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Influence of Digital Technologies on Transition to a Circular Economy in Tourism: Values and Barriers

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Abstract: Circular economy (CE) designed as a socio-economic system where resources are maintained for a long term with minimal leakage and waste, making them circular through closing, narrowing and slowing resource loops. In this system, we should not only consider materials and technical resources but also human capital. Creating circular business strategies is one of the paradigms of sustainable development and has potential to achieve many of the SDGs. Digital technologies (DT) enable this movement to CE including in the service sectors as a tourism. The aim of this paper is to identify how DT supports the transition to CE in tourism (CET). In this study, we conducted semi-structured interviews with 12 experts from tourism, CE and DT fields. Findings determined main values created by DT in CET, with special attention to values for human development, and existing barriers to utilize whole potential of DT for CET. This study contributes to conceptualization of knowledge about the role of digitalization in transition to CE in tourism and outlines future research areas.

Structured abstract: Purpose: to show how DT aids in the transformation of tourism to CE business model, by examine values created by DT for CE in tourism and human development and determine barriers for DT in transition to CE in tourism.

Design/methodology/approach: In this study, we applied semi-structured interviews with experts. To address study subjects, we employed a non-random judgment sampling strategy. Twelve specialists in total participated in semi-structured interviews.

Findings: Enhancing community participation, provide educational and training resources, access to information about sustainable tourism practices – are values created by DT for social development in tourism. Findings from the study suggest that DT can provide platforms for collaboration and innovation in tourism development. This can lead to new business models, products, and services that are more sustainable, inclusive, and resilient. However, in order to utilize DT in CET more effectively required particular economic, social, legal conditions, in the other word there are barriers and challenges.

Originality: The present study reveals roles of DT for transition to CE in tourism particularly outlining human-centered approach. The exciting frameworks considering links between DT and CE in the literature mainly directed for closing, narrowing and slowing material resource flow and only few included human capital. In this study, we outlined the main DT important for transition to CE in tourism, values created by this DT for CE and human development in tourism and existing barriers for them.

Keywords: circular economy; digital technologies; social capital; circular business models; sustainable development.

JEL Classification: Q50; Q20; Z32; L830; O33; O35.

Introduction

Digital technologies (DT) are playing a more and more important role in many industries including tourism. Another trend that affects tourism is circular economy (CE), which changes the business landscape by responsible usage of resources for a long period of time, which leads to sustainable development goals (SDG) (Jones and Wynn 2019). CE coupled with DT and human centric approach is a future for our society (Schröder, Lemille, and Desmond 2020).

Concept of circular economy in tourism (CET) concentrates on a sustainable approach to travel that prioritizes local communities, the environment, and responsible tourism practices (Sørensen, Bærenholdt, Andreas, and Møller 2019). This idea stems from the principles of CE, which aims to minimize waste and promote the efficient use of resources. In CET, tourists travel to various places in a way that minimizes their impact on the environment, supports local economies, and contributes to the well-being of the local community. Circular business model (CBM) supports engagement of stakeholders and values co-creation which leads to a more inclusive society and contributes to SDGs.

CET is becoming a prevalent approach compared to the traditional linear model of tourism, which mainly concentrates on short-term economic gains and disregards the long-term effects on the environment and local communities (Rodríguez, Florido, and Jacob 2020). CET pursues a more responsible and sustainable approach to travel by promoting best practices, supporting local businesses, and encouraging environmental conservation.

The purpose of this article is to show how DT aids in the transformation of tourism to CE business model. And research objectives are determined as a following:

- Examine values created by DT for CET and human development
- Determine barriers for DT in transition to CET.

The findings give practical suggestions for application of DT to sustainable tourism practices and policy implication in this area.

1. Literature Review

In this study, we reviewed both academic and gray literature to find existing frameworks how DT can enable CET. The reviewed frameworks can be divided into three groups 1) the frameworks illustrating CE or CBM without specification of industry, 2) application of CE principles to business models in the tourism industry and 2) frameworks displaying relationships between DT and CE also general for all industries

Circular Economy

CE is a balanced socio-economic system where human and natural resources should be used as long as possible and ideally be regenerative as a natural system and benefiting all stakeholders (Einarsson and Sorin 2020). In CE, products are designed to last longer and should be repaired easily to extend their lifespan. And one of the main ideas of CE is resource efficiency, which requires adoption of closing-the-loop production where resources should be used more efficiently and waste is minimized through the use of renewable energy, recycling, redesign, repurposing or refusing (Bocken, Olivetti, Cullen, Potting, and Lifset 2017).

