of digitalization is **big data** which can be used **to calculate customer behavior** so as to design personalized tourist experiences. Data pool and its application are imperative for companies to detect their target group and suggest personalized services. **Together with these developments, AI, the IoT, VR and AR are simplifying close interaction** with customers which results in loyalty to the specific company. (Zeqiri, A., 2020).

- In one hand digitalization of the tourism field needs improvements in different aspects such as business management, marketing, economy, and communication. In the other hand the needs of the clients in the touristic market are changing really fast.

- The Covid-19 related complications in tourism have been harsh, many tour operators and agencies being forced to close their businesses. Yet, despite all the damages it brought, it has also facilitated digitization of the industry, making the access of travelers easy as well as facilitating further developments of the industry.

- Covid is not the only change that the touristic sector is living, the generational shift represents a major force that will shape the future of tourism. More specifically, this special issue concentrates upon the relationship between the Millennial generation, Generation Z (Gen Z) members and tourism. These generations represent a clear break with the past in many ways. “Findings indicate that through engaging with geocaching, smaller entrepreneurial businesses can reap the benefits associated with employing the principles and practices associated with smart tourism to meet the needs of this new generation of tourists who seek richer digital and often gamified tourism experiences.” (Corbisiero, 2018).

- Although it is often presented as a narcissistic generation, seeking to put forward their “selves”, for example by posting selfies, Generation Z seems to show a great modesty during their tourist experiences and be much more suspicious and vigilant about social networks and their use. Youth tourism is becoming more important in a global scale and it’s “a challenge for both tourists and tourism professionals” (Haddouche, 2018).

- The generation Z don’t follow the past tourism experiences and practices and through the analysis of narratives and tourist stories, is easy to see that this tourist segment is sensitive to the notion of sustainable tourism. “The expression “Generation Z” refers to a new sociological category, nourished by the information technologies, the internet, and the social networks. As it is a hyper-connected generation (Ipsos, 2015) with different travel arrangements and needs, the study of their motivations, their representations, purchasing behaviour and tourist practices is a considerable challenge not only for academic research, but also for tourism professionals. Our aim is also to identify if/how this generation apprehends the concept of sustainable tourism through its own tourist practices and its use of social networks.” (Haddouche, 2018).

- In all European countries is necessary to study an education plan that develop and adopt new quality standards in VET field that can reflect the needs of the population. The European Wellness industry is aware that in order to maintain its leading positions and service quality, ensuring relevant training is a critical success factor, both for current and future employees involved in the provision of services ensuring the satisfactory delivery of the tasks assigned is necessary to plan a change (Dimitrova, 2019).
- **Digital tourism** has already managed to penetrate into various activities of a travel, using e.g. Expedia, TripAdvisor, airline frequent flyer, mobile tour-guide applications, photo management including Facebook, Flickr, etc. It **is a tourist experience before, during and after the tourist activity**. It can be expressed in the form of a recommendation for finding an accommodation while planning a trip, a mobile tour-guide application to help during the trip or a means to effortlessly explore holiday photos once at home (Benyon D, et. al, 2013).
- **A key feature of digital tourism is the relationship between producers and suppliers** realized not through goods, but rather **through information flows** which are not only flows of definite data, but also services and payments. As such services like accommodation or aircrafts are not presented in physical form and are not examined at the point of sale, making the only guide to the availability and quality of the product information. In line with this, **reliable information and its prompt dissemination are imperative** for the survival of the tourism industry as the actual provision to consumers of its services (Kayumovich, K. O., 2020).
- **Information technology in the tourism industry includes Global distribution systems (GRS); Local reservation systems for tours, hotel places, etc.; Office support systems; Destination management systems; Electronic networks (Internet); Multimedia technology; Management packages for hotels, travel agencies, restaurants, etc**. (Kayumovich, K. O., 2020). Tourist agencies have access to the internet and have a website or a homepage. Many tourist operators also provide different **online and automated services**. Most airports, especially in Europe offer **online check-in, self-check-in kiosks and mobile boarding passes. Computerization and robotics are also deployed in the hospitality area**, e.g. to let guests check in, respond customers' questions, inform about local attractions, weather or flights, or provide virtual tours. Some restaurants even use robots to serve food, suggest tablets, QR codes instead of paper menus, etc. Museums offer virtual and/or augmented reality to attract more visitors.
- **ICT economy has broadly altered corporate and customer behaviour.** Many of the undertaken changes are linked to tourism business which is disposed to digital innovation, costumer-business relationships, and platform dependence. In light of this, it is significant to acknowledge **the role of social networking platforms in foodstagramming, virtual reality tours** to explore tourist

attractions from home, **teaching simulations to improve learning about systems, big data analysis** to determine prevalence of environmental interest, as well as regulatory demands on platforms to address principles of accountability, responsibility and transparency. Technology and **ICTs promote SDGs** at best in marginal ways, and there is still need for wider desirable outcomes. It is worth to remember how mainstreamed tech & ICT applications have already become in tourism and hospitality businesses. **For example, restaurants use technologies comprising smart kitchen furniture, guest WIFI, tablets for Point of Service platforms, phone charging stations, digital displays, table-top devices, or music systems; and ICT for reservations, wait list management, finances, marketing, staff management and education, deliveries, menu design, food waste management, energy management, restaurant websites, inventory management, ordering systems, guest loyalty and reward programs, as well as smartphone payment systems** (Gössling S., 2020).

Thus, digital tourism is related to the provision of tourism experiences through digital tools. It means the usage of an info-communication tool, an IT solution that can support to address the tourists' needs and expands the competitiveness of tourism agencies (Happ E, 2018).

2. New Wave of Digital Transformation in Tourism

2.1 Impact of COVID 19

The Covid-19 related complications in tourism have been harsh, many tour operators and agencies being forced to close down their businesses. Yet, despite all the damages it brought, it has also facilitated **digitization** of the industry, making the **access of travelers easy** as well as facilitating further developments of the industry. **Digital transformations** will be beneficial for the future/potential travelers but also for those who are less mobile, e.g. **VR and AR**, as alternatives that can further promote the tourism industry in the future, making travel, under different shapes or forms, accessible to all people, regardless of their degree of mobility (Teodorov, A. V., 2021).

- People's lives after the COVID-19 crisis will be widely impacted by rigorous usage of ICT throughout the pandemic. In tourism there is data for the effective execution of ICT; hence, it is foreseeable that digitalization will endure in tourism, even after COVID-19, as a new standard. ICT has caused a foremost influence on the **travel industry** which is now to be grounded on this **customer-centric approa**ch in order to fulfill the evolving skillful customers. Therefore, a positive tendency of importance in digital tours in the post-COVID age is more than realistic (Sorooshian, S., 2021).

