Towards a Green and Digital Transition for European Tourism

The European Commission's new industrial strategy launched in 2020 looked to lay the foundations for the twin transition to a green and digital economy. Within the same year, the advent of the COVID-19 pandemic highlighted the need to accelerate the green and digital development of specific sectors of the European Union's economy. As tourism was arguably hit hardest by the pandemic, it became the first sector for which a transition pathway was developed. The European Commission's report entitled Transition Pathway for Tourism, published in 2022, described the measures needed to accelerate the twin green and digital transitions within the tourism industry. This review paper focuses on the European Commission's report and it includes an outline of the characteristics of the green and digital transitions; brief outline of the review process; the results of a literature search, undertaken to provide an academic context for the paper; a summary of the European Commission's report with a specific focus on the 'green and digital transition' (European Commission 2022a): some reflections on the green and digital transition of tourism; and a brief conclusion.

Keywords: *twin transitions, green transition, digital transition, tourism industries, Europe*

Introduction

In launching its new industrial strategy in 2020, the European Commission looked to lay the foundations to support the twin transition to a green and digital economy, and in an attempt to make industries across the European Union more competitive globally. Here the term green transition is taken to mean a shift towards economically sustainable growth and an economy that is not based on fossil fuels and the overconsumption of natural resources, while the term digital transition means the move towards integrating digital technology into all areas of an organisation. The year the industrial strategy was launched, the advent, and increasingly widespread impact, of the COVID-19 pandemic, highlighted the need to accelerate the green and digital development of specific sectors of the European Union's economy. To this end, the European Commission proposed launching transition pathways that were to be co-created with stakeholders, and as tourism was arguably the sector hit hardest by the pandemic, it became the first sector for which a transition pathway was developed. The European Commission's (2022a) report entitled *'Transition Pathway for Tourism'* looks to describe the measures needed to accelerate the twin green and digital transitions within the tourism

industry and to provide guidance for its stakeholders. This review paper offers a review of, and a commentary on, the European Commission's report. More specifically, the paper includes an outline of the characteristics of the green and digital transition; the results of a literature search, undertaken to provide an academic context for the paper; a brief outline of the review process; a summary of the European Commission's Transition for Tourism report with a specific focus on the *'green and digital transition'* (European Commission 2022a); some reflections on the green and digital transition of tourism; and a brief conclusion.

Green and Digital Transitions

The green and digital transitions, increasingly twinned together, are widely seen as the most important force in securing a viable future for people and the environment. The green transition was developed around the consensus that economic growth must urgently be decoupled from environmental harm to address both climate change and poverty. The digital transition, evolved as companies increasingly realized they could reap a range of economic benefits from the digital technologies. Rehman et al. (2023), for example, claimed that *'in an attempt to promote a sustainable future, the European Commission has set the objective to utilise digital technologies to pursue a green future through systematic transformations by introducing the concept of twin transitions which refers to an intertwined and simultaneous green and digital transition to offset companies' carbon footprint.'*

The green transition can be seen as part of the wider transition to a more sustainable future, and as such, is closely linked to sustainability, but there are important distinctions between the two terms. Essentially, the green transition means using environmentally friendly products and services, while sustainability means producing goods and services in a way that does not damage resources for future generations. Thus, while a final product may be green, its manufacturing or production process may not be sustainable at all. As social awareness of climate change and of the finite nature of the planet's natural and ecological resource base increases, so organisations may pursue several green initiatives designed to reduce their negative impact on the environment.

For Rosario and Dias (2022), *'digital transition involves the application of technologies such as Artificial Intelligence (AI), big data analytics, Internet of Things (IoT), and mobile technologies that are used to develop and implement sustainability solutions.'* However, digital transformation involves cultural as well as technological change. Henley (2020), has argued, for example, that *'the reality …is that digital transformation isn't about software or technology – it's about organizational adaptability. To keep pace with the change driven by digital transformation, organizations must be agile and adaptable, and organizational culture is crucial to the success of any digital initiative.'*

The Review Process

This paper offers a review of, and a commentary on, the Transition Pathway for Tourism. This report, published by European Commission's Directorate General for Internal Market, Industry, Entrepreneurship and SMEs in 2022, which aims to provide guidance for European tourism stakeholders, provided the principal source of information for the paper, and the stimuli for the review's reflective discussion. The report was well structured and clearly signposted and the author used this signposting to draw out, and describe, its main features. That said, in his summary, the author focussed on those features of the report that he considered central to the green and digital transition. This approach to the review process has the advantage of providing specific and first-hand insights into the European Commissions' policy thinking on the twin transition with the tourism industry, but as with any single source review, it can be criticised for its lack of methodological rigour, researcher subjectivity, and external validity. Nevertheless, the author believes that his approach is fit for purpose in providing a review of current European Commission thinking on the challenges in achieving green and digital transitions in the tourism industry.