To transform of existing leaner business models, which performed according to principles “make-take-waste”, to circular models, requires implementing collaborative business models, to share resources, reduce waste, and create value (Ranta, Aarikka-Stenroos, and Väisänen 2021). Transition to CE requires systematic approach and institutional changes including regulation, consumption behavior, networks, even though in the level of single company principles of CE can be adopted (Manniche, Larsen, and Broegaard, 2021). The important role in the transition to circularity plays consumption patterns and customers, they also can contribute to CE through new, slow or low-consumption-oriented practices (Sørensen and Bærenholdt, 2020).

Ellen MacArthur Foundation developed one of the first frameworks of CE as a “butterfly” diagram, where the linear flows of products and materials are replaced by circular flows in two separate cycles, the biological cycle and the technical cycle (EMAF, 2015). The main criticism for this study was that it is considering only material flows (bio- and techno-spheres) in CE, restricted consideration of the role of human sphere (Schröder *et al.* 2020), while movement towards Industry 5.0 accented social-centered approach (Müller 2020). Integrative conceptual framework for a Human Development-focused Circular Economy offered by Schröder, Lemille, and Desmond, (2020) where the human sphere given a central role thereby complementing the technological-material focused CE.

One of the pioneering conceptual frameworks for guiding a sustainable, resilient and future proof transition of tourism to CE was offered by Einarsson and Sorin (2020). This framework of CE for tourism is based on the mentioned “butterfly” diagram with specifications for asset heavy and light companies within the tourism sector.

And later Sorin and Sivarajah (2021) developed a conceptual circular applicability framework for tourism. By reviewing best Circular Hotel's practices, Sgambati, Acampora, Martucci, and Lucchetti, (2021) created a framework for the implementation of Circular hotels. The reviewed frameworks of CE in tourism are considered material loops (bio and techno-spheres. However, studies of CE practices in the tourism industry are not in considerable number, and authors call for future research in this area.

Digital Technologies and Circular Economy

As one of the enablers of CE is recognized DT (Burmaoglu, Ozdemir Gungor, Kirbac, and Saritas 2022), furthermore DT considered as a critical component and accelerator (Nassanbekova and Yeshenkulova 2022). Hence, understanding the relationship between CE and digitalization is important to achieve sustainable growth.

Different DT proposed to use in CBM including technologies for data collection, data integration and data analysis (Pagoropoulos, Pigosso, and McAloone 2017). While according to the review of Chauhan, Parida and Dhir, (2022) the key role in the transition to CE is given to AI and IoT. Digital tools such as big data analytics, machine learning, and IoT sensors can be used to optimize resource management, such as predicting maintenance needs, reducing energy consumption, and managing waste more effectively (Ping 2011). Digital platforms can facilitate sharing of resources and assets, enabling better utilization of resources and reducing the need for ownership (Schulz, Hjaltadóttir, and Hild 2019). Digital tools such as 3D printing, virtual prototyping, and simulation can be used to design products that are more durable, repairable, and recyclable (Centobelli, Cerchione, Chiaroni, Del Vecchio, and Urbinati 2020).

