



## The Digital Revolution: Impact on Tourism Education\*\*

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### Abstract

Digital revolution has become a prominent driver of society that incorporates both advantages and disadvantages for higher education as well as many other organizations today. COVID-19 has revolutionized the training system and contributed to the online transformation process of higher education institutions. However, practice and research in tourism and hospitality are still in its infancy. Therefore, this study aims to identify the benefits and limitations it brings to the field in the literature. It provides an overview of the current literature review on the field that focuses on recently published open-source research, peer review and the analysis of selected documents through content analysis. The results showed that the apparent benefits of using digital technology in tourism education are for students and teachers: (i) resilience in time and place; (ii) development of essential and technical skills; iii) keeping track of students' performance and give feedback, iv) teaching them to be self-disciplined; and (v) taking less time. Although the implementation of digital tools enacts to have a decisive impact on the participation of students and lecturers, we still need more time and practice to cover the issue of digital literacy for both teachers and students in a comprehensive way. This study is a comprehensive contribution to the current debate on the need to rethink tourism education, taking into account the demand not only of students but also of teachers.

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## INTRODUCTION

Tourism is often included as a subject in the formal education curriculum due to its crucial economic contribution to the public and private sectors, which is especially the case in emerging markets (Hsu, 2015; Mayaka & Akama, 2015; Adukaite, Zyl & Cantoni, 2016). Eventually, tourism in Turkey is accepted as a vital sector of the economy with sustained growth potential. According to the United Nations World Tourism Organizations [UNWTO] (2019) Turkey ranks the 6th most visited country in the world in terms of international arrivals, 14th in terms of tourism income (UNWTO, 2019), and the 4th again in Europe in the top tourist hosting countries list (Ministry of Culture and Tourism, 2020). Tourism creates a considerable amount of income for Turkey. For example, receiving \$34.5 billion from tourism in 2019, increased 17%, up from \$29.5 billion in 2018 according to the Turkish Statistical Institute (Türkstat, 2020) and aims to reach 50 million tourists and \$50 billion in revenues by 2023 (REUTERS, 2018). Therefore, tourism growth in Turkey requires a skilled and professional workforce.

The most significant social impact of all this could be the impact of the digital revolution on tourism, which could account for one in 11 jobs all over the world by 2025 (Saavedra, 2020). Smart technology will alter the essence of some tourism professions and eliminate others. In this case, it is crucial for higher education institutions (HEIs), particularly in the tourism industry, to keep up with the on-going digital transformation adjusting their tourism education curricula.

Digitalisation has become the top priority in the country's public sectors as well as higher education institutions. The digital revolution offers new opportunities for social and economic development, and this has been particularly observed in the tourism and education sectors (Anwar, Carmody, Surborg & Corcoran, 2014; Vandeyar, 2015). As regards teaching and learning the use of modern digital tools, it has not yet been fully implemented and realised in the education sector in Turkey. It is based on the overview and visualisation of teaching materials and ideas which usually involve passive communication with students. Teaching in a more vivid and interactive way can significantly increase satisfaction with the online learning environment and interest in the subject (Nicholson, Nicholson & Valacich, 2008; Ajanovic, 2014).

The sudden transition to online education, especially after COVID-19 has compelled teachers, academics and administrators to determine instantly and innovatively about how students will continue to learn through online courses. It remains unclear if online learning perseveres after the pandemic and how these changes will affect the global education market. Since the COVID 19 outbreak, more than 1.6 billion children and adolescents have been taken out of the schools in 161 countries. This corresponds to about 80% of school-age children all around the world. Educational technology has already developed and spread tremendously long before COVID-19. Global investment in education technology was around \$ 18.66 billion in 2019, and the overall online education market is expected to score \$ 350 billion by 2025. Virtual audio applications, tutorials, the use of video conferencing tools and e-learning software have increased dramatically (Li & Lalani, 2020).

Though technological advances in education, the current tourism education is applied traditionally mostly. Curricula, pedagogy and the learning space, have been progressed and redefined throughout the years. However, the required revolutionary changes have not occurred in a world full of innovation and turmoil. It is also noteworthy to mention that innovation activities have occurred mostly digitally in the tourism industry (Jacob et al., 2003, p. 292; Pikkemaat and Peters, 2005, p. 108; Pikkemaat, 2008, p.194, as cited in Çınar, 2017, p.41) and it is expected to

continue in the future as part of digital transformation. In other words, technological improvements, personalized services and customer relationship management will continue to maintain its place as the main trends in service innovation (Verma et al., 2008, p. 9, as cited in Çınar, 2017, p.41). Though the innovation may be concerning for many, radical changes and improvements which are necessary for the sustainability of tourism education are essential (Hsu, 2018, p.181). Thus, this study is also crucial since it contributes to the evolving structure and presents evidence for the on-going development of digital tools in tourism education.

The results of that study are also expected to prepare a solid ground for future researches and practices in this area. In the first part of the study, the literature review about the digital revolution in tourism sector, digital revolution in the tourism education in higher education institutions, and the impact of COVID-19 on the Digital Revolution are presented with the examples from the sector and higher education institutions. Important implications for all interested sides in the education process are derived as well. In continuation, the results of an evidence-based literature review on digital transformation in tourism education highlighting the advantages and constraints in order to develop better digital competences to become more analytical, agile, practical and ethical, and active in the information space are presented. In conclusion, the suggestions for further planning of the academic programs regarding the digital transformation in the sector and higher education institutions are proposed.

## **Literature Review**

### **Digital Revolution in Tourism Sector**

As tourism is a service-oriented sector that continually adapts to the needs and demands of customers and markets, more specialised skills in digital tools in terms of marketing, planning, promotional activities are needed. This should apply to all enterprises and businesses in the tourism sector, including travel agencies and hotels. In this type of education, as defined by Dale and Robinson (2001), Functional Tourism Degree should be combined with the Generic Tourism Degree and Product/Market Tourism Degree.

Indeed, digital technology, especially in tourism, is indisputable and is generally seen as the driving force of innovations in this sector (Dexeus, 2019). Digital technology not only improves customisation and personalization as an added value for the tourist, but also improve the existence of leading services and destinations. Furthermore, it enables the sharing of experiences. This growing character of the high tech industry in tourism, travel and hospitality has reformed the whole tourism process (Dexeus, 2019). Moreover, digital technology impedes more efficient and innovative tourism products, to be inferred as complicated and integrated experiences requiring various economic, social and cultural characters and assets (Framke, 2002).