The paper also includes the results of a simple literature search designed to explore research undertaken on the twin transition. A search was undertaken in April 2023 via Go0gle Scholar, using the key term twin transition, via the Google Scholar, to provide an academic context for the review. In selecting research publications for this review, the aim was not to offer a comprehensive examination of the literature on the twin transition, but rather to provide a flavour of the scale and variety of this work, and here again researcher subjectivity is an issue. The issues raised in the reflective discussion reflect some of the author's longstanding concerns about both the green and the digital transitions and about the sustainability of the continuing growth of tourism, the relationship between sustainability and digitalisation, and digital responsibility.

Literature Search

There is growing interest in the twin transition in the academic literature, but no research has been published, to date, in that literature on the twin transition within the tourism industry. That said, three, partially interlinked, themes stand from the literature search, namely, how the twin transition can drive green competitive advantage, the relationship between digital transformation and sustainability, and the role of SMEs in twin transition. The aim of this literature search was offer some idea of the flavour and variety of this work, and to provide an academic context for the paper, rather than provide a comprehensive picture of research in this field.

Rehman et al. (2023) investigated whether the pursuit of the twin transition can enhance a company's green-based competitive advantage. The empirical finding suggested that the Internet of Things, green human resource management, and investment in environmental management strategies are both directly, and

indirectly, linked with a company's green competitive advantage, and that management seeking to improve such an advantage, could do so by adopting the green transition. The study claimed to make two contributions, firstly that technological innovation and green work climate perception, increase green competitive advantage, and secondly, that both green work climate perception positively strengthens the relationship between technological innovation and green competitive advantage.

Dabbous et al. (2023) looked to evaluate the effect of digitalization on entrepreneurial activity and sustainable competitiveness, and the authors claimed a number of contributions to the literature. The study measured the degree to which the overall level of eco-digitalisation contributes to sustainable competitiveness, and it extended the notion of competitiveness beyond its economic value, to include social and environmental dimensions. At the same time, their work tested the relationship between digitalisation, entrepreneurial activity and sustainable competitiveness, and it provided a better understanding of the twin transition concept. Finally, the results of the study were seen to provide several practical implications for governments and policymakers, who should look to account for the importance of new technological innovations when formulating policies aimed at increasing entrepreneurial activity and fostering sustainable competitiveness. Here there are implications for tourism businesses, particularly perhaps for SMEs, in that such businesses may not have the financial resources or the employee expertise to harness the benefits of the digital technologies.

Ortega-Gras et al. (2021) looked to examine two issues. Firstly, to analyse, at a European level, the existing policies that foster the twin transition, and secondly, to provide practical use cases and international projects, where circular economy practices are boosted through the implementation of key enabling technologies. The authors concluded with a set of recommendations designed to boost the twin transition in those sectors where digital technologies had already been introduced to a greater extent with green purposes, and to foster their implementation in less advanced sectors. These recommendations included setting clear objectives of digitalisation and circularity for those advanced sectors to help to spread the process; establishing new strategic plans to foster the twin transition in manufacturing, energy, electrical and electronic, and mobility industries; providing the necessary skills to understand and implement the transition; and supporting research and development activity on those technologies that are already accelerating the circular transition. As such, the European Commission's report provides details of one of these recommendations, namely the establishment of a strategic plan to foster the twin transition, albeit within the tourism industry.

Rosario and Dias (2022) argued that little attention had been paid to the connection between digital and transformation and sustainability, and looked to develop a systematic bibliometric literature review to demonstrate the potential contributions of the digital transition to environmental, economic and social sustainability, and thus help to fill this knowledge gap. In focusing on environmental sustainability, for example, Rosario and Dias (2022) argued that the digital transition involves the application of a range of digital technologies to implement sustainability solutions, in areas such as sustainable urban development,

sustainable production, and pollution control. In a similar vein, economic sustainability was seen to involve digital technologies driving transformation into a more sustainable circular economy, the digital sharing economy, and to establish sustainable manufacturing and infrastructure design. In the digital transition to social sustainability, the studies analysed the need for multidimensional policy perspectives to address the current digital divide. However, while digitalisation may help to achieve sustainability goals, it may also increase energy consumption and generate other environmental problems