Table 1. DT and CE in tourism: Existing frameworks and identified gaps

Authors	Main results relating to the current study)	Identified Gaps
EMAF, (2015)	The relationship between the technical and natural resource flows is depicted in the CE outline's "butterfly" diagram.	The limited role of human sphere to only being either consumers or users.
Schröder, Lemille and Desmond, (2020)	Developed integrative conceptual framework for a Human Development-focused Circular Economy based on observation of academic and grey literature	Exploratory research needs future application and empirical testing of the framework. Accented on human loop in CE. The framework for all industries as a general, not specified the role of DT
Einarsson and Sorin, (2020)	Developed conceptual framework of circular economy in tourism and travel	General framework without specification the role of DT. White paper, requires future verification.
Sorin and Sivarajah, (2021)	Developed conceptual circular applicability framework for tourism - empirical evidence from Scandinavian hotel operators.	The framework for CE in tourism is considered mainly a material loop. The research approach limits the exploration of the social capital regeneration potency in hotels.
Sgambati *et al.* (2021)	The Reviewed the case studies showing best practices of Circular Hotels and developed framework for the Implementation of Circular Hotels	The paper presents just the results of a preliminary study on circular practices implementation in hotels. Further efforts dedicated to fill in the framework. More attention paid to the loops in bio- and techno-spheres, not considered loop in human sphere
Ranta, Aarikka-Stenroos and Väisänen, (2021)	Synthesized framework on how digital technologies catalyse business model innovation for CE through value creation and capture and developed a model of four key types of business model innovation for circular economy catalysed by digital technologies.—Multiple case study.	Study mainly focused on industrial businesses, limited applicability for the service sector as tourism, in addition the study has not considered the human sphere in CE.
Hedberg and Šipka, (2020)	Explored the linkages between digitisation and the circular economy, the opportunities created by data and digitally-enabled solutions, and the challenges associated with harnessing their full potential for the transition to a circular economy. - Report	Mainly focused on industrial sectors of Europe and without specification of human capital.

Source: Completed by authors

Digital tools such as blockchain can enable greater transparency and traceability in supply chains, facilitating more efficient and sustainable use of resources (Chauhan *et al.* 2022). Digital technologies can support the development of circular business models, such as product-as-a-service, in addition product-service systems (PSS) recognized as innovation to achieve CE (Chauhan *et al.* 2022).

In Table 1, we summarized existing frameworks relating to the studied topic and identified gaps in the chosen studies, particularly, integrative framework on the role of DT in transition to CE in tourism focused on human capital was identified as a gap uncovered by the studies.

The studies studying link between DT and CE considered also values created by DT in CBM (Ranta, Aarikka-Stenroos and Väisänen, 2021; Neligan *et al.* 2022) (Uçar *et al.* 2020)(Chauhan *et al.* 2022), but mostly focused in industrial business and have not considered the specifications of DT playing in CE of service sector such as tourism. Values created, captured and delivered by DT in CBM aimed at narrowing, slowing and closing resuorce loops (Ranta *et al.* 2021).

By the reviewing the values created by DT for CE, we grouped them as a following:

Resouce efficiency: DT can help optimize resource use, reduce waste, and enable more efficient production and consumption processes including energy consuption.

Monitoring and tracing: DT such as blockchain can increase transparency and traceability in supply chains, monitoring product location availability and control of resource flows.

Enhanced collaboration: digital platforms can facilitate collaboration and knowledge sharing between different stakeholders, enabling better coordination and integration across the value chain.

New business opportunities: DT can support the development of new business models, such as product-as-a-service and sharing platforms, that can create new revenue streams and value propositions.

Even DT considered by most of the studies as a supporter and enabler of CE, there are different barriers and challenges, apart from the fact that movement to CE has their own difficulties. Within the studies investigating link between DT and CE we searched the barriers and challenges in application of DT in transition to CE. The barriers can vary widely from cost-associated to psychological issues (Alcayaga, Wiener, and Hansen, 2019; Chauhan *et al.* 2022), however, most of them surrounding data management and use of digital solutions (Hedberg and Šipka, 2020).

To address the call for research in CET and identified research gap regarding relation between DT and CET we conducted exploratory research with Delphy method.

2. Methodology

In this study, we applied semi-structured interviews with experts. To address study subjects, we employed a non-random judgment sampling strategy. We applied the following selection criteria: (1) background—experts needed to be either knowledgeable in DT and active in tourism or in CE; (2) policymakers, scholars, experts linked to CE, DT and tourism advising, or being advised due to their wide expertise on a few subjects across various sectors. We identified and contacted with 18 experts and 12 of them agreed to take part. Twelve specialists in total participated in semi-structured interviews.

In order for the respondents to follow a standardized procedure, we used semi-structured questions. Questions included but not limited the following statements: How and which particular DT contributes to movement to CET? What kind of value creates DT for CET? What kind of value can create DT for human development in CET? What are barriers to using DT for CE in tourism? During the interviews, we also stated findings from the literature and asked about their comments and applicability to tourism industry.