An essential determinant of tourism development worldwide is a highly efficient information technology and its use in the sector. Krsak, Tobisova, and Sehnalkova (2014) investigated the need for additional training of employees in the tourism sector to improve the quality of the services provided to their clients. According to the results of the survey conducted on the providers of the accommodation, catering and transportation services, and other tourism organizations, there is a need to introduce digital technology as a means to increase market share in tourism businesses. It also demonstrates a high awareness of these needs and the willingness of employees and their managers to receive further training in the field.

In order to develop tourism education that meets the needs of the expanding and diversifying global industry, it is necessary to have an educational programme that enables graduates to perform excellent management skills as an added value to the organisations operating in the tourism industry (Dale & Robinson, 2001). Courses related to the use of digital programs and software in tourism and other sectors provide students with the necessary knowledge about practical and real working conditions in the sector. By learning the basics of these digital tools, students can learn how to solve some of the everyday operational tasks.

Knowledge space is evenly at the disposal of tourists, agents and professors of the tourism industry, as well to students and researchers from all over the world. It has been getting more and more complex and compelling. In this context, digital technologies that support significant connection and correspondence among different stakeholders within destination networks and markets should be considered crucial for enterprise accomplishment (Dexeus, 2019; Law, Buhalis & Cobanoglu 2014). Therefore, universities and especially academics, should be getting ready to successfully adjust digital tools into the curriculum, as they help to promote contextual learning and interaction with real circumstances, actors and conditions. Learners need to be aware of not merely the aspects and potential of digital Technologies, they also need to use them to get better prepared for their future careers.

The theme of World Tourism Day in 2018 was “Tourism and the Digital Transformation”. UNWTO has been inviting governments and the global community to "support digital technologies that change the way we travel, reduce the negative environmental impact of tourism and reap the benefits of tourism for all" (World Bank, 2018). Digital technologies and platforms can serve developing countries to meet the challenges of traditional destination management and increase their competitiveness. They can also offer new opportunities for women and entrepreneurs in rural places and improve market access and financial inclusion. However, there is a lack of knowledge about how to use digital platforms and how to mitigate risks. They are not only constrained by a lack of understanding, knowledge and resources. They are also unable to use digital tools for tourism development. Partnerships are essential to make the best use of digital tourism platforms, especially when negotiating with governments and international organisations that put the business on the table.

The tourism sector is highly dependent on the Internet economy and digital Technologies (Minghetti & Buhalis, 2010; Chiao, Chen & Huang, 2018; Tavakoli & Wijesinghe, 2019). Tourism is characterised as a knowledge-intensive field (Buhalis, 2000; Gretzel, Yu-Lan and Fesenmaier, 2000), in which information processing and collection is vital for daily activities (Sheldon, 1997). Besides, the latest improvement in the digitised world has dramatically altered the tourism sector (Buhalis, 2003), advancing both the way potential tourists communicate with them and the way they purchase tourism products (Klein, 1999).

Future employers in the tourism industry are continually looking for well-trained and competent workers who are enriched by knowledge of modern technologies and, above all, by brand new ideas. The use of new technologies has led to revolutionary and continuous changes in the daily business operations of the tourism and hospitality industry. As a result, tourism businesses have become more sensitive to the needs of their customers. They need employees who are flexible and ready to adjust to the changing requirements and expectations of the industry. Teaching and transferring the digital knowledge used in this sector to university students can be a concrete step in the creation of this type of workforce. In order to achieve all these, significant digital transformation starting from tourism education is needed.

## Digital Revolution in Tourism Education

The evolution of information and communication technologies changes almost all sectors of the digital era that we are experiencing together with Industry 4.0 and globalization. This rapid transformation is also affecting tourism education both as a structure and as a learning environment. The article focuses on this digital revolution process identifying the benefits and limitations it brings to the literature. Though it is recognized that the development of ICT skills is crucial for learner's extensive and practical involvement in the ultimate society (OECD, 2015b, 2015a), and digital devices in teaching and learning do not assure active participation and performance of learners (Kirkwood, 2009).

Tourism education has progressed through a strong background and is thus strongly focused on the industry (Xiao, Qiu & Cheng, 2018). Therefore, tourism courses concentrate on mainly practical training specific to this particular sector. Internships, practical courses in restaurants and trips are good examples of this experiential learning. Similarly, case studies and real-time learning help the learner to understand "real-life" situations and problems better (Dart, 2009).

Tourism education is in a versatile and continuous development due to its nature. Therefore, it has been steadily developing in undergraduate and graduate programs in Turkey recently. Unlike other types of fields, the fact that tourism education includes applied training and the necessity to follow innovative developments in the sector continuously are some of the features that facilitate its digital transformation (Keleş, Çınar & Akmeşe, 2020). In this context, tourism is positively affected by technological applications developing all over the world. According to the report prepared by TUADER in 2019, a total of 133 universities offer tourism education at associate degree. In total, 379 programs as formal education, evening education, open education and distance education programs are carried out in these institutions as 184 units. Within the scope of Tourism Education, there are four main pillars, namely Tourism Guidance, Gastronomy and Culinary Arts, Tourism Management and Recreation Management in 2019. The number of students who have been placed in these departments in 2019 is 16,218 (<https://tuader.org/2019/09/11/2019-yks-turizm-yerlestirme-istatistikleri/>)

Thus, higher education in tourism in Turkey is highly varied with different curriculums and structures offered by different universities, each department needs to develop its own methods following the essence of the digital age, which makes the truth relative. involves conduct and management of learning opportunities and support through computer, network and digital technologies, to help the performance and development of the individual.

The main structure of hospitality and higher education in tourism has been changing radically (Kim and Jeong, 2018), enhanced by digital technology which is a key to the tourism education sustainability (Hsu, 2018). The benefits, challenges and opportunities of online learning have been exploited and widely mentioned such as flexibility in terms of time and the place of delivery, life-long professional improvement, the catalyst for digital transformation (Poehlein, 1996). Sigala (2002) reported that the Internet in general, and online learning in particular, offers great flexibility to adapt to specific working conditions in the tourism sector. In addition, Cho and Schmelzer (2000) stated that online learning enables students in tourism and hospitality programs to think more critically and improve their problem solving skills, while making them technologically competent.