- **COVID-19** has accelerated the integration and usage of v**arious digital technologies** in the tourism industry and how these technologies have mitigated the Covid-19 related challenges. Nowadays, digital technologies are essential for the tourism sector's **resilience, competitiveness, and**

recovery. As such**, social media, big data analytics, artificial intelligence, robotics,** support travelers and tourism agencies to manage the crisis. Moreover, the use of technology will change the way of working for tourism agencies, e.g. robots and automated machines can **overtake operational activitie**s at accommodation structures, airports, airlines, etc as well as perform some **human-based activities**, such as cleaning and sanitization, food delivery and other services, thus protecting employees and customers from infections. Apart from these, **artificial intelligence technologies, big data solutions, and chatbox** will enable **redesigning of marketing, sales, booking, communication, interaction, visitors flow management, mobility tracking, understanding customer behavior and preferences, and planning and decision-making processes** (Valentina N., et. Al., 2022)

- At post-Covid-19 era tourists needs and expectations will be modified, with them paying **more attention to hygiene and sanitation, digitalization, facility quietness, etc.** As such doing marketing activities by focusing on the specified factors will be important for hotel businesses. To this end, digital transformation will be a key solution. As the studies have shown, tourists prefer **more customized and individualized solutions.** In line with this, **tourists will prefer small-scale accommodations** (such as boutique hotels and apart hotels) or diverse accommodation models (caravans, camping, housing rentals). Moreover, the **demand for rural tourism** is a growing tendency. Another phenomenon which has raised and seems to remain also after the Covid-19 refers to the employment models. During the pandemic, hotels have chosen **remote employees- home-office in some sections (such as reservation, accounting and HRM) for health but also costs reasons.** Therefore, **personnel in the tourism industry will need to improve diverse corporate abilities and rise their technology-related awareness.** Furthermore, tourism operators have advanced more in technological structures, tools and applications both during and after the pandemic, e.g. services such as carrying guest luggage, reception responsibilities and room cleaning have often been performed by robotics. (Demir, M., et. Al, 2020).

- **Online information sources gained weight over consulting friends and relatives, and a great advance in digitization is expected,** where physical travel agencies will be displaced **by online platforms,** except for specialized and advisory services. Additionally, technologies such as **virtual reality (VR) or artificial intelligence (AI) may play an increasingly important role in the medium term (**Toubes, et. Al, 2021). Indeed, COVID-19 era has been prominent in transforming a destination into a digital/virtual experience. A notable **example is the Faroe Islands**, which have reinvented themselves digitally by producing a new distant tourism device. Diverse shareholders joined to design digital tours for the islands. Tour guides offer fascinating virtual travels. Tourists can even sightsee the island by means of a joypad to turn, walk, run or even jump, from their own house anywhere in the

islands. Destination management organizations are another central factor for the travel industry. As such in Finland, Visit Finland has initiated free online training material on the digitalization of tourism businesses (Celiane Camargo-Borges., Corné D., 2021).

- For the post-COVID-19 revival of the tourism industry in generally and with a **case study on Vietnam, the role of human–machine interactive (HMI) technologies, including both artificial intelligence (AI) and virtual reality (VR)-**enabled applications is to be acknowledged. Important but also decisive factors for tourism are increasingly becoming safety along with the assurance of empathetic, personalized care. Moreover, human–machine interactive devices are integrating AI and VR and have a significant impact on overall service quality, resulting in tourist satisfaction and loyalty. On the other hand, for the deployment of social interactive gadgets within the tourism industry, requires a commitment to futuristic technologies, as well as building value by raising service quality expectations among fearful tourists. Additionally, **tour bubble** and the opportunities it may propose are interesting to observe as they use the devices in smart, sustainable destination tourism strategies for the future so that, jointly, **service 5.0 with HMI devices** can possibly revive tourism industry. These service applications can contribute to social innovations, sustainable service and a sophisticated experience for all tourists (Van, N. T. T., et. al, 2020).

- Another **case study can be Portugal** where tourism is also one of the biggest economy industries, amounting up to 15% of the country's total GDP and providing more than 1 million jobs. As such Covid-19 had a dramatic impact on the country's economy. The challenges are both short-term and long-term. In the short term, it is essential to ensure sufficient liquidity to reopen activities and in the long term, it is necessary to be prepared and reactive to disruptive movements that may arise in tourist demand. On the other hand, some opportunities can emerge, among others the **quality of the health response**, **the exploitation of a less mass tourism** supply based on the components of **social and environmental sustainability**, the increase of **tourism among the elderly** population from countries with greater purchasing power and the acceleration of the **digitalization of tourism operations** (Almeida, F., & Silva, O., 2020).

- **Hospitality industry 4.0 technologies have new facilities** and will have more important and deeper impacts. They should lead to reductions in mass tourism, personalized services and sustainability. The hospitality industry was an early adopter of technology. Yet, the impact of the recent pandemic COVID-19 on the hospitality sector has been dramatic. It will never return to how it was and the future of hospitality industry will be characterized by deep structural change. The termination of tourism activities has increased use of digital technologies, and in the post COVID-19 world we can expect changes to tourists' use of tourism services and increased use of virtual reality. The future

hospitality will change radically based on increased use of industry 4.0 technologies and different consumer behaviour and preferences (Zeqiri, A., et. al, 2020).

• Technology and tourism are interconnected and **technological innovations redefine tourism industry**. As such, technological developments are unprecedentedly accelerated due to the Covid-19, with service robots being used more than ever. This kind of change has both benefits and disadvantages. On the one hand **service robots are easy to access, enable an alternative communication, reduce costs and boost operational safety – they can be for front-of-house and back-of-house tasks, such as customer care and service, cooking, and delivery. They can also perform internal and external operations e.g**. dealing with routine tasks, replacing human employees, offering service businesses a chance to attract customers' interest, utilize resources more efficiently, change service employees' required skill sets etc. On the other hand, **service robots may also lead to unemployment** which can raise anxiety and depression among the demoralized employees (Omar P, M., Cobanoglu C., 2021).

2.2 Specific effects of Digital transformation on Tourism Industry

Digitalisation of the tourism touches such aspects as business management, marketing, economy and communication.

• **Digital marketing** is a comprehensive concept, including several components, such as 1. **Presentation** (website, apps, blogs, podcasts), 2. **Communication** (social networking platforms), 3. **For sale** (e-commerce, social networks, marketplaces, block chains), 4. **Strategic** (SEO - search engine optimization), **SEM** (search engine marketing), **content marketing, attraction marketing), 5. Analysis and measurement** (data generation, big data, metrics, key performance indicators (KPIs), analytics, data services) (Toubes, D. R., et al., 2021).

• The **website linked to the marketing events by Internet has successfully promoted dissemination of the communication, worth of the product and service, and corporate reputation.** From marketing perspective, the website development is not an one-step action but rather regular rise from the minor to the advanced level of the website and generates a practical and cooperative feature. **Tourism website must be planned in line with the organization vision, express the market-relevant requirements, advertise the offered service and/or product, and this with the full knowledge of the target market.** This is nowadays a critical aspect for business as the online information is a decisive phase when planning a travelling, with the website of tourism destination being a reference point for online visitors. Consequently, the website **must be user-friendly by adjusting customary features and posing actual and all-inclusive information,** enabling the

visitors to collect appropriate information, navigate through different texts and graphical components, and making first impression from the virtual mode.

- Virtual reality's influence in the tourism industry is also significant in education. **VR provides a feeling of presence in a learning process as well as enables interaction which facilitate learning process**. VR also contributes to data collection depending on the user's behavior, e.g. when applying it to cultural places to test their popularity. As marketing tourism highly depends on the internet, **VR is also an interesting way or providing information**. Additionally, **it can be deployed in entrainment as a product to attract tourist**s. **The development of automation, AI and service robotics together with virtual reality augmentation cuts expenses, rises empathetic services, reduces the possibility of danger and increases information flow** (Van, N. T. T., et. Al, 2020). VR triggers tourists to "daydream" about accommodation offers before undergoing them at the destination's premises. The tourists visiting the destinations are more probable committed to virtual reality. In line with this also cultural tourism benefits from virtual reality applications as VR mediates the relationship between experience and emotions (Akhtar, N., 2021).