Bianchini et al. (2023) explored the nexus between digital and green transitions in European regions in an effort to identify the impact of digital and environmental technologies on the greenhouse gas emissions originating from industrial production. Their results revealed that the beneficial effect of environmental technologies is stronger in regions with large digital technology endowments and, conversely, the detrimental effect of digital technologies is weaker in regions with large green technology endowments. The authors concluded that policy actions promoting the twin transition should take this evidence into account, in light of the potential downside of the digital transformation when not combined with the green transformation. These findings highlighted the wisdom of the European Commission in looking to combine the green and the digital transitions to develop tourism, but also suggested that success in developing tourism policies based on the twin transition may face major challenges in the more remote regions of Europe.

Almansour (2021) examined consumers' responses to the twin transition via a study of the role of e-businesses and digital marketing associated with electric vehicles. This research revealed that consumers' adoption of electric vehicles was affected by digital features, financial considerations, and environmental concerns, mainly driven by misinformation, about the adverse effects of electric vehicles on the environment. The study revealed three sets of practical and policy implications for supporting the twin transition. Firstly, that while there was an awareness that electric vehicles can help to reduce carbon dioxide emissions, consumers were reluctant to change their traditional motoring habits, and thus there was a need to raise awareness of the current climate crisis, and that digital marketing could play a key role in this process. Secondly, given that electric vehicles are only as sustainable as the power source used for charging them, it is vital that utility companies transition to 100% sustainable energy production, and thirdly, that government and manufacturers should work together to make electric vehicles more affordable.

Chen et al. (2023) looked to identify which digital technologies could be applied with which elements of lean production, to produce environmental benefits. More specifically the authors carried out a case study in three Swedish SME's and undertook a literature review to investigate the frameworks and practices of digitalised lean implementation, and the resulting environmental impact. The paper identified an exploitative innovation approach to using lean production as a bridge leading toward the twin transitions. The Internet of Things, and related connection level technologies, were identified as the most commonly applied digital technologies, in that they can be widely integrated with lean

principles through tracking, monitoring, connecting, and analysing the collected data to enhance visual management, standardization, and inventory reduction. Here benefits were seen to include, reductions in natural resource and energy consumption, and reduced transport demands.

In focusing upon Romania's SMEs, Ogrean and Herciu (2021) looked to explore both the readiness of the country's SMEs for the European Union's twin digital and sustainability transition, and how well the country's SMEs were matching up to the European Union's benchmarks. Their findings revealed that for many Romanian SMEs, targeting environmental and social sustainability was seen to be expensive and hardly worthwhile, with less than obvious short-term benefits. A lack of managerial skills and little evidence of customer demand, were seen as major barriers to increasing commitments to sustainability. At the same time, the digital performance of the country's SMEs was also well below the overall European average. Here a lack of financial resources, a shortage of digital skills and a general lack of internal interests in digitalisation were seen as barriers to change. As such, these findings might be seen to call into question the European Commission's focus on the role of SMEs in its Transition Pathway for Tourism.

Little of the published work on green and digital transition has looked to provide a theoretical framework to help to guide and structure future research or to help to locate it within business and/or social structures, but Zhang et al. (2023) used the perspective of socio-technical systems theory to examine the green empowerment of digital technology, in relation to manufacturing industry in China. More generally, Zhang et al. (2023) suggested that technical systems theory suggested that managers can play an important role in the interaction between technological and social systems, and this has implications for the role of tourism managers in developing green and digital transition policies.

Summary of European Commission's Transition Pathway for Tourism

The Transition Pathway for Tourism report opened with an introduction which outlined the basic characteristics of the tourism industry, and the impact of the COVID-19 pandemic on the industry. The main body of the report included details of the policy and governance frameworks on transition pathways as relevant to tourism; green and digital transition; long term resilience; the role of funding and investment in enabling the transitions; and the arrangements for supporting and monitoring, the transition process. By way of a concluding annex the report proposed 27 detailed action topics.

In its introduction to the green and digital transition, the European Commission explicitly recognised that tourism's links with other industrial sectors can both contribute to, and hamper, the transition process. More specifically, a number of industrial sectors, including, the aerospace, agriculture and food, construction, cultural, digital, health, transport, and retail, were all seen to have a direct impact on the sustainable and digital transition of tourism. As such, the European Commission emphasised the need for coordination at the local, regional, national, and European Union levels.