Several studies have been carried out to understand and represent the use of online learning in hospitality and tourism. Braun and Hollick (2006) examined the flexibility of online delivery and discussed whether sharing knowledge could contribute to capacity building in the tourism sector. Haven and Botterill (2003) reviewed the existing and potential exploitation of virtual learning spaces in hospitality, leisure, sport and tourism. Sigala (2001) reviewed and assessed the evolution of e-practices in order to identify the e-learning models in tourism and hospitality departments.

Information and Communication Technology is vital for teaching and learning about tourism before students enter in the tourism industry (Adukaite et al., 2017). Active technology-based learning tools and platforms such as HOT, clicker and INNOTOUR have been used in the hotel and tourism education (Kim and Jeong, 2018). Chiao et al. (2018) built an online platform, called the Digital Orientation Platform for Cultural Tourism (CTDGP) and examined the effectiveness of learning. Hsu (2012) examined the integration of 3D virtual simulation world into tourism education. That application not only improves the self-efficacy of the students, but also offers training in tourism knowledge, as well as communication and interpersonal skills. Liburd and Christensen (2013) stated that Web 2.0 can be significantly and effectively applied to higher tourism education. As part of this type of teaching and learning, students can gradually become familiar with the tools and the learning environment.

In education, the shift to online was made at concise notice. It has accelerated new forms of pedagogy and tremendous initiatives from individual academics and institutions. Learning by doing or by experiential learning is usually considered as a very effective way to teach students. The network generation students are more courageous in accessing information instantly and spend a reasonable time engaging with digital tools (Camp, Avery & Lirely, 2012; Lane, Hunt & Farris, 2011; Prensky, 2001 as cited in Morellato, 2014). The precise nature of today's digital devices seems to be changing their daily activities, decreasing their attention span, altering learning style and triggering more effective coping abilities with various simultaneous demands than before (Lane et al., 2011). Researchers state that students exhibit more technically fluent competent experiences in digital multitasking learning. However, they still have lack of knowledge and awareness of the essence of using digital technology, especially in learning contexts (Li & Ranieri, 2010; Liburd, Hjalager & Christensen, 2011; Prensky, 2001 as cited in Morellato, 2014).

This new student profile prefers more active and specific learning methods in a system (Prensky, 2001) in which the instructor is not the only source of information and learning materials such as digital tools, websites, social media and other open learning channels are diverse. Thus leads to an inevitable change in the teacher/academic profile. With this new profile, the students take the role as a learning actor rather than being just a student, and the instructor facilitates learning through a digital transformation in which the student is more active and the academic is somewhat more passive. However, it was quite significant for a learner to obtain information in the pre-digital learning stage, which is crucial for building the model with the information acquired in the recent digital era. This has given rise to the expansion of experiential and participatory learning and student-centred learning (Thiele, Mai & Post, 2014).

Improving digital competence development in the educational curriculum is highly crucial to promote substantial student participation and the improvement of analytical, innovative and ethical behaviour, rather than just training them to use some digital tools. Recently most of the higher education institutions have acquired software platforms, especially after COVID-19. This new inevitable circumstance exposes teachers to use the technological environment

for teaching activities and materials at the same time, and students are primarily the ultimate final user. They have a little perspective on digital education tools and their capabilities.

Teachers' pedagogical capacity about the efficient use of digital educational tools is rather critical (Englund, Olofsson & Price, 2017). Because change does not occur simply by bringing teachers into contact with technology, it also requires digital competence, including the critical use of ICT for business and education. This process should also be supported by basic skills such as having necessary computer skills for receiving, collecting, producing, presenting, evaluating, and exchanging information, as well as taking part in collaborative networks on the Internet (Ferrari, 2013).

The project titled 'Digital Transformation in Higher Education', launched by the Higher Education Council in 2018, has made a significant contribution to the distance learning process. The project brought together nearly 6,000 academics from 16 universities for a course called 'Science and Education in Higher Education in the Digital Age'. Another course titled "Digital Literacy was offered" to more than 50,000 students and academics were from the socio-economically disadvantaged regions of Turkey. However, with the establishment of more than 120 distance learning centres in Turkish universities in recent years, this challenge has become easier to meet. CoHe's International Public Relations Department, which monitors and reports on developments at universities around the world, also serves as a support unit (Saraç, 2020).

For example, with regard to the use of digital tools in higher education institutions through external stakeholders and the community, Middle East Technical University has set the goal of establishing and expanding open access mechanisms to disseminate knowledge in society and increase academic visibility, Anadolu University promotes its social responsibility activities through the use of all information communication facilities. Concerning the cooperation between university and sector in digital transformation, Gazi University has developed innovative models for sector-university cooperation in the framework of industry needs and digital transformation objectives. Therefore the university stressed that it would do so by internalizing the main policy objectives of the district in its strategic plan (Kuzu, 2019).

Since the Internet connections have been expanded and differentiated by scope recently, the standard of teaching materials has transformed to expand this digital and online education tools. It is now available to watch videos from both digital devices and mobile phones, which have become essential functions in today's classroom (Seaton, Nesterko, Mullaney, Reich & Ho, 2014). As a result, traditional face-to-face teaching has been replaced by experiential learning methods in the form of hybrid/blended education (Almaraz-Menendez, Maz-Machado & Lopez-Esteban, 2016).

Higher education institutions have already started to enable their on-campus internet networks available for these digital revolution. Apart from that, students have taken part actively in the process of creating more digital learning resources. Due to cost advantages, This has become more popular in distance learning platforms. Experience learning has been added to traditional face-to-face and distance learning methods and has become mixed / hybrid learning methods (Kuzu, 2019).

When the studies and opinions on the digitalisation of higher education are examined, it has been found that the role of MOOCs in digitalising higher education has become increasingly important (Vassiliou & McAleese 2014).

MOOCs, which are believed to cause a radical change in higher education, will destroy university campuses and thus an increase in the number of people studying outside of the universities through MOOCs. Several MOOC modules on tourism education are currently available. Some programs at universities accept MOOC modules completion counting these credits as part of the graduation fulfilment. The “sharing economy” model enables a reasonable option for the students, the professor and the institution. Students will have gain expertise outside of their university, even in different regions. The online mode also serves as a visual “on-demand” expectations of students. Such universities will become more popular and they will have more impact through the courses attracting highly qualified learners to continue their education. Meanwhile, the institutions offering virtual courses will benefit from reduced teaching loads and expanding their curriculum capacity (Hsu, 2018, p.182).