- **One of the trends resulted by the increased usage of the internet is also a change in online impulsive purchasing behavior** which can be 1. because of the website positively affecting on the buyer, 2. the sales raise considerably influences purchasing behaviour and is a resilient broker on the relationship between website quality and online instinctive purchasing; and 3. the online impulse buyers are certainly predisposed by usage of credit cards, which increase the relationship between website quality and online impulse purchasing. Travel operators acknowledge **social media as the most powerful marketing tool, followed by digital marketing and direct sales. Also, the AI will make more customized offers and the VR will further be triggering tool to purchase.** Moreover, due to the anxiety caused by the COVID-19, certain safety measures will be imperative also in the post-pandemic tourism, among them 1. provision of tourists with up-to-date social distancing information, for example, by webcams, and short messages with information on successes in safety actions; from the individual and emotional aspect, communiqué interferences must focus on evolving distinct skills to manage unfamiliar predicaments, i.e., consolidation of resilience. Thus, business needs to adjust to changes and try to have a good online image, as it is the linking the insight of the customer and the shareholders. (Toubes, D. R., et al., 2021).

- **Digitization of the tourism economy** can raise the **efficiency of tourist operators/agencies** and **be also beneficial for consumers**. There is positive relationship between the development of the tourism industry and **GDP growth**. Moreover, countries in which economic growth is lower, try to improve their stance by integrating digitization and sustainable development policies. They push Sustainable Development Goals because, by implementing the idea of sustainability as they perceive

the possibility of using digitization as a tool to improve their market position (Filipiak, B. Z., et. Al., 2020). Digitization in tourism has also beneficial effects on economy due to prospects and access to supply and information. It makes **processes more effective and cost-efficient**, enabling a large trades size as the usage of the Internet makes the transition and distribution of information faster, better, and economical irrespective of territorial and time boundaries. Customers have **quicker and straight contacts** to offers, information and circumstances as well as safeguard of their interests. It **facilitates risk** and integrates them into the management process. It creates a new ecosystem and a new approach of business management (Filipiak, B. Z., et. Al, 2020).

- ICT provides consumers various opportunities, such as **cost comparisons, ability to find the best accommodation, the most exotic restaurant or the most interesting attraction**. Moreover, online platforms have also shaped certain **consumer behaviour and culture**, as they motivate users to evaluate their products and services. As such, e.g. **Facebook, Twitter and Instagram have important roles in communication and self-representation** as travel creates desire as well as social and linkage capital. These practices influence on individual and public characteristics, as well as behaviors, which gradually co-develop with technology advances that contribute forms of ambitious depletion of particular destinations or extravagant practices of travel (Gössling, S., 2020). As such, **social media is a power for the interrelationship with the guest.** It is a dynamic aspect for the increase of the tourism and hospitality. **Destination marketing with the augmented reality and virtual reality capability should use social media marketing to involve the customers with these technologies,** e.g. customers can use their mobiles at a restaurant, immediately leave reviews or have access to menus, or pose their tablet at a famous landmark and learn about its history. Social media is a major contributor to cultural and heritage tourism promotion and this topped with augmented reality and virtual reality (Akhtar, N., Khan, 2021).

- The prerequisite for the successful promotion of hospitality services is the **digitalization of communication channels** which can **reduce the distancing of services, suggesting consumers new forms of personal loyalty programmes, innovative packages, RevPAR optimization strategy, management of revenues, hotel rooms occupancy rates, etc**. Moreover, while direct sale channels ae important, there is also the need for the collaboration of hospitality entities with digital channels. Thus, it is pivotal to focus on identifying effective practices in the formation of distribution systems (Bovsh, L., et.al, 2022).

Thus, Covid-19 pushed implementation of digital technologies, highlighting the necessity for the businesses to get digitized. Moreover, it revealed the need for new models and strategies for the distribution of services and resilience of businesses.

3. Digitalisation and VET during the Covid-19: Case Study Gewerkstatt, Germany

"Digitization has arrived at all levels of tourism in Germany. When it comes to the implementation and use of digital instruments, however, there is a large gap from the state to the local level" (Spellerberg A., 2021). This was also the case in Gewerkstatt, Germany, which is a VET school which provides EQF4 qualifications for waiters, chefs, chef assistants, receptionists, cleaning staff as well as language and integration courses to migrants and refugees. Unfortunately, the digital approach in VET courses was not sufficiently developed before the Covid-19 outbreak and all the courses and lessons were of 100% presence mode and technologies or media played a very marginalized to a hardly existing role.

Though Gewerkstatt had the relevant facilities and computer labs, the digital competences and offering online/blended courses were not the priority. In the curricula there were only few IT hours. Gewerkstatt offered no distant learning courses. Moreover, the trainers were not prepared to teach remotely and had no relevant materials or methods. For example, in the QUAZ language and integration center, which also belongs to Gewerkstatt, there were only two computer labs out of 10 classrooms, which were not effectively used either by the lecturers/trainers or by the participants. The PCs were used by many users and as a result were not always in optimal condition (lack of responsibility towards). Some of the lessons took place in the computer labs, yet, without the actual use of the PCs. WiFi was also not available either for employees or for participants. Home- office or "mobile working" was not an option.

With the outbreak of Covid-19 and the connected lock-downs, as most other institutions worldwide Gewerkstatt had to react promptly, review its structures and work culture, adapt to the new realities and find alternatives to conventional presence courses and lessons. To keep the education to go, the institution has decided to switch to **distant teaching**. Yet, it was quite thought-provoking.

- A part of the challenge was identifying what's existing and which tool works best and make a choice which is choice is big and confusing. The institution made use of the online platform **MOODIE** which is a free and open-source learning management for blended learning, distance education, flipped classroom and other online learning schemes.
- The next challenge was developing **relevant digital material** for which the trainers were not prepared and had little if no time before switching to online/remote classes.
- The trainers were to introduce and adapt **new communication forms** which was also via MOODLE.
- **New assessment and examination methods** and formats were to be considered

Applying again the experience of QUAZ, it is worth mentioning that as the pandemic broke out, a group of media-savvy got together and researched the various possibilities/learning platforms. It was difficult to find a platform that was adapted to the Center's needs (practice space, German lessons/non-native speakers and, ideally, mobile phones and no PCs as end devices for the users). As mentioned before, the choice fell on the free version "Moodle", because course-related rooms can be set up with little resources, where participants not only find Word files and PDFs uploaded by trainers, but also carry out activities/tasks without time or location restrictions and with built-in automated feedback. However, the preparation of these activities is very time-consuming. To facilitate distant learning, every German course and every practice area course was given a Moodle course/room where the participants had access to a virtual classroom and tasks/activities adapted to the lesson. Before Corona times the Center offered 20 hrs. German course and 20 hrs. practice area lessons offered in 4 blocks, but it had to digitally limit the respective offer to a maximum of 10 hours. To this end the trainers and participants had difficulties getting used to it, which led to poorer attendance (new timetable, no proper learning environment, no suitable equipment). In some cases, trainers had to work with PowerPoint for the first time and had to adapt to the pedagogy in the digital area, which was unfamiliar to everybody.

Thus, **learning by doing** was the subject matter of the whole phase, leaving space for improvements and adjustments.

4. Digitalization of VET in Europe

4.1 Digital challenges and digital trends for VET in Tourism

The following part of the report is summarizing the actual situation of VET in the light of digitalization. The chapter defines SWOT analysis of the digitalization in VET system, emphasizing its strong and weak points, presenting opportunities and signalizing threats that come with the usage of the digital environment in VET training. The ideas and themes that the VET experts are currently debating on, especially within the scope of the digitalization of the VET services, are described in this section.