Everyone received an email from the interviewers prior to the interviews outlining the goals of the study and inquiring if they would agree to participate in an interview. In this research, three different categories of specialists were asked for semi-structured conversations. First, we spoke with experts on CE and DT who were involved with or related to various economic sectors (6 respondents), then with experts from the tourist sector and CE, including policymakers (4 interviewees), and finally with experts in DT who were involved with the tourism sector (2 interviewees) The conversations were recorded throughout with the participants' permission. The interviews were conducted in online (video-conference through Zoom and Teams) and offline formats, duration of the interview was an average between 40-60 minutes.

Then, after transcribing the interviews, we coded and analyzed the data manually.

3. Results and Discussion

Most of interviewees supported the statement that DT enablers of CE and CET. As main promising technologies in the movement to sustainability and CE models were mentioned mostly: Internet of Things (IoT), Big Data and Analytics, Blockchain and Artificial Intelligence (AI).

By the participants were mentioned and other DT such as: sharing platforms, mobile applications, finTECH and Virtual reality (VR) and Augmented reality (AR) technologies. Which is interesting, attitudes of the experts towards VR are contradicting. One of policymakers in tourism industry expressed opinion that:

"VR may pose a threat to the development of tourism, as it can potentially reduce the tourism flows .."

While by the other expert VR were considered as technology, which contribute to makes it possible to visit sensitive and hard-to-reach destinations with less environmental impact.

From the interviews, we can highlight the following values created by DT for CET:

Enhance transparency and traceability, for example, blockchain technology allows the tracking of materials, products, and transactions. This can help verify sustainability claims, enable peer-to-peer transactions, and facilitate the sharing economy within the tourism industry.

Optimizing resource allocation and reducing waste in tourism operations: for example, smart sensors can monitor water and energy consumption in hotels, enabling more efficient resource management. Big Data also help identify patterns and trends to support decision-making in CE.

Customer centricity and involvement - analysing large volumes of data collected from various sources, including social media, booking platforms, and customer feedback, can provide valuable insights for designing sustainable tourism experiences and AI based technologies help to offer customized options and improving resource efficiency.

Promoting sustainability - digital platforms facilitating peer-to-peer sharing of resources, such as accommodation, transportation, and experiences, play a crucial role in promoting the circular economy in tourism. In addition, DT can empower tourists to make sustainable choices by providing information about eco-friendly accommodations, local circular economy initiatives, responsible tour operators, and sustainable transportation options.

However, one of the values created by DT mentioned in the literature – cost reduction, caused doubt by some the participants in our study. The expert mentioned:

"high implementation and maintaining cost of DT, particularly for SMEs in tourism are not always affordable. I would say it is one of the main barriers for DT."

Big Data and Analytics: Big data analytics can also help identify patterns and trends to support decision-making in the circular economy.

The experts also highlighted as a possible value created by DT for CET – social inclusion and equality – in CET it helps to human resource development. The growth of ICT and digital platform creates opportunity for local society to participate in the development of tourism in their destinations. Particularly, rural tourism development requires high involvement of local society and in the same time creates different opportunity for them. One of the expert who is policymaker in tourism industry told the success story from his experience how local people from rural area run business in tourism industry by opening tulip farm for Instagram photo sessions. In this case, social media (digigital marketing) was used for promotion and increasing role of digital presents (beautiful photos in Instagram) helped to create new business in tourism.

Schröder, Lemille and Desmond (2020) included to CE framework human sphere, while the frameworks describing the relationship between digital technologies and CE have not included human loop, so the current study sheds light on this topic to some extent and is exploratory in the nature. In this study, we would like to outline human-centred values created by DT for CE in tourism and asked opinion of the experts.

One of the first values created by DT for human development within the CE is - enhancing community participation. Particularly, DT can provide platforms for local communities to participate in tourism planning and development. This can promote community engagement and ownership, leading to more sustainable and inclusive tourism practices (Perez-Vega *et al.* 2021).

The experts also agreed that DT can provide educational and training resources to promote sustainable tourism practices, improve skills and knowledge, and support local entrepreneurship. This can lead to improved livelihoods and economic opportunities for local communities.

And because for creation CET the role of tourist is quite important (Sørensen and Bærenholdt 2020), DT can provide tourists with access to information about sustainable tourism practices, cultural and natural heritage,

and local communities. This can promote awareness and understanding, leading to more responsible tourist behaviours and increased appreciation of the cultural and natural diversity of tourism destinations.