One of the frequently encountered concepts in the digitalisation of higher education is University 4.0. According to Dewar (2017), University 4.0 represents a new curriculum structure. Within this structure, it offers uninterrupted learning opportunities through different channels, traditionally, blended, multiple or online:

- (i) Opening short-term training and certificate programs in order to gain various professional competencies,
- (ii) Ensuring learners’ career management and skills development;
- (iii) Emphasising that University 4.0 is a complex concept, according to Lapteva and Efimov (2016).

University 4.0. increases scientific studies towards transforming information into reality, provides support for the opening of companies that produce advanced technology, establishing communication networks and provides coordination between different subjects and new applications. It is one of the characteristics that universities should be in line with the age of Industry 4.0 (Yıldız Aybek, 2017).

### **Impact of COVID-19 on the Digital Revolution**

COVID-19 has also fostered this digital revolution forcing many universities and other higher education institutions around the world to close their doors and have delivered their courses online temporarily. This new scenario has exposed many shortcomings and inefficiencies in the training system from computer facilities and the supportive environment needed for online training to resources and behaviour change. Throughout this period, there has been a joint effort to maintain continuity in education. However, the students have had to rely more on their resources for continuing distance education at home via the internet. Teachers have also had to adapt to new pedagogical concepts and ways of delivering instructing, for which they may not have been trained, yet. In particular, the most marginalised groups of students who do not have access to digital educational resources or who are lacking resilience and committed to learning are at risk of being left behind.

The COVID-19 pandemic also had a significant impact on higher education as the higher education institutions have quickly replaced face-to-face lectures with online courses. The lockdowns have affected the safety and legal status of international students as well as their learning and examinations. Most importantly, the crisis is likely to raise questions about the value of higher education in terms of networking, social opportunities and educational content. In order to remain relevant, the university must redesign their educational settings in which digitisation expands and complements student-instructor and other relations.

There is a great opportunity, especially in large student groups, to develop new forms of personalised education and to move beyond the traditional evaluations that are now still predominant in student assessment (including online). In the period before COVID-19, there was already a growing demand from the global labour market for more flexible and hybrid forms of life-long learning beyond primary education to meet the need of upskilling and reskill for a better employee in the digital economy (Burquel & Busch, 2020).

Concordantly, since the scholarly and professional attention has focused on the digital innovations that have emerged in this swiftly evolving information society, there has been some progress in the tourism education recently (Lugosi & Jameson, 2017; Patiar, Kensbock & Cox, 2017; Tavakoli & Wijesinghe, 2019). Over the last few decades, tourism diplomas have become more functional and particular, with specialised curricula for areas such as spa, entertainment and tourism management. Shortly, there will be more programs to develop universal cognitive skills. For example, the Data Science Program enables learners to improve their competences in analysing and interpreting the big data, as well as learning how to design digital tools and data extraction techniques. The Tourism Design Programme will allow students to progress scientific, culturally sensitive, ethical and comprehensive approaches to reconcile and promote sustainable tourism development (Hsu, 2017, p.182).

With the COVID-19 pandemic, there has been a rapid transition from the classroom to online learning all around the world, accelerating the process of transformation in higher education institutions. Nearly all higher education institutions in the worldwide are switching to online and virtual education, according to AACSB's COVID-19 (March 2020) Rapid Survey of How Higher Education Institutions Use Technology in the Classroom (AACSB Business Education Intelligence, 2020). It has been found that 51% of respondents have changed their one to one courses to online or virtual courses; however, there are some regional differences. Respondents from Oceania and the Middle East have the highest rates of conversion to online and virtual formats at 86% and 84% respectively. Respondents from Canada, Africa and the United States are the least numerous with at 33%, 43% and 44% respectively since these countries have already adapted online courses in higher education (AACSB Business Education Intelligence, 2020).

In a study carried by Karadağ and Yücel (2020) with 17.939 students at the undergraduate level, the students' satisfaction regarding the application of distance education during COVID-19 period in Turkish universities was investigated. According to the results of this study, it was found that only 63% of the students had an internet connection at home and 66% had a computer/tablet, and 23% could not continue their distance education. This result shows a significant amount of students who do not have the opportunity to access technological facilities. Although the "support quota for distance education" of 6 GB was provided to university students by CoHE (2020k) in this process, it is likely that many students could not benefit from this support sufficiently due to the fact that distance education tools (Zoom, Microsoft Teams, Youtube, etc.), which are widely used by universities are out of the scope of that support. Some tools with free options, such as Zoom, have seen an increase in popularity recently with the spread of the COVID-19 pandemic worldwide. Privacy issues should also be important. There may be some possible threats ranging from hacker intrusions to sharing information with third-party social networking platforms and analytics engines. Therefore, the business model of the tools should be analyzed carefully, keeping in mind that a "free" tool may generate revenue through advertising or transmit user data. (Hodge, 2020, Rapanta et al., 2020).

Meanwhile, these digital innovations could be one of the main drivers that will fundamentally change the tourism field in the period 2010-2030. For example, digital innovation could be the critical issue for the integration of diligent

entrepreneurial proficiencies and capabilities into tourism education, as pointed out at the TEFI summit in Vienna in 2007 (Sheldon et al., 2008). Convergent software for mobile reservation and payment, new multimedia podcasts, digital communication platforms, geolocation, cloud computing, and augmented reality have made yesterday's technologies based on web portals, newsletters, e-commerce and search engines obsolete. In this new millennium, the ubiquitous nature of mobile devices not only characterises the way information is accessed, but also influences consumer behaviour and people's online presence, with links accessible from anywhere in the world (Morellato, 2014).

During the pandemic, distance learning became a lifeline for education, but the options offered by digital tools go far beyond a temporary solution during a crisis. Digital technology provides completely new explanations to the questions of what students learn, how they learn, where and when they learn. The technology can enable teachers and learners to access specialised materials that go far beyond textbooks, in a variety of formats and ways that save time and space. Intelligent digital learning systems not only deliver academic content to students, but also allow them to observe how they learn, what tasks and thoughts interest them, and what problems are challenging or boring for them to solve. Systems can therefore adapt the learning experience to students' learning style with great granularity and accuracy (OECD, 2020).