- Teachers' digital competence (TDC) is an important condition for the effective integration of technologies in education, and it depends on personal and context-related factors. "Multiple regression analysis highlights the main role of attitude towards technology and digital tool use frequency among the personal factors that contribute to TDC development. The teachers' workload, rarely considered in previous studies, is also a relevant factor. For the context-related

factors, curriculum support is the element with the largest effect on TDC, although it has a smaller impact than the personal factors." (Cattaneo A. A.)

- It's clear that is necessary to make the right choices about using innovation and digitalisation in VET to deliver the skills needed by young people and facilitate the upskilling and reskilling of adults. This also means looking at reforms and investments.
- "There is a tendency to think of the impact of educational technology in a vacuum. However, it is likely that the instructional context in which educational technology is used affects student learning. For instance, outcomes may differ when using educational technology in a classroom versus at home, in a quiet versus noisy environment, or in a context where support is readily available versus not available." (Bruce M. McLaren, 2022)
- Covid 19 situation created the situation to test VET teachers' capacity in the technology field that we will analyze in our case study.
- During his studies the author Lucas M. analyze the relation between in-service teachers' digital competence and personal and contextual factors and try to understand what matters most. To provide a valid and reliable instrument to measure teachers' digital competence based on the European Framework for the Digital Competence of Educators and to examine the relation between in-service teachers' digital competence and personal and contextual factors, he conducted a study with 1071 in-service teachers. "Gender and age differences were found, but the number of tools used for teaching and learning was the strongest predictor of teachers' digital competence, followed by ease of use, confidence in using digital technology, and openness to new technology." (Lucas, 2021)
- Some countries have successfully introduced some aspects of innovation and digitalisation in VET. It identifies key insights for policy development along with good practices to inspire new approaches.
- But in some studies, we observe that, even though the public policy and investment and their school's support was appropriate, "the teachers' own beliefs about their competencies still worked as barriers to their use of technology. At the school level, the availability of and access to digital tools (e.g., school infrastructure, computers for instruction, and internet access) and the quality of the digital infrastructure are necessary prerequisites, but they are not sufficient conditions alone to lead teachers toward using technology in their classrooms" (Bingimlas., 2009)
- In conclusion, acceptance of technology in educational contexts is a relevant factor in determining teachers' intention to use digital tools in their teaching practice. "However, the mechanism through which teachers' digital competence can influence or enhance their

technology acceptance and use intention remains relatively unexplored, especially in the context of vocational education and training." (Chiara A., 2022)

Digitalization of the teaching process in VET – Strengths

- Through the use of digital media and self-organized learning formats in professional development, lifelong learning can be supported, previously underrepresented target groups can be reached and permeable professional and career paths can be made possible. Continuing education providers/organizations strategically reposition themselves. They are no longer just "providers" and "service providers", but increasingly partners in the dialogical development and implementation of contemporary educational services. Digitization creates (new) opportunities for further vocational training and individual motivations for further training. (Zaviska, C., p.12)
- Job-related continuing education and life-long learning increasingly require employees to take the initiative and learn more independently. To complement this development, forms of learning are emerging which can be used flexibly and which facilitate any-time, any-place interaction and communication (De Witt, C.)
- Modern technologies in education have created opportunities to supplement (extend) the way of education, created a vision of complementary education - a vision to a large extent already realized, constantly modernized and adapted to newer, greater needs and possibilities. (Przybyła, M.)
- E-learning can boost the accessibility of education and training: "e-learning technology opens possibilities for new ways of engagement and invites innovative pedagogies". E-learning "[…] facilitates transmitting the digitized knowledge from the online sources to the final user devices, like a laptop, desktop and handheld devices". (Hofmeister, Ch., Pilz, M.)
- Digital technology is an undeniable prime mover of society, and the ongoing digital transformation seems to be increasing the challenges within Tourism Education. (Balula, A., et.al 2019)
- Even though the use of digital technology appears to have a positive effect on students' engagement, there is still some way to go to fully address the development of the students' and teachers' digital competence (Balula, A., et.al 2019)
- Teachers and students agree that some of the clear advantages of using digital technology in Tourism Education are: 1) time and space flexibility, 2) the development of technical/systemic competencies, and 3) the possibilities it opens for authentic/situated teaching and learning. (Balula, A., et.al. 2019)

Digitalization of the teaching process in VET – Weaknesses

- Remote education requires a teacher at every educational level to have the appropriate predispositions. (Winiarczyk, A., Warzocha, T. 2021)
- Despite numerous trainings, efforts and attempts to adapt educational strategies to requirements of the information society, the need for greater involvement of teachers and teachers can still be seen. (Porzucek-Miśkiewicz, M.)
- Most universities still show little interest in providing in-service training for vocational school teachers, which hugely restricts these teachers' scope for adding to their skills. (Hofmeister, Ch., Pilz, M. 2020)
- A somewhat neglected part is the trainer's interaction in the new surroundings; i.e. how to hold attention of the trainees in the digital environment, how to act in front of a camera, which implicates considering elements such as light, sound, speech, and screen management, all of which are further skill that have to be learned. (Aufner, A.)
- The opportunities offered by the digital economy are promising, even if not yet extensively taken up in tourism especially among SMEs. (OECD, 2021,)

Digitalization of the teaching process in VET – Opportunities

- On first glance the pandemic has delivered the game-changing reason to digitalize education systems – to support remote learning. It is a necessity, so argument is superfluous. In the foreseeable future, the need to sustain online delivery remains an obvious imperative for digitalization of those aspects of TVET and skills development. (ILO, 2021)
- Emerging advanced technologies could play an important role in ensuring the continuity of practical learning in VET. The adoption of new technologies, such as virtual reality, augmented reality and simulators, can facilitate the delivery of practical learning and can be integrated into online learning platforms and in face-to-face settings to develop key competences for learners of all ages. (OECD, 2021)
- Vocational training needs modern institutional framework conditions so that qualification and competence development can succeed in the context of digitization and lifelong learning. (Zaviska, C. 2019)
- Digitalisation of the economy can spur innovation and productivity growth, but it is also changing the way that work, and production, is organised, creating, in turn, challenges for jobs and skills. (OECD, 2021)

• Demand for advanced technological skills such as programming will grow rapidly. There is also a lack of sufficient understanding of technologies to lead the organization through the adoption of automation and AI. (Atwell, G.)

• The trainer market is in a rapidly changing process, accelerated through the crisis and the needs of clients. In the foreseeable future, the trainer will become a learning process coach and his tasks will include the conception and consultation regarding the selection of tools, learning methods and contents. In the learning process he will take over the roles of coach, modelling, reflexion and expertise.

Digitalization of the teaching process in VET – Threats

• Closures of education institutions in upper-secondary VET may have led to significant learning gaps, especially since distance learning had its limitations for important parts of VET curricula. (OECD, 2021,)

• Online learning in its entirety is dependent on technological devices and internet, instructors and students with bad internet connections are liable to be denied access to online leaning. Students and instructors with low digital competence are liable to lack behind in online learning.

• The new technologies may constitute a barrier for many teachers and impose the need for self-education in this area. (Winiarczyk, A., Warzocha, T. 2021)

• A teacher without appropriate predispositions, skills and commitment may have a problem with the effective use of available modern didactic aids supporting the educational process. (Winiarczyk, A., Warzocha, T. 2021)

Looking into the future, research predicts that computers and computer-managed machines would overcome the most of the existing jobs. Along with the improvement of performance of computers and other machines, in the future, through education and other means, people would gain new knowledge and skills which will enable them different advantages in performing activities which are not routine, as well as in performing new jobs.(Arsic, M. 2020)

The digital transition of technical and vocational education and training (TVET) and skill systems goes far beyond taking training products and services online. A holistic and coordinated approach to digitalisation should be taken that looks at each high-level function of a national skills system, and its potential for digitalisation. (ILO, 2021). It is possible that education-policy strategies involving a greater use of digital media in lessons might reinforce existing digital divides rather than eliminate these unless it is ensured that children and young people have access to such learning materials outside school as well and that schools in different socio-economic settings offer similar equipment.