Findings from the study suggest that DT can provide platforms for collaboration and innovation in tourism development. This can lead to new business models, products, and services that are more sustainable, inclusive, and resilient. This opinion shared by the respondents also as a value of DT for CE as a whole and not only for human development.

Overall, DT can help tourism operators and local communities to capture more of the economic benefits of tourism, leading to more equitable distribution of wealth and opportunities. This can also lead to improved social and environmental outcomes, contributing to human development.

However, in order to utilize DT in CET more effectively required particular economic, social, legal conditions, in the other word there are barriers and challenges. Data from this study regarding to barriers and challenges we grouped as a following:

Lack of awareness and understanding, many organizations and individuals may not fully comprehend the potential benefits and opportunities offered by DT in the context of the CE, at the same time there are skills and knowledge gaps. The participant expressed opinion:

"since the tourism sector is dominated by SMEs, there is always an acute problem of lack of competence and financial resources."

That is cause of the next barrier, cost and financial constraints. Implementing DT can require significant upfront investments and ongoing operational costs. Some organizations, particularly SMEs, may face financial constraints that make it challenging to adopt and integrate these technologies.

Next barrier for DT is infrastructure limitations, the effective use of DT often relies on robust and reliable infrastructure, such as high-speed internet connectivity and data storage capabilities. However, in some regions, especially rural areas or developing countries, the necessary infrastructure may be inadequate or unavailable. One of the interviewees was quite pessimistic regarding DT opportunities for tourism as a whole and stated:

"how we can talk about DT if in rural areas there is simply no access to high-speed Internet"

The expert also concerned data privacy and security issues; the utilization of DT involves the collection, storage, and analysis of large amounts of data. This raises concerns about data privacy, security breaches, and the misuse of sensitive information. Addressing these concerns and ensuring robust data protection measures are in place is crucial for widespread adoption. And the entrepreneurs can have fears regarding digitalization:

"they are afraid that their activities would be over regulated By whom? State, society"

Furthermore, CE requires collaboration and coordination among various stakeholders, including businesses, governments, and consumers. However, different DT and platforms may not always be compatible or standardized, making it difficult to share data and communicate effectively across the entire value chain. And there are increase interoperability and standardization challenges.

The regulatory and policy environment plays a crucial role in shaping the adoption and deployment of DT in CET. In some cases, outdated or unclear regulations can hinder innovation and create barriers to entry for new technologies. Therewith, incentives from state could push the process of moving to CE and as consequence to more sustainable development. One of examples was provided by the respondents:

"before in our country (Kazakhstan) there were tax incentives for SMEs who use renewable energy sources, nowadays these incentives eliminated, which lead to slowing the process of moving to CE…"

"if there would be ecological certification for hotels as in, which could affect their image, this could be driver for CE, accordingly to search for digital solutions in this context"

Addressing these barriers requires a multi-faceted approach involving collaboration among stakeholders, policy support, investment incentives, and capacity building initiatives. By overcoming these challenges, digital technologies can significantly enhance the transition to a circular economy by enabling increased resource efficiency, enhanced transparency, and improved decision-making processes.

Conclusions and Further Research

The present study reveals roles of DT for transition to CET particularly outlining human-centered approach. The exciting frameworks considering links between DT and CE in the literature mainly directed for closing, narrowing and slowing material resource flow and only few included human capital. In this study, we outlined the main DT important for transition to CET, values created by this DT for CET and human development and existing barriers for them.

This study contributes to conceptualization of knowledge to the resolution of sustainable development issues in tourism. By identifying gap in the literature, following future research direction recommended:

- Digitalization and CE linkage in tourism, particularly policy frames and required institutional changes and the role of customers and behavior change;
- Barriers to digitalization led CE in tourism should be identified and discussed, and way to mitigate faced challenges;
- Enablers of digitalization led CE in tourism, empirical studies assessing impact and valuable outcomes generated by DT;
- Digitalization-led business models in CT, circular strategies and cases;
- Inter-sectoral studies in CT (Accommodation, food and beverage, leisure and travel), partnership within the destination for transition to CE and creation value chain for the sector.