## Method

This study has an exploratory characteristic and focuses on showing evidence on how the digital transformation is finding its way into tourism education. It follows a literature review methodology that focuses on recently published and peer-reviewed open-source research. The data was collected from the selected databases that include international peer-reviewed open access journals. The research was conducted between 2nd August and 10th November 2020. The results were reviewed to avoid duplication of work. This process resulted in 45 documents from different sources through content analysis based on the relevance of the evidence for the digital revolution in tourism education, led to the selection of 21 documents. This scientific work was based on six primary electronic databases which include Google Scholar, Elsevier, ScienceDirect, Springer Link, Emerald and Taylor & Francis. These electronic databases were selected for their reliability and credibility in analyzing the data needed for the primary research.

The basic principles, approaches and best practices determined from the data will be applicable for future studies and implications. Though this study deals with the specific field of tourism, the facts of this work make a meaningful addition to state of the art in future and ongoing researches in the tourism education field. These various categories that emerged from the literature review were reduced to four basic categories based on the indicators collected as an affirmation from the relative documentary sources. These categories are types of delivery of online courses (e.g. e-learning, MOOC, etc.); Web paradigm (from Web 0.5 to Web 5.0) that summarizes the different digital technologies used in tourism education; main benefits; and limitations identified in this context as shown in Table 1 and Table 2 in the following part. For the interpretation of the results, a blind triangulation of the coding and recoding method was applied.

## Findings

As highlighted in several types of research reviewed, a marked tendency towards digital revolution in tourism education has been indicated (Enticknap-Seppänen, 2017; Patiar et al., 2017; Tavakoli & Wijesinghe, 2019). Chiao

et al., (2018) affirm that digitalization works as a vital means of introducing innovation for tourism organizations, professionals and educators. In this perspective, it is crucial to figure out how tourism education accompanies the ubiquity of digital technology and its revolution, as well as to promote the digital competence of teachers and students. The first analysis of this study focused on identifying the reported teaching and learning modes and web paradigms most commonly used in tourism education.

In educational institutions, the efficiency of teaching and learning processes depends on the learner's perception of competence, on the quality of the real-time teaching and learning material and the way it is provided (Patiar et al., 2017, p.136). Lin and Cantoni (2018, p.275) pointed out that only half of the speakers intended to revise the experience of teaching in MOOC format in the future, mainly because of the impressive amount of work required in its layout and implementation. The results of another research support these findings adding that MOOCs are not a clear economic solution for universities (Lugosi & Jameson 2017). However, Xiao et al., (2018, p.1) conclude that MOOCs can be a cost-effective and efficient way of delivering a more prosperous curriculum when integrated into a blended learning model. Indeed, by combining online and face-to-face learning, it seems possible to minimize some of the limitations of introducing MOOCs, namely:

- (i) the inadequate barrier role of MOOC evaluation in the review of qualifications,
- (ii) their shortcomings in the training and assessment of higher practical skills, and
- (iii) the unsatisfactory role of students as co-designers and co-advisers.

Tavakoli and Wijesinghe (2019, p.48) show that several studies on digitalization in tourism education have been conducted on Web 1.0 (websites); Web 1.5 ; and Web 2.0 (social networking, wikis, online YouTube, videos, tagging tools. Other platforms using Web 3.0 (second Life- virtual hotels, virtual destinations, 3D virtual social networks: vTime); Web 4.0 (smart tourism); and Web 5.0 (sensory-emotion web-based artificial intelligence technologies) are rarely investigated by netnographers. These researchers offer examples of digital technologies that are likely to be applied in a variety of contexts by teachers, educators, and researchers.

Both teachers and students see the digitalization in higher education as inevitable. However, they also recognize the need to understand how students learn better by the help of digital technologies in order to provide more richness and complexity to the 'traditional' learning experience (Lugosi & Jameson, 2017) and to bridge the digital gap between teachers and students. When analyzed all the related studies about the digital revolution in education, it has been found that it is neither universal and consistent nor inflexible. These studies have also highlighted gaps and opportunities for their use in explicit situations. Although the results of these studies should not be generalized, the types and indicators shown in Table 1 and 2 present principal attitudes that should be considered in future attempts to consolidate digitalization into tourism education.

**Table 1:** Benefits of Digital Revolution in Tourism Education

Category	Indicators	Researches
<b>Benefits</b>	-Significant increase in knowledge dimension; incorporating scenario-based and e-learning experience	Chung-Shing, Yat-hang and Tzs Heung (2020)
	-A shift in the system from a teacher-centred model of education to a student-centred one	Rapanta et al. (2020); Trinidad (2020); Torrisi-Steele (2020)
	-Keeping track of students' performance and providing feedback	Cheung, Wan and Chan (2018); Xiao et al., (2018)
	-Promoting equity among students	Schaffer (2017); Chiao et al., (2018)
	-Self-paced learning, use of modern methods and materials, course diversity	Roshchina, Roshchin, Rudakov (2018)
	-Prompting more integrated/multidisciplinary learning	Chiao et al. (2018); Lugosi and Jameson (2017)
	-Fostering immersive/authentic learning	Patiar et al. (2017); Schaffer (2017); Schott (2017); Enticknap-Seppänen (2017); Chiao et al. (2018)
	-Possibility to make distance students work consistently between exam sessions	Vaganova and Telegina (2017)
	-Assistance in unlocking learners' potential and "developing their professional and personal qualities"	Mozhel and Lukianov (2017)
	-Reinforcing students' professional identity and awareness	Enticknap-Seppänen (2017); Padron et al.(2017); Schaffer (2017)
	-Fostering student-centred, flexible learning	Patiar et al. (2017)
	-Enhancing students' intrinsic learning motivation and engagement	Chiao et al. (2018); Enticknap-Seppänen (2017); Lugosi and Jameson (2017); Schott (2017); Sharafuddin, Sawad and Wongwai (2017); Patiar et al. (2017); Xiao et al. (2018)
	- A solution to the time, location, resources based problems and environmental constraints of field trips by providing virtual experiences	Schott (2017); Crisp (2014)
	-Acquisition of new competencies	Yelizarov, Yelizarova (2016)
	-Increased tutoring assistance; implementation of problem-based learning by integrating offline university courses with top professors' courses - Strengthen the knowledge acquired onsite and to capture the attitudinal and behavioural changes of the students.	Mozhaeva (2016)  Ting and Cheng (2016)
-Availability of self-study materials for students; automated or peer-review assessment of student assignments	Zhuk (2016)	