VET has been called upon to adapt to the pandemic, not least in seeking to address the educative needs of the most vulnerable. ILO Brief (2020) argues that special attention needs to be given to:

- women, who hold 70% of jobs in the health and social care sectors and are therefore often on the front line of the response to the crisis (they are also over-represented in the informal service sector and in the labour-intensive manufacturing sector);

- informal economy workers, casual and temporary workers, workers in new forms of employment, including those in the 'gig economy';

- young workers, whose employment prospects are more sensitive to fluctuations in demand;

- older workers, who even in normal times face difficulties in finding decent work opportunities and are now burdened with an additional health risk;

- refugees and migrant workers, especially those engaged as domestic workers and those working in construction, manufacturing and agriculture [and we could add undocumented workers];

- micro-entrepreneurs and the self-employed – particularly those operating in the informal economy, who may be disproportionately affected and are less resilient. (Avis, J., et.al. 2021)

The identified changes in the relationship between vocational and general education can be roughly characterized as "academization" of vocational education and "vocationalization" of general education. Taking these developments into account, three scenarios were developed on the basis of the scenario workshop and the survey are presented below:

- A pluralized VET with lifelong learning as a central feature, in which the distinction between vocational and general education becomes increasingly obsolete.
- Distinctive vocational training with professional competence as a central point of reference, a clear demarcation from general education and a certain dominance within the education system.
- A purpose-specific (or marginalized) vocational training that practically only plays a repair function and plays a subordinate role in the education system and is reduced exclusively to job-specific qualification. (Markowitsch, J. et al. 2020).

VET systems are in urgent need of a package of support measures to strengthen their capacity to respond to current challenges as well as to adapt and respond effectively to both anticipated and unanticipated changes in labour market requirements. (OECD, 2021)

4.2 Digital Competencies in Education and Tourism

Many reviews of digital competence have been performed over the decades. For the current research is essential to compose a comprehensive definition of teaching professionals' digital competence together with industry specific set of digital skills in Tourism in order to design an effective training process for VET providers.

An overall finding about the definition of digital competence is that the reviewed publications defined digital competence in a general way by referring to policy documents and related research while it can be present from different perspectives. The framework presented in Europe has gained worldwide attention (Yu Zhao, 2021). Indicating that digital competence has been identified as one of the eight key competences for lifelong learning, it defined digital competence as "**the confident and critical use of information society technology for work, leisure, and communication. It is underpinned by basic skills in information and communion technology: the use of computers to retrieve, assess, store, produce, present, and exchange information; and to communicate and participate in collaborative networks via the internet**" (Kim, Hong and Song, 2018).

Ferrari defined digital competence as follows: "the set of knowledge, skills, attitudes, abilities, strategies, and awareness that are required when using ICT and digital media to perform tasks; solve problems; communicate; manage information; collaborate; create and share content; and build knowledge effectively, efficiently, appropriately, critically, creatively, autonomously, flexibly, ethically, reflectively for work, leisure, participation, learning, socializing, consuming and empowerment (Ferrari, 2013).

Digital Competencies in Education

While unified definition of digital competence is a conceptual framework for the improving workforce's digital qualifications across all industries, industry-specific competences are essential points for tailored human resource development programmes. As a result of the incorporation of technologies into teaching, professional activities of educational instructor are drastically changing. A deductive analysis across the literature identified three implicit orientations of teacher digital competence: competence in the generic use of computers, integrating digital technologies into teaching practice and professional digital competence.

	Generic digital competencies	Digital teaching competencies	Professional digital competencies
Competencies examined. Ability to:	Use presentation, creative, collaborative and communication software and Use hardware such as datashows, cameras and printers	Teach using digital technologies Evaluate teaching decisions critically Teach students who are using digital technology	Teach using digital technologies Manage digital learning environments Use systems and tools in the professional work as a teacher.
ITE programme aim. Teachers to develop:	Technical knowledge to use technologies for teaching.	Knowledge of how to apply digital technologies to replace or enhance established teaching practices.	Knowledge of how to be a teacher in a digitally infused schooling system
Educational context.	Introduction of digital technologies.	Integration of digital technologies into teaching programmes	Infusion of digital technologies across the work of a teacher.
ITE programme	Course on how to use digital technologies	Course on how to teach with digital technologies	Digital technology use infused across the programme

(Louise Starkey, 2020; p.51)

Only a few publications have further developed these concepts for different research audiences. More attention should be paid to appropriate pedagogical approaches involved in digital competence which is a key for universities to adapt to the current educational model and social environment.

In general, the digital competence of college teachers and students is at a basic or medium level. Some of them may think they have a good level of performance in a certain area such as communication and collaboration, but most of them can still feel shortcomings in their ability when they encounter complex problems. As we live in an era of big data, the security part needs special attention, which is a weakness of students and future teachers according to the obtained results. (Yu Zhao, 2021)

Regardless of their backgrounds, educators acknowledged the significance of digital technologies in education. Older professionals frequently exhibited poor skills, but they also understood the value of professional development in order to use modern technology. Education today and in the future depends on the development of work communities in which diverse competences complement each other and the skills, attitudes, and knowledge of teaching professionals can be enhanced by professional development. Increasing the use of digital technologies in pedagogical practices should provide teaching professionals with recurring opportunities to develop their skills. (Hämäläinen R., et.al. 2021)

It is appropriate that educational institutions encourage training in digital teaching competence through the enhancement of ongoing teacher training, as well as an improvement in the initial training of future teachers. It is essential to address this aspect; thus, this is the only way to achieve a real change in teaching and learning. In particular, teacher education should focus on clarifying the ways in which technology can be used in the classroom. (Garzón A. et. Al. 2020)

Digital Competencies in Tourism

Taking in to account the results of research conducted in 2021 with the sample of 1668 respondents in 5 tourism sectors (Yu Zhao, 2021), future digital skills across all tourism subsectors should consist of:

- Self-learning capacities (permanent education, adaptability, agility and flexibility – necessary to cope with ongoing digital innovations and disruptive business models);
- Digital fluency;
- Skills for conducting E-business: all skills necessary for online branding, marketing and distribution (including websites, social media, reviews), data collection, data analytics and data management (including protection, ethics and cybersecurity);
- As AI, VR and AR driven technologies will be increasingly important in all tourism sectors, a better understanding of these fields is essential;

As unique, customised and personalised experiences are the future in all tourism sectors, skills in creating experiences both in the real world and with the use of AR, VR or in mixed reality with special attention to gamification, as well as creating online and video content will become more important. And it is important to note that profession-specific knowledge (about attractions, hotels, food, “non-googleable” travel options) will remain important. (Carlisle, 2021)

Tourism organisations consider that digital skills are still an unresolved issue. Specifically, employees are willing to operate in environments where technology has an increasingly leading role. On the other hand, organisations believe that there remains a lot to be done until employees have, both

at present and by the year 2030, a suitable level of digital skills enabling them to operate in the tourism subsectors. (Zaragoza-Sáez, 2021)