The present study entails some important implications for practitioners. To play a pivotal role in the transition from a traditional to a CE- based setup, managers and policymakers must develop a detailed understanding of the role of digitalization in CE adoption. Managers can refer to the analysis of the present study as they work to identify potential DT applications for boosting CE. Value co-creation framework of DT for transition to CE in tourism provides structured view of application of DT for CE in tourism. Policymakers could use the framework as a foundation for updating existing rules and regulations to boost transition to sustainable development and increase investment attractiveness and competitiveness. For business, the framework could provide bases for strategic analysis and adjustment of business models in order to improve customer experience of loyal customers and attract new. The study contributes to increase awareness among tourists and to promote more environmentally conscious behavior.

The results of this study should be generalized with caution due to sampling bias, the experts where from one country (Kazakhstan) and in further samples that are more representative should be used. In addition, empirical studies from the tourism field is desirable.

In this study, we reviewed English language papers; the authors acknowledge the likelihood that they missed some relevant studies because of these criteria. The review also excluded book chapters and reports. Therefore, future studies could include book chapters and studies in other languages and examine other academic databases.

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Credit Authorship Contribution Statement

Samalgul Nassanbekova: Writing – original draft, Data collecting (Expert Interviewing), Data analysis (Coding, Interpretation), Writing – review and editing.
Gaukhar Yeshenkulova: Methodology, Project administration, Formal analysis, Supervision, Funding acquisition.
Nurkhat Ibadildin: Conceptualization, Investigation, Supervision, Funding acquisition.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

[1] Alcayaga, A., Wiener, M. and Hansen, E. G. 2019. Towards a Framework of Smart-Circular Systems: An Integrative Literature Review. *Journal of Cleaner Production* 221: 622–34. DOI:https://doi.org/10.1016/j.jclepro.2019.02.085

[2] Bocken, N. M P, *et al.* 2017. Taking the Circularity to the Next Level: A Special Issue on the Circular Economy. *Journal of Industrial Ecology* 21 (3): 476–82. DOI: https://doi.org/https://doi.org/10.1111/jiec.12606

[3] Burmaoglu, S., Gungor, D. O., Kirbac, A. and Saritas, O. 2022. Future Research Avenues at the Nexus of Circular Economy and Digitalization. *International Journal of Productivity and Performance Management* ahead-of-p (ahead-of-print). DOI: https://doi.org/10.1108/IJPPM-01-2021-0026

[4] Centobelli, P., *et al.* 2020. Designing Business Models in Circular Economy: A Systematic Literature Review and Research Agenda. *Business Strategy and the Environment* 29 (4): 1734–49. DOI:https://doi.org/10.1002/bse.2466

[5] Chauhan, C., Parida, V. and Dhir, A. 2022. Linking Circular Economy and Digitalisation Technologies: A Systematic Literature Review of Past Achievements and Future Promises. *Technological Forecasting and Social Change* 177 (March): 121508. DOI: https://doi.org/10.1016/j.techfore.2022.121508

[6] Einarsson, S., and Sorin, F. 2020. Circular Economy in Travel and Tourism: A Conceptual Framework for a Sustainable, Resilient and Future Proof Industry Transition. *CE360 Alliance*. www.CE360-alliance.com

[7] EMAF. 2015. "Growth within: A Circular Economy Vision for a Competitive Europe." *McKinsey Center for Business and Environment*. https://www.mckinsey.com/business-functions/sustainability/our-insights/growth-within-a-circular-economy-vision-for-a-competitive-europe

[8] Hedberg, Annika, and Stefan Šipka. 2020. "The Circular Economy: Going Digital." *European Policy Centre*.

[9] Jones, P., and Wynn, M. G. 2019. The Circular Economy, Natural Capital and Resilience in Tourism and Hospitality. *International Journal of Contemporary Hospitality Management* 31 (6): 2544–63. DOI:https://doi.org/10.1108/IJCHM-05-2018-0370

[10] Manniche, J., Topsoe Larsen, K. and Brandt Broegaard, R. 2021. The Circular Economy in Tourism : Transition Perspectives for Business and Research. *Scandinavian Journal of Hospitality and Tourism* 21 (3): 247–64. DOI: https://doi.org/10.1080/15022250.2021.1921020

[11] Nassanbekova, S., and Yeshenkulova, G. 2022. Mapping Analysis of the Research Trends on Digital Technologies and Circular Economy in Tourism. *Journal of Environmental Management and Tourism* XIII (7(63)): 2048–57. DOI: https://doi.org/10.14505/jemt.