**Source:** Prepared by the author

**Table 2:** Limitations of Digital Revolution in Tourism Education

Category	Indicators	Researches
<b>Limitations</b>	-A decrease in attitude and usability dimensions.	Chung-Shing, Yat-hang and Tzs Heung (2020)
	-Maintaining academic integrity (Plagiarism: difficult in individual assessment, copy paste assignments; lack of discipline, lack of attentiveness; lack of student feedback; limited attention span; unable to teach practical courses	Mukhtar et al. (2020)
	-The decrease in the internationalization and international student mobility	OECD (2020); Dennis (2020); Mitchell (2020); Studyportals (2020); Linney (2020); Bulut Şahin (2020); Çalıkoğlu and Gümüş (2020);
	-The loss of instructional time delivered in a school setting	OECD (2020)
	-Lack of personalization	Kuzu (2019)
	Students' lack of digital skills	Arik (2020); Salman (2020); Vigdor and Ladd (2010); Roche (2017); Robinson, Wiborg & Schulz (2018)
	-Teachers' lack of digital competence/proficiency; Teachers' workload may also prevent them from innovating in their teaching practice.	Cheung et al., (2018)
	-E-assessment and co-creation of content are complex and difficult to implement.	OECD (2020); Xiao et al., (2018); Barbera et al., (2017); Lin and Cantoni (2018)
	-Not enough personalized learning, or lack of learner identity verification opportunities	Roshchina et al., (2018)
	-Lack of digital competence/proficiency of students; Technology can act as a distractor.	Lugosi and Jameson (2017)
	-Instructors must develop on-camera skills	Yelizarov, Yelizarova (2016)
	-Resource intensity (online education production requires adequate money, time, and effort.	Agapova (2015)
	-Challenges of instructor-learner communication	Azimov (2014)
	-The availability of computers, software and technological support is crucial, as it is linked to the success of an online course.	Bell and MacDougall (2013)
	- In disadvantaged areas, the resource limitations to integrating ICT are far greater.	Bladergroen et al. (2012); Eren (2020) ; Warschauer, Knobel & Stone (2004); Krumsvik (2008).
-Institutions need to 'revise current policies and procedures to accommodate the online student and the online process'	Appana (2008)	
-Expected risks in financial management and technical support is needed.	Appana (2008); Bartley and Golek (2004)	

**Source:** Prepared by the author

Based on these indicators, it could be said that some teachers have mixed feelings about the increasing role of digitalisation in education. Because of these, some lecturers accept the use of digital technology as a disruption and are less confident that students pay attention to education (Lugosi & Jameson, 2017). They also see it as a contribution to reducing meaningful content engagement, as students are not always able to make critical and careful decisions and use the information provided by search engines. Besides, it should be noted that increased workloads of teachers may also prevent them from keeping up with the development of digital solutions to improve their teaching practices. (Cheung et al., 2018, p. 10) state that education should enable teachers to think or use technology differently, rather than just teaching them how to use it. Furthermore, due to its ease of use and versatility, teachers should be motivated to use technology-based strategies to achieve learning outcomes, especially to meet the needs of diverse student backgrounds (Patiar et al., 2017; Schaffer, 2017).

On the other hand, as Chiao et al.,(2018) indicate digitisation can boost a more unified and multidisciplinary approach in education and curriculum design. Only when the use of digital technology is based on clearly defined learning outcomes, the real learning experience can become possible, and the acquisition of information resources in multiple formats be supported and integrated into the teaching and learning process (Patiar et al., 2017). Also, digitisation makes it possible to monitor student performance and provides real-time feedback as formative assessment (Cheung et al., 2018; Patiar et al., 2017). However, Barbera et al., (2017) also discuss that co-designing and co-creating content when negotiating between teachers and students are not easy tasks. Furthermore, without reliable internet access /or technology, participating in a digital learning environment is a struggle. For instance, whilst 95% of students in Switzerland, Norway, and Austria have a computer to use for online education, 70% in Turkey, only 34% students in Indonesia have these possibilities according to OECD data (Saavedra, 2020).

Concerning social interaction, the lack of group classes with the possibility of lectures and social discourse in online courses is problematic and hinders the sense of community. One of the most relevant aspects of digitisation, especially virtual reality, is that it provides the chance of a fixed understanding of the structure (Chiao et al., 2018). For instance, learning and teaching strategies connected with the use of virtual reality (Web 3.0) as well as game-based learning, which support and enhance fieldwork based on industry needs and promote authentic learning experiences through stories (Patiar et al., 2017; Schaffer, 2017; Schott, 2017). Indeed, virtual reality environments are being created in the tourism industry, in particular, because they allow innovation through real-world simulations (Chiao et al. 2018) and then foster students' self-esteem and critical thinking (Schott, 2017). The integration of virtual real-life scenarios in tourism courses enables students to engage and interact more deeply and enhances their intrinsic motivation (Chiao et al., 2018; Schott, 2017). As a sample to the adaptation of academic and administrative staff to the digital transformation Anadolu University proposed an in-service training as a part-time training on how academics can effectively use technology to apply and utilise technological developments more frequently in formal education, such as mobile learning, social networks and augmented reality (Kuzu, 2019).

The shift toward online education at universities due to the pandemic has substituted the system from a teacher-centred education model to a students-centred one (Rapanta, Botturi, & Goodyear, 2020). Higher education institutions in Turkey have been struggling for years to accomplish this goal in line with the Bologna Process. However, it is not easy to abandon entrenched teaching habits. In teacher-centred education, there is a one-way teaching approach, where the teacher has to know everything about the course he or she teaches and delivers a lecture

in a real classroom environment. Sometimes s/he instructs specific topics to students in the form of a monologue, in which students are usually passive, silent and not involved in the teaching and learning process. In such a system, students usually memorise their lecture notes in order to pass the exams.

In the online system, however, the teacher is only a facilitator; not only does he teach online, but he also assigns homework to students, encourage them to do research and to do their assignments. The teacher is always in contact with the learners assisting and guiding them constantly, monitoring their homework and giving feedback. Though this new approach may sound a bit challenging for students, it also has the potential to change their habits. It encourages students to be more creative, improving their critical and analytical thinking skills, mental growth, creativity, innovation, communication, emotional intelligence, and problem-solving skills. These soft skills are what the world of business increasingly demanding from the 21st-century graduates (Bailly & Lene, 2013; Borghans, Weel & Weinberg, 2014; Dean & East 2019).