4.3 Digital education for educators

Digitalization has already managed to penetrate all sectors of our life and educational sector is facing a big digital challenge. “Although modern classrooms are increasingly moving towards digital immersion and personalized learning, we have few insights into K-12 teachers' current practices, motivations, and barriers in setting up their digital classroom ecosystems. We interviewed 20 teachers on their process of discovering and integrating a vast range of productivity software and educational platforms in their classrooms, with a particular focus on how they personalize the UI and content of these tools (e.g., with plugins, templates, or option menus). We found that teachers largely depended on their own experimentation and professional circles to find, personalize, and troubleshoot software tools to support student needs or their own preferences. Teachers were often hesitant to attempt more advanced personalization due to concerns over student confusion and increased troubleshooting load. We derive several design implications for HCI to better support teachers in sharing their personalized setups and helping their students benefit from digital immersion.” (Laton, V, 2019)

Well-designed programmes to train educators make teachers more self-aware of their ongoing learning and reflective. These programmes also affect their capacity to interact more with students and foster open environments where students can share their experiences and produce quality learning. (Lucas et al. 2017). This interaction can be more challenging but also exciting when technology and digital means are involved. This is the reason that it is imperative that teachers be trained and be provided with learning tools to help in the articulation of these skills, specifically ICT skill. (Lucas et al. 2020.). On the same line of thinking and according to Michael J and Nathan A. (2020) only when aspirant teachers observed experienced teachers using technology often did field experiences have a positive impact on their beliefs and intentions.

Using technology in education has brought on line learning more intensely these days since events like the pandemic became a reality. This new virtual environment for learning is using various tools and techniques in order to make the learning environment more meaningful for learners.

Educators in the hotel industry are training other professional, which are in essence providing knowledge that will affect decisions. Digital technologies enable entrepreneurial learning on a massive scale. A study by Zur A., (2020) identifies 3 factors which can trigger intense horizontal knowledge spillovers on a massive scale: 1. participants’ common interests and aspirations, 2. induced mobilisation, and 3. participants’ optional anonymity. (Zur, A, 2020). The same study on MOOCs

mentions that this method enables knowledge exchange, consolidation, and new knowledge creation through connecting geographically and institutionally distant actors.

Webinars

Webinars is used as a training method because it can provide synchronous online environments that students can access from any location with an internet connection. For this reason, by using webinars a training programme has the ability to offer open access to learning resources and, as a result, a high level of regional flexibility. Even though webinars is a method of training that provides easy access from many geographical areas, in order to be productive trainers should encourage interactivity in their training designs. Increasing the frequency of interactions can help increase satisfaction levels and, ultimately, contribute to higher levels of learning and transfer. (Gegenfurtner, A., Zitt, A. and Ebner, C., 2020)

The same source states that according to the perspective of the participants, webinars should be used to go deeper into topics that have already been presented in class. Extremely complex or difficult material should not be presented in webinars.

Another recommendation for this method of training was that fast internet connections are key for the success of webinars since fast internet can avoid technical issues.

Simulators

One other way specially effective for the digital education and training of professionals and educators is the use of simulation. According to Bergamo, P. et al. (2022) training that uses simulations improves effectiveness and alerts staff to errors before they are actually used in the field. When a real-world problem arises, simulation can aid the industry in remembering how to handle it. Businesses also utilize simulation-based training to communicate values and boost efficiency. The source also signifies that in addition to enhancing competency, simulation-based training may have an impact on training-related environmental challenges.

Simulators typically give students opportunities for multi-layered learning and help them refine soft skills like strategic thinking, decision-making, and data analysis. They also help them learn through their interactions with others and from feedback on their actions and outcomes. The simulator is now a fantastic opportunity and an incredibly efficient tool for all the stakeholders in the educational ecosystem.

Simulation according to Bergamo, P et.al. (2022) can be combined with gamification could provide a more immersive experience, making training applications more interesting to students.

Gamification

Gamification can make training fun and promote a healthy competition. The widely accepted definition of gamification is “the use of game design elements in non-game contexts, also known simply as the “points, badges, leaderboard” method. (Deterding,S, 2011)

Common gamification elements are: Points, scoring, leader boards, progress bars, ranks, rewards or incentives

The process of applying gamification elements to modify training content and methodology is called gamification of learning or training. (Chang, C. and Hwang, G., 2022)

One can also divide gamification components into extrinsic and intrinsic motivation. These two types of motivation can be categorized using psychological theories like operant conditioning, expectancy-based theories, theories of self-regulation, and theories of self-determination. (Chang, C. and Hwang, G., 2022)

Multimedia in training

With the employment of multimedia strategies, which enable the fusion of image, sound, text, and color to generate multimodality, multimodal education is made possible. The rapid use of these technologies in education has given rise to a novel concept known as multimedia learning in pedagogical literature.

Using multimedia strategies is a form of learning based on many variables like self-discovery of new knowledge, and interactive approaches that are made possible through problem-solving (Albulescu, 2008)

The use of multimedia in training according to Tudor (2013) has many benefits which include

1. They facilitate the effective management of learning, allowing individualization and personalization of learning,
2. Provide rapid information, stimulates discovery learning, the interactive learning model, provides opportunities for simulation, problem solving, deepening knowledge.
3. Using strategies based on multimedia stimulates cognitive confrontations, determines active and interactive training and gives the learner cognitive and informational autonomy.
4. The student has an active attitude, continuously stimulating personal reflection capacities, critical thinking, imagination, creativity, but also an interactive one, being forced to interact with other to solve teaching tasks.

Graphical representations

There is great importance of the use of graphical representations in the development of critical thinking and problem-solving abilities in training programmes. The purpose of professional training is to promote the problem-solving skills of in-service employees, including the ability to find and recognize relevant information as well as organize and understand the acquired information in order to make informed judgments (Schommer-Aikins, M., & Hutter, R. 2002).

In educational settings, graphic organizers like mind maps and concept maps are frequently used. This is because in professional training, both mind mapping and concept mapping could play important roles in learners organize the learning content since they need to fully understand the associated ideas or pieces of knowledge related to a core concept as well as the propositional relationships between concepts. (Chang, C. and Hwang, G., 2022).

4.4 Digital Education for VET providers

This part of the literature report maps digital education in relation to vocational education training (VET). It is of great importance to highlight that a research society offers understanding on digital education and VET teachers, trainers, students, and curriculum development; the necessity to encourage employees to use digital technologies; advice to policy makers and providers. For instance, VET teachers' approach, tools, and methods for better learning-teaching outcomes (Subrahmanyam, 2022; Cox & Prestridge, 2020; Griffin & Mihelic, 2019; Williams, 2019).

Foroughi (2021) addressed the necessity for supply chain workforce training to encourage employees to use digital technologies, and Wibrow et. al. (2020) offered advice to policy makers and providers to integrate digital skills into VET supply.

However, there is less evidence, therefore a lack of understanding on how current VET providers and employees learn to digital skills, therefore, tackle with this matter in their daily working life. (Zaragoza-Sáez et.al., 2021) identified the gap between the current and future needs regarding digital skills, as well as the training needs for the 2030 horizon in Spanish tourism organizations.

Further, Lazaro-Mojica & Fernandez (2021) argued that there is a gap in skills in the food sector and the authors brought solutions through the Work Based Learning methods, new VET, higher flexibility in the channels and formats, but also the incorporation of transversal hard and soft skills. Last, Foroughi (2021) addressed the essentiality for supply chain workforce training to empower employees to use new digital technologies and to identify and evaluate current source of supply chain training.

Digital education and VET teachers, trainers, students, and curriculum development

"Lack of access to training, lack of access to digital resources and infrastructure, and lack of digital skills among TVET teaching staff linked to resourcing issues have been highlighted by many studies as the key barriers to use of digital technologies for teaching TVET in low- and lower-middle-income countries" (Subrahmanyam, 2022).