In addressing the green transition, the European Commission argued that the competitiveness of the tourism industry depended in no small measure, on its capacity to meet the customer demand to become more sustainable. Here changing habits to produce more sustainable outcomes, was seen to cover a wide range of issues, including the consumption of locally sourced products, reductions in waste generation and water use, and changes in travel modes. A range of strategies, across a number of sectors, were seen to be essential to meet the demand for more sustainable tourism. Passenger transport companies would need to reduce their greenhouse gas emissions in the drive to become carbon neutral by 2050: cities and regions would need to develop sustainable mobility for climate neutral cities; buildings would have to become more energy and resource efficient; the tourism and hospitality sectors should work towards a more circular business model; and customers should be provided with more information about the environmental footprint of their proposed destinations.

Turning to the digital transition, the European Commission suggested that the digitisation of the economy and society, and the increased scope for data collection and services, would provide important opportunities to transform tourism services. More specifically, the argument is that making better and innovative use of data will be a key factor in boosting competitiveness and innovation in tourism services. The hope is that this will improve data access for smaller businesses, and this will in turn, allow such businesses to anticipate customer demand, and to analyse customer profiles and tourism trends more effectively, and ultimately to provide enhanced customer experiences.

The European Commission called for the creation of public-private partnerships and funding arrangements, which could be important in facilitating new types of data sharing, which the European Commission argued could have a number of benefits including supporting better decision making, enhancing the competitiveness and resilience of destinations, preparing future research proposals for funding to accommodate circular tourism projects. At the same time, the European Commission suggested that this would require the creation of data sharing practices and agreement models that comply with the necessary privacy rules and respect the legitimate commercial interests of each partner. More generally, it was argued that the digital transition should also help to make information on the sustainable tourism offer within the European Union more visible and known online.

A number of other issues were also presented under the banner of the green and digital transition, including, the role of small and medium sized enterprises (SMEs), research, innovation and technology, measuring and reducing both the environmental footprint, and barriers to taking up new solutions. In focusing upon SMEs, for example, the European commission argued that local communities could become key players in the transition towards sustainable tourism through social economy approaches, such as community co- operatives, in which local actors in tourism supply chains are involved in the promotion of destinations, and the co-design and governance of online booking systems.

In focusing on barriers to taking up new solutions to promote the sustainable and digital transition, the low level of digital skills amongst SMEs was seen as a

specific barrier to the adoption of new digital solutions. Here, such skills were seen to be important in marketing and also for developing innovative and improved services to meet changing tourism demands, and improving the efficiency and sustainability of SMEs. Looking to the future, the European Commission emphasised the need to develop new digital technologies such as virtual reality, big data, and blockchain, to be able to respond effectively to changing customer expectations. However, while the implication from the European Commission was that harnessing these new digital technologies could bring a wide variety of benefits for the tourism industry, there was little information on how these benefits would be realised.

The 27 action topics cover a wide range of issues, for example, covering sustainable mobility, the circularity of tourism services, data driven tourism services, and support for digitalisation of tourism for both SMEs and destinations. While it is not feasible to present all 27 topics in this paper, two illustrative examples serve to provide a picture of the action themselves, the actors involved and the expected outputs. Firstly, in addressing regulatory support for multimodal travelling, the principal actors were seen to be national, regional and local authorities and the tourism industry, while the expected outputs were increased opportunities for visitors to make door-to-door travel arrangements for bout urban and rural destinations. In a similar vein, in addressing the circularity of tourism services, for example, developing the use of locally supplied ingredients and increasing water efficiency, national, regional and local authorities, tourists, and hospitality organisations were seen to be the principal actors, and the expected output was halving the amount of non-recycled waste by 2030.

Reflective Discussion

The European Commission's Transition Pathway for Tourism report offers a wide-ranging prescription for the green and digital transition of Europe's tourism industry. However, three wider issues, namely the sustainability challenges to the growth idiom in tourism, the complex relationship between digitalisation and sustainability, and the role of SME's in the drive to the twin transition in the tourism industry, merit some reflective discussion.