These results also draw attention to the need for teachers to regularly update their skills to enable them to innovate their practice and adapt to the rapid changes inherent in the 21st century (Borghans, Weel & Weinberg, 2014; Dean & East 2019). This is even more crucial in the current scenario, where the COVID-19 pandemic has prompted teachers to adapt very fast, especially in countries where they do not always have the pedagogical and technical skills to integrate digital tools into learning (Rapanta et al., 2020).

From the students' perspective, using social networking tools such as Instagram and Facebook can have a positive effect on the learning process (Lin & Cantoni 2018). Besides, some authors conclude that there is an indication of effective learning on the use of social media and technologies, as well as acceptance and adaptation of the digital technologies in tourism education institutions (Chiao et al., 2018, p.29; Schaffer 2017; Patiar et al., 2017; Schott 2017). As Liburd and Christensen (2013) stated that social media also can be used as part of online learning and teaching in tourism education since it can provide in-depth learning and collaboration among students and teachers with the strength of inter-activeness, joint creation of content, and critical thinking (Qui, Li & Li, 2020). In this context, Anadolu University emphasises the significance of social media platforms in communicating with graduates by pointing out that “the share of social media should be increased in eliminating the communication problem with graduating students” (Kuzu, 2019)

Furthermore, virtual reality such as the Second Life environment or a targeted tourism platform for cultural tourism or the InstaVR platform help to close the gap between theory and practice by engaging in collaborative and creative teamwork where critical thinking, problem-solving and knowledge creation for decision making play a crucial role in internships, part-time or full-time jobs (Patiar et al., 2017, p.136). Moreover, learning strategies supported by game-based and virtual reality can minimise emotional impediment for communication and increase active engagement (Enticknap-Seppänen, 2017). Finally, the authenticity of technology-based learning environments also seems to encourage improving professional identity in tourism. For instance, digital technology can expand students' professional consciousness and competence, as well as their firmness in professional opportunities, as they are inclined to be more ambitious and responsive in future professional environments (Enticknap-Seppänen, 2017).

Virtual reality has also been adopted in tourism education and training. In a study, Huang, Backman, Chang et al., (2013) created an educational platform for real-world simulation, social interaction and collaborative learning supported by Second life. It combines virtual world into tourism education (Chiao et al., 2018). The results of Deale

(2013) also concluded that Second Life enabled students to participate effectively in the learning process. The classrooms of the future will have mobile furniture, transparent and reconfigurable walls, ample writing spaces, versatile technologies and innovative designs (Qui, Li & Li, 2020).

Another limitation experienced in this process is the impact of the differences between students' digital literacy skills on distance learning processes. This deepens the existing inequalities. In the international literature, there are several studies showing that the differences in access to technological opportunities and digital literacy skills of students at various education levels, including higher education, affect their academic achievement (Vigdor and Ladd, 2010; Roche, 2017; Robinson, Wiborg & Schulz, 2018). In Turkey, this digital divide among students and the differences of their learning processes are also observed and within the impact of COVID-19, this gap is becoming more and more common (Arik, 2020; Salman, 2020). Regarding the equal opportunity, Eren (2020) similarly drew attention to the right to freeze or postpone enrollment granted to students by the Council of Higher Education in that process, and emphasized that this decision should not be implemented in a way to increase inequality in access to education. In this context, while planning the distance education and technology integration, it is necessary to take into account the differences of students in accessing and using technological tools and to activate much stronger support mechanisms for disadvantaged student groups. Otherwise, it should be kept in mind that a rapid technology integration process has the potential to further reinforce the reflection of current social inequalities on educational outcomes (Warschauer, Knobel & Stone, 2004; Krumsvik, 2008). To ensure continuity of education despite the curfew, universities have benefited from technology to provide online teaching and learning experiences instead of face-to-face lectures. However, many colleges and universities have struggled to find new ways to deliver instruction and assignments due to lack of experience and time to do so.

Exams have also been affected, disrupting student learning paths and their real-time progress. In addition to the transactional learning background, these students are also missing out on other opportunities of international mobility, interacting with foreign labour markets and networking. A study on EU students studying in the UK revealed that the main reason to study abroad was to broaden their horizons, experience other cultures, improve their probability doing an internship in the labour market and improve their English language skills (West, 2000, p.19). Similarly, the opportunity to live abroad, learn and improve a foreign language and meet new people are among the three main reasons given by students participating in the EU-ERASMUS programme (European Commission, 2014, p.20)

Another limitation affected by the decline in international mobility is undoubtedly related to the international students. A survey conducted by Studyportals on university students who wanted to continue their education abroad during Covid-19 process. %36 of the respondents out of 849 indicated that they had changed their plans to study abroad because of the pandemic. In response to the question of alternative options being considered by students, postponing their overseas plans to the next year and enrolling in an online program are among the most preferred options. However, 21% of the participants would like to continue their education in their home country instead of going abroad. 11% of the students were still thinking of studying abroad (Studyportals, 2020, as cited in Çalıkoğlu & Gümüş 2020). All these findings show that tourism education has progressed vigorously and, over the past decade, academic and professional consideration has focused on digital innovations emerging in this swiftly evolving high-tech society (Lugosi & Jameson, 2017; Tavakoli & Wijesinghe, 2019). Regarding skills development, deficiencies

in online training and assessment of higher practical skills remain as challenges and the in-depth development of general and practical skills is not yet fully addressed in online learning environments (Xiao et al., 2018, p. 1).

### **Limitations and Future Research**

Since the final corpus is limited, it has constrained the analysis and conclusions. Although a framework and key concepts have been established, the review cannot provide a complete picture of the current situation in tourism education. Nevertheless, the analysis contributes significantly to the recognition of the importance of digital transformation in tourism education. Therefore, future reviews should consider expanding the research to other languages, as this should produce more results, opening up new possibilities for categorisation and data analysis.