The main aim of Williams (2019) report was to investigate international approaches to developing 21st century skills in VET learners and how to build the capacity of VET teachers to develop and assess these skills in their students within Australian context. Griffin & Mihelic (2019) offered understanding on how online delivery is used and what element are considered vital for successful outcomes, thus comprehend the employment outcomes and satisfaction of students.

Picture 1: Advantages of online learning for students and teachers, trainers, etc. (p. 25)

Table 3 Advantages of online learning for students and RTOs/trainers, as described by interviewees

Students	RTOs/trainers
• accessible for regional/rural students • accessible to people who work; can study at night or on weekends (good for people looking to change careers without alerting current employers) • can study when convenient; fit in with other commitments; can multitask • accessible for people with mental health issues and people with physical disabilities • accessible for people who are incarcerated • can access it when on the move (day to day, or when travelling); easy access, assuming they have a device • can study at own pace, and can take breaks if necessary (days, or weeks) • can enrol at any time; often don't need to wait for a semester to start • businesses can enable qualifications for their workers while they're still doing their work; they can study at work, in work time • it can be more affordable (for students and/or employers) • it can be faster i.e. things can be responded to more quickly; feedback can be quicker • cost- and time-efficient; no travelling, car park costs etc. • lots of information at students' fingertips • online assessment often better than face-to-face; it has been under scrutiny and is improved because of that.	• increased flexibility, especially for contract trainers • can respond quickly to students • access to data for validation is useful • can promote stronger relationships; information about the student is right in front of trainers, can pick up the phone and call • can control the learning journey more easily; can ensure students access all resources to progress (this improves assessment outcomes) • trainers can better monitor how students are going; can intervene if they feel they are at risk of non-completion • it's scalable • can access students' work straightaway • everything in the system is mapped; no need to map manually • easier to provide feedback.

Picture 2: Disadvantages of online learning for students and teachers, trainers, etc. (p. 25)

Table 4 Disadvantages of online learning for students and possible solutions (where stated), as described by interviewees

Students	RTOs/trainers
• fear of the unfamiliar • can feel disconnected, may lack a sense of belonging; might not have a cohort to engage with; more difficult to build rapport with other students and/or the trainer • no set timetable; can be hard to maintain motivation • assumption of digital literacy; students might have difficulties with technical activities such as filming a video on their phone and uploading it to the system • connectivity issues, lack of internet access (including where internet access is poor due to rural location or housing situation) • access to help when needed can be harder, can take longer (trainer is not online all the time) • doesn't necessarily cater for all learning styles; can't see the trainer showing them how to do things in person; tends to be a lot of reading; doesn't suit people who really prefer face-to-face contact • the perception that a course is completely online when it isn't (such as when work placements are required) • some online courses are put together cheaply and are not high-quality or effective • can take the student longer than they expect; they still need to do the work • students might not understand the support available to them • harder to learn some things, like communication and leadership • difficult where practical observations are required.	• needing to go through a third party if something goes wrong with the portal; 'if it goes offline, you're offline' • keeping up with the pace of technological change; keeping abreast of technologies available and having the funds to implement new technologies • ensuring the person enrolled in the course is the person completing assessment tasks • identifying plagiarism (although can sometimes be easier in an online environment) (not specific to online learning) • issues with literacy and numeracy (not specific to online learning) • harder to develop a sense of community • engagement can be harder; students can hide more easily • the structure of the course can be harder to maintain; some students skip ahead to assessment without doing the learning activities • expectation that the trainer is always online • training packages may be worded in ways that are challenging for online delivery; for example, counselling sessions must be with someone in the same room (and hence, can't simply be done with the trainer via video) • national reach can make it difficult to ensure content is accurate for each jurisdiction • lower completion rates; higher drop-out rates • the perceived perception of government and the regulators that online courses are inferior.

Cox & Prestridge's (2020) research study focused on understanding online education in vocational education and the research results are presented and discussed in three parts: (1) teacher characteristics, (2) teaching profiles using two different approaches, and (3) relationships between teaching context and enacted practice. Subrahmanyam (2022) mapped trends and challenges in the training of TVET teachers and trainers in the context of digitalization, and to identify examples of innovative TVET teacher training efforts that have proven successful. On the other hand, Wibrow et. al., 2020 offered a practice guide, thus advice to providers and policy makers on the incorporation of digital skills into VET delivery. The authors in their practice guide claimed that 'providing greater flexibility for VET trainers and providers to pick and choose units of competency to tailor training to suit a learner's needs' (p. 57). 'Developing units of competency that can be used across a number of similar occupational groups rather than creating new units (p.57). And 'developing a faster and more efficient way for updating content in training packages, given the speed at which new technology is being introduced and old technology superseded (p. 57).

How do VET providers and employees learn to digital skills?

Zaragoza-Sáez et.al., (2021) identified the gap between the current and future needs regarding digital skills, as well as the training needs for the 2030 horizon in Spanish tourism organizations. The authors explained that tourism organizations consider that digital skills are still an unresolved issue. Their research study provided an aid to build a Europe Blueprint Strategy for digital skills within the tourism and hospitality sector, to provide employees, employers, entrepreneurs, teachers, trainers, and

students with a set of core digital skills represented in a skills matrix. Further, Lazaro-Mojica & Fernandez (2021) argued that there is a gap in skills in the food sector. As well, the authors bring solutions through the Work Based Learning methods, new VET, higher flexibility in the channels and formats, but also the incorporation of transversal hard and soft skills. These might come as possible solutions for the more and more demanding intermediate positions in big companies and the flexible and multi-task profiles of SMEs personnel. Last, Foroughi (2021) addressed the essentiality for supply chain workforce training to empower employees to use new digital technologies and to identify and evaluate current source of supply chain training. The author unveiled supply chain professional organizations, consultants, MOOC courses and MicroMasters programs at colleges and universities. The author assisted with practical implications of his by identifying sources of supply chain training that are currently available to help bridge this serious skill shortage, the results can serve as a guide to enterprises moving toward supply chain digitalization. Social implications of this research study shed light that in order to succeed in the current environment of digital transformation, employees need opportunities to build digital skills that are demanded by corporations around the world. This is especially important at a time when unemployment is at an alarming rate.

In conclusion, for a changing job market, personal and societal needs are served best by training which develops flexibility, digitalisation and innovation allowing for a range of options and better preparedness for an uncertain future. This has been described as training that anticipated labour market necessity. "*Anticipation of this kind is to be encouraged. Students can make more rapid and sensitive adjustments to the needs of the market through enlightened self-interest than is likely by either governments or employers if training providers have similar flexibility of response. Future-oriented training requires greater emphasis on generic competencies, transferable skills, flexibility and adaptability, enquiry and problem-solving skills and capacity to continue learning. Training programs must adapt quickly to this demand."* (Graham Maxwell, 2000)

5. Potential Improvements for the Future of Tourism

In all spheres of life digitalization and its solutions have become standard, thus affecting also tourism industry. As such it presupposes also new formats and models for business management, marketing and communication.

- The tourism industry has quite many gaps in this direction as the trend now is **tourism 4.0** and not all tourism providers are capable to meet the demands and satisfy the needs and expectations of travelers who are eager for more **digital offerings and experiences**. Several reasons stand behind

the incompetency, among them being also lack of personnel, financial resources and subject-related expertise. As such, it is yet unclear what vectors the tourism industry can take but it is clear that efficient **management of the digital transformation** in tourism requires the **all-inclusive development and coordination of innovative strategies** (Spellerberg A, 2021).