Firstly, tourism is seen a major engine of economic growth. The United Nations World Tourism Organisation (2022), for example, reported that *'international tourism growth continues to outpace the global economy'*, and Julia Simpson, the President of the World Travel and Tourism Council (2022), recently claimed *'despite the difficulties the sector has been facing, our projections point to a strong decade of growth.'* The Travel and Tourism Council (2021) clearly see the continuing growth in tourism as not only having an important role to play in driving economic growth, but also as an accelerator of social progress, and an enabler of community enrichment. So seen, tourism is cast as making a positive contribution to sustainable development, but it also brings a wide range of major environmental and social problems, including the depletion of a wide range of finite natural resources, pollution, the destruction of traditional ways of life, and

problems with tourist-host relationships. Ultimately, this dichotomy raises *'the growth paradox'*, namely *'can tourism ever be sustainable?'* (World Economic Forum 2017).

The European Commissions' Transition Pathway for Tourism has a commitment to sustainable growth, but it offers no definition of the term. As such the European Commission might be seen to reflect the position put forward by Torkington et al. (2020) that in many European national tourism policy documents, the term *'sustainable' is appropriated to suggest continued growth, rather than reflecting the finite limits of ecological and societal sustainability.'* Further, Torkington et al. (2020) argued while the terms growth and sustainability are often seen compatible by governments and policy makers, whereas they believe them to be incompatible. While the European Commission's conception of sustainable growth might be seen to be consistent with the traditional economic view that the term is used to refer to realistically achievable growth that the tourism economy can maintain, there is no detailed evidence to suggest that it refers to an approach to growth that can be achieved without generating the environmental and social problems referred to above, or by dramatically reducing such problems.

In looking to address the growth paradox mentioned above, the World Economic Forum (2017) emphasised that *'truly innovative thinking is needed from destination authorities and business leaders working together to determine how to manage growing visitor numbers, address changing traveller expectations and shape and improve both visitor and host experiences.'* More specifically, in illustrating its focus on innovative thinking, the World Economic Forum (2017) suggested that there were major opportunities for businesses, visitors, and host communities, to derive greater benefit from tourism, and that many problems could be addressed, for example, through increasing adoption of the principles of the circular economy, enhanced economic, social and environmental impact measurement, and the introduction of the sharing economy. Here the argument is that such measures, will help to support science-based decision making, help to mitigate tourism's negative effects, and reduce the commodification of the beautiful and historic places on which the tourism industry depends.

While it remains to be seen if such an approach can deliver truly sustainable growth that respects finite environmental boundaries and social communities, more radical, approaches can also be identified. Fletcher et al. (2022), for example, recognised both the numerous problems associated with conventional tourism development and that calls for sustainable tourism development were couched within the traditional growth idiom, but argued that growth itself was the *'fundamental problem that needs to be addressed in the discussion of sustainability in tourism.'* Further, Fletcher et al. (2022) suggested that continuing growth was intrinsic to capitalist development, and that an alternative focus should be on post-capitalist practices which looked to socialise the tourism industry. In looking to illustrate such an approach, Fletcher et al. (2022) offered four empirical examples drawn from Barcelona, Sao Paulo, Buenos Aires, and BerkelEnschot in Holland. However, it seems very unlikely at the present time, that the tourism industry will have any sort of appetite for such an approach.

Secondly, there are issues in and around the relationship between sustainability and digitalisation. Initially, Lenhe and Dethier (2020) suggested that while the European Commission has consistently placed the twin green and digital agendas side by side, it has '*not yet properly connecting them to reap the synergies and to manage the risks they present to each other.'* Here, Lehne and Dethier (2020) argued that there were *'two key issues with referring to green and digital as twin transitions',* namely that *'it makes them seem both too similar and too separate.'* On the one hand, it was argued that while the green and the digital transitions were happening in parallel and that both would have massive consequences for the future of work, and for existing political systems, they are fundamentally different. The green transition was seen to be a necessary response to the worsening climate crisis, while the digital transition is about the European Union not falling further behind its peers in harnessing the benefits of the digital technologies. On the other hand, Lenhe and Dethier (2020) argued that the two *'are more interlinked than the twin analogy suggests',* not least in the links between the demands the digital technologies make on the environment are not fully explored, and that *'a changing climate could both accelerate and disrupt digital trends at different levels.'*

The European Commission (2022b) looked to address some of these concerns in presenting a forward-looking strategic reflection on the interactions between the green and digital transitions, and argued that both were top of the European Union's political agenda. The European Commission (2022b) argued that the digital technologies could play a key role in achieving climate neutrality, in reducing pollution, in enhancing biodiversity, in improving resource efficiency, in facilitating the design of more sustainable processes, products and buildings, and in facilitating the introduction of more circular business models. At the same time, the European Commission claimed that the green transition could transform the digital sector, in that renewable sources of energy, including solar and wind energy, and nuclear energy and nuclear fusion technology, will all be important in meeting energy demands for data centres and cloud infrastructures.