### **Conclusion**

The digital revolution has become an indispensable mechanism which paradoxically brings both challenges and advantages for higher education institutions, as well as for all other organizations and socio-economic systems. Thus, this must be placed at the centre of corporate strategies. We are witnessing a time when digital and remote education in higher education stands out, and the country's ability to offer online courses is becoming more important at various levels. This new digital environment seems to last a long time. It has been experienced that working at home, self-isolation and remote communication is quite challenging during this period. Therefore, this process needs to be managed in an effort by being aware of the fact that administrators need to follow these challenges carefully and pay maximum attention to the values that motivate students and instructors socially, emotionally and spiritually (Saraç, 2020).

Several important conclusions emerge from this study. In tourism education, digital media offer many opportunities to enrich the traditional learning experience and to develop transversal skills relevant to the tourism and hospitality professional. On the other hand, teachers seem to fear losing control over students and their learning if they develop too much innovation in digital management. It is believed that this fear of losing control as a teacher of digital media is common to all subjects and prevents the necessary adaptation of the role of teacher to tutor, guide and student (Lin & Cantoni, 2018; Schaffer, 2017).

The findings show how technology can be used to improve service delivery and support flexible student participation. Several technology-supported teaching modes and the various learning platforms available and they do offer not only a more individualized choice of options for students but also provide the possibility of broader access to tourism education for a diverse and non-traditional audience. Despite the reluctance of teachers, who are often under tremendous pressure to use technology-based learning methods and contexts, the studies examined here show that blended learning solutions can offer the most significant benefits for students and future professionals. However, their application requires the development of new knowledge processes, which depends on the will of staff and the ability of institutions to invest in resources, which is not always feasible as competition for resources.

It is understandable that there are some limitations and problems in the planning and implementation process as the current situation is an emergency distance education experience. Short and long-term plans should be set forth by evaluating these shortcomings together with the main findings in the distance education literature, which has a long history. Thus, it will be possible to respond to digital efforts and diversifying student needs, and to be prepared for similar crises that are likely to happen in the future. As Emil (2020) underlines, certainly, that a more

comprehensive and participatory planning, qualified information and appropriate course content creation activities will be needed for distance learning activities in the future. Considering that the technological infrastructure invested so far can be used both within the scope of different distance learning activities and to support face-to-face education in the future, support mechanisms should be established to help instructors develop themselves in educational technology and distance education pedagogy.

Taking into consideration the uncertainties during the COVID-19 process and the difficulties in obtaining visas, it is expected that students' interest in popular western countries will decrease for a while and turn to alternative options (Ziguras, 2020, as cited in Çalikoğlu & Gümüş, 2020). Many students may not want to go overseas, paying very high fees amid the current uncertainties. In such a case, Turkey has started to become a regional centre in terms of internationalization recently. In particular, relatively low fees, proximity to Asia, Africa and the Middle East and the easy procedure in the visa application process for international students which can turn into an advantage for the current process of Turkey. In this context, with the decisions announced by the Council of Higher Education (2020) on May 30, 2020, the facilities provided for the enrolment of international students and the opportunities for them to continue their education in their own countries for a certain period are quite positive. However, medium and long term policies and strategies in the international arena are needed in order to join the list ranking the top countries to study abroad (Çalikoğlu & Gümüş, 2020). In addition to the steps towards the general improvement of teaching and learning activities carried out in higher education institutions, making the necessary structural, environmental and administrative arrangements, will contribute to this internationalization process. It would be beneficial to implement policies aimed at recruiting well-equipped academics and increasing the number of tourism programs that teach English online.

Online education can also provide opportunities for Turkish universities to open their doors to the best international academics without having to be physically present at the university. Universities could benefit from the knowledge and experience of many well-known academics, who could teach the students, thus enabling them to learn what is happening beyond our borders. There are lessons to be learned to improve institutional resilience in higher education. Real change often happens in deep crisis. Although this crisis has deeply destructive implications, even for education, it has no predetermined outcomes. It will be the nature of our collective and systemic responses to these disruptions that will determine how they affect us (Burquel & Bush, 2020).

Digital transformation has become one of the top priorities for higher education institutions to address several challenges caused by rapid transformation in the tourism sector. This transformation is apparent in the use of digital technologies in business management models, curriculum models, information and learning assessment/analysis programmes, cost (finance), and success measurement systems as part of university management (Mehaffy, 2012). Academics should acquire new merits, such as being able to use technology creatively in order to adapt the educational standards and skills of the 21st century. They need to redesign their lectures with project-oriented teaching methods and with differentiated educational programmes. They need to apply new and modern strategies for assessing student performance. Furthermore, they need to adopt a life-long learning philosophy (Kuzu, 2019).

The digital transformation in higher education does not merely refer to a technological transformation. It also aims to broaden this narrow sense, determining in advance the needs and behaviours of stakeholders and provide adequate education, research and social services in line with the demands of users/beneficiaries who benefit from

services in an evolving competitive environment (Seres, Pavlicevic & Tumbas, 2018). Furthermore, many opportunities can be created for educational and professional institutions to work with industry cooperatively to develop new and digital education platforms, which must be directly responsive to the needs of the sector in order to meet the basic requirements of both employers and employees.

There are boundless possibilities to develop specific or innovative conceptual lectures according to existing skills gaps and today student's desire for new knowledge (Brownell & Swaner, 2010; Dodge & Kendall, 2004; Kassens-Noor, 2012; Patiar et al., 2017; Lugosi & Jameson 2017; Balula et al., 2019). Therefore, educational institutions need to benefit from these business opportunities to develop online education platforms and provide a pathway for competence assessment and recognition. In the future, students can graduate with a formal qualification that is accepted by the employer and counts towards formal examinations. Once the required credits have been completed, institutions work with vocational and higher education providers to certify that employees can continue their education without leaving their jobs or homes. The tourism industry also needs to adopt new MOOC technologies and concepts to explore and expand the possibilities of digital tools and to drive this new digital revolution in teaching and learning.

The promotion of the internationalisation of online tourism education is underway. While COVID-19 is spreading all over the world, the fight against this pandemic is no longer the responsibility of one or more countries. This is a common challenge for all countries such as climate change, refugee crisis or terrorism and we must unite and cope with this situation together. The digital revolution of courses in higher education must be achieved through the diversification of platforms and the internationalisation of study programmes. During this period, online education in Turkey has become more mature and has accumulated wealth experience and impact, which can be even a further point of reference for other countries if applied properly. This study is a comprehensive contribution to the current debate on the need to rethink tourism education, taking into account the demand not only of students but also of teachers.

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