- From today's view, the key **challenges** of digital tourism are mainly: **1. the synchronized digital delivery of information and tourist management, 2. data management, 3. Voice quest by language aides, artificial intelligence and automation, 4. digital tourism bids or allowances as well as share tourism with mediators such as Airbnb, 5. Online booking and advertising of tourism and other services, mobile payment and platform economies, 6. the smart connecting of big data with smart data, visitor data gathering and assessment as a source for digital offer development and tourism promotion as well as digital evaluation portals, 7. Internet accessibility in public places and tourism relevant spaces .**
- To adjust rapidly to the post-COVID-19 period, **tourism should reflect** the profound understandings stemming from the deviations in **consumers' psychology and behaviors and reshape and change their marketing tactics consequently as well as their corporate startegies** (Valentina N, et. Al, 2022, pp. 15-21).
- To form the change in the insides of actions in the tourism industry in a market and service-oriented way, **reformed skill and expertise** must be applied. **Artificial intelligence technologies, big data solutions, and chatbox will enable redesigning of marketing, sales, booking, communication, interaction, visitors flow management, mobility tracking, understanding customer behavior and preferences, and planning and decision-making processes.** Though adopting such technologies can be challenging, new formats will lower operational costs by 30%. In addition, the need for **sector reskilling and upskilling is required**. While some jobs will be replaced by machines, new job opportunities will appear related to artificial intelligence, big data, and digitalization of processes and services. Moreover, **digital skills upgrades for tourism staff are necessary for dealing with digital marketing, organization of virtual experiences, handling new advanced solutions and tools for decision making, and creating and delivering digital content and information** (Valentina N, et. Al; 2022)
- There is also a prerequisite **to address such aspects as digital ethics, data protection and consumer protection** (Spellerberg A, 2021).
- In the post-Covid-19 time it is expected that tourists' priorities may change and that there will be greater demand for non-mass regions, places where they can have unique experiences and where quality prevails over quantity. Tourists are more likely to choose socially and environmentally

sustainable places, where there is no overtourism or overcrowded hotels but rather are small and close to nature. (Almeida, F., & Silva, O., 2020).

- **More developments** are envisaged**, e.g. room smart control devices for Check-in and check-out, individual based technologies, face and voice recognition methods, mobile payment transactions, etc.** Thus, the usage of automation, digitalization and technological applications will be increased in rooms, front office, restaurant, kitchen, floor and security services and smart hotels will be favored by tourists. As such hotels will be designed in smart style to ensure benefit in profitability and competitiveness in the future (Demir, M., et. Al, 2020).

- **New products, for example, the tourist voucher**, are to be designed. In this new setting, the tourism offer must be revived, transformed and reshaped, familiarizing the subsequent processes: **redesigning of business agencies; high-tech solutions for the regulation of cleanness, health and security; modernizing and reformatting the booking projection, income management and pricing schemes; speeding up digital and data analysis; restructuring the mode of tourism experiences and the emotional influence of the activities** (Toubes, D. R., et al., 2021). An extraordinary experience is remarkable and tourists highly appreciate individual experiences in spite of their price. Tourist providers can have a serious competitive advantage in case they can ensure an unforgettable experience because future outlooks and actions are constructed on customers' recollections of prior experiences (Zeqiri, A., 2020).

- For the success of the digital transformation in the tourism industry, it will be necessary **to form a digital ecosystem of service providers who produce all-inclusive and smart experiences using customized approach, context knowledge and actual information**. For that purpose, tourism providers should be resilient, have relevant partners but also flexible customers. Among the **advantageous tools can be digital hubs, community platforms, interactive maps, and other smart solutions in accommodation and transportation.** Destinations, especially **DMOs, will have a tactical management aspect in accelerating digital transformation.** DMOs are frequently accountable for distributing technologies, and cooperative schemes to participate in new ecosystems are unavoidable. As for the customer management, customers will expect more digitalization, and this especially in the frontstage. Tourism providers can take this as an opportunity to act and develop in a more customer-oriented way. It is expected that also daily activities and data provision will be digitalized, setting ground for next steps in digital transformation, including chatbots, assistance robots, immediate customer management, etc. (Thees, H., et. Al, 2021).

- **Tour operators should extend using information technologies and alternative payment possibilities, should uphold doing distance business and deployment of innovative digital**

platforms (e.g., social networks, virtual congresses, etc.) in order to diversify tourism marketing and subsequently attract new ardencies (Almeida, F., & Silva, O., 2020).

- Choosing **usage of renewable energies** can become another advantage to get more energy efficacy and act sustainably, e.g. smart hotels use smart lightning, temperature adjustment devices, smart showers, smart sinks, smart laundries, etc. which use energy and water more economically. Additionally, **application of smart meters** in hotel kitchen and restaurants and other related tourism businesses might decrease food waste. As such, some smartphone applications collect information on customer preferences to identify the portion size (Zeqiri, A., 2020).

- Innovation is a cornerstone in gripping prospects provided by digital technology. 3 directions will further be evolved and be trendy - **virtual reality tourism**, **virtual tourism**, and **augmented reality**. Virtual tourism is a practical and valuable option for mass tourism during the COVID-19 outbreak and can replace mass tourism after the pandemic. While virtual tourism is not the same as visiting a certain natural destination, it can still attract tourists. To this end, virtual spaces must develop further features and innovative solution (Akhtar, N., 2021). VR and AR can provide fascinating visitor experiences and become key marketing tools. Using service robots opens another array of opportunities. During crises like Covid-19 they can ensure physical distance. In their turn robot chefs are the current trend, as people are interested to visit those restaurants and get acquainted with new cooking methods. Moreover, there is a belief that robots are smarter, faster and cleaner than human chefs. To this end, digitalization causes job insecurity as employees might get demoralized and do their regular activities less effectively. Thus, embedding of digital competencies must be carried out step by step showing its importance in modern civilization and stemming trust in them (Bovsh, L., et. Al, 2022).

Conclusion

Digitalization in the tourism industry, and this especially during and after the Covid-19 era, has become a key tool, which brings both challenges and opportunities to the industry, thus, making it a central strategy both for businesses and education providers in the field of hospitality and tourism.

For the development of resilient tourism destinations, a complex approach is needed involving all the shareholders, promoting management of employees, quality management, digitalisation, internal communication, and support for tourism businesses. Tourism recovery should comprise an ongoing development and the rebranding of destination images will have a decisive role in local and short-term market reclamation. To this end commitment for a sustainable tourism should be worldwide as without it the tourism industry will not convert into more resilient and better equipped for coming emergencies. Moreover, though cultural and natural aspects have a potential to attract tourists, in the progressively

competitive tourism industry, it will be indispensable to project and present original experiences, and advance smart specialties (Jones, P., 2022).

In line with these, it is particularly central to have a competent and skilled personnel capable to fulfill the tasks professionally and unmistakably. As such, education and digital technologies in the tourism industry are an urgency. With blended learning solutions offering various benefits to learners and providers, teachers and trainers should be ready for technology-based learning methods and contexts. However, application of digital technologies obliges the enlargement of original and innovative knowledge practices, for which the staff should be flexible enough to adapt to the changes adopt a lie-long learning philosophy and the institutions prepared to make investments. Education providers should get new qualities, e.g. deploying technology creatively, redesigning the lessons with project-oriented teaching approaches and personalized educational programs, using novel methods to evaluate learners' performance, etc. (ÇINAR, K.; 2020).

Thus, the fundament for a successful and efficient digital tourism is constant improvement, development, enlargement and modernization.

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