However, the increasing adoption of digital technologies to tackle environmental problems might also be seen to be the antithesis of sustainability, and more specifically, of sustainable consumption. Here, the European Commission recognised that unless the digital technologies become more energy efficient, they will not only lead to an increase in energy use, and in greenhouse gas emissions, and that tensions will also arise in relation to environmental waste and the environmental footprint of the digital technologies. At the same time, these technologies increasingly enable consumers to buy a wide range of goods and services instantly, regardless of the consumers' location or the time of day, at the touch of a button or a key, further contributing to unsustainable consumption. More generally, ICTworks (2020), an online community for international sustainable development professionals, argued that the digital technology industry is one of the least sustainable and most environmentally damaging industrial sectors, and claimed that the digital technologies, and their use, *'have very significant impact both on the environment in general and also on the constituents of the Earth's climate.'*

Thirdly, over 99% of the businesses in the tourism sector in the European Union are SMEs (European Court of Auditors 2021) and it is not surprising that the European Commission's Transition Pathway for Tourism envisaged an important role for these businesses. However, while many large hotel and hospitality companies in the tourism industry have well established and wider ranging sustainability programmes, SMEs are much less likely to have such programmes, and where SMEs do have an eye to sustainability, it often focusses on individual issues, such as the local sourcing of produce, and reductions in the provision of single use plastics for customers' toiletries, rather than a full range of environmental and social agendas. SME's also face a range of problems, including a lack of Information and communication technology infrastructure, especially in rural areas, a lack of digital skills, and a lack of awareness of the potential business benefits of digital transformation. More generally, it remains to be seen if SMEs have the financial resources, the skills, and the inclination, to grasp the twin challenge.

While the European Commission's Transition Pathway for Tourism emphasised the benefits of the digital technologies, for SMs, the digital responsibilities, increasingly captured in the concept of corporate digital responsibility, of tourism businesses adopting these technologies, was not explicitly recognised. Corporate digital responsibility, simply defined as *'a set of practices and behaviours that help an organisation use data and digital technologies in ways that are perceived as socially, economically, and environmentally responsible'* (Corporate Digital Responsibility 2022), embraces people, the economy and the planet. Within the tourism industry, SME's digital responsibilities to people, include their customers, their employees and society at large. Here, for example, customers may transmit personal and financial information on their mobile phones and/or via the internet, and the privacy and security of such information will be paramount to such customers. Digital responsibilities to the economy can be seen to include the SMEs themselves, their shareholders, and their suppliers, while the responsibilities of the SMEs to the planet embrace a range of environmental issues, notably climate change, natural resource depletion, energy use, and waste management. Here again, it remains to be seen how well SMEs will recognise and address their responsibilities.

Conclusion

The European Commission's Transition Pathway for Tourism report offers a variety of measures to accelerate sustainable and digital transition within the industry and it offers guidance, and a series of action points, for stakeholders, but the report has relatively little to say on how SMEs will rise to the challenge of the twin transition, on how barriers to its adoption might be overcome within the tourism industry, or on how tourism companies that adopt digital technologies might go about discharging the responsibilities associated with these technologies. More generally the author of this paper has a healthy scepticism not only about how widely the tourism industry within Europe will adopt these measures and

follow the European Commission's guidance, but also about how the efficacy of a single Europe-wide policy solution for the twin transition, will play out in practice. However, some wider issues, namely, the sustainability challenges to the growth idiom in tourism, the complex relationship between sustainability and digitalisation, and the role of SME's in the drive to sustainability and digitalisation in the tourism industry, pose challenges for the industry.

Nevertheless, this paper provides a review of the European Commission's recent thinking on the twin transition within the European tourism industry. While this is a review, not an empirically based research, paper, and as such it can, at best, only make a minor contribution to helping to fill the gap in the academic literature on the twin transition in tourism identified earlier, it may provide a platform, future research enquiries. Such research might focus, for example, on progress on the twin transition in individual European countries, and perhaps more specifically on the twin transition in rural areas both generally, and within countries. Research might also profitably explore the socio-cultural and employment impacts of the twin transition, and how barriers to transition may be overcome. The role of some of the large companies in the tourism industry in driving the twin transition would also merit research attention, as would some survey and case study research on the role SMEs are playing in the twin transition process. Research into how both large companies and SMEs within the tourism industry are addressing their corporate digital responsibilities could also add to the body of work in this emerging field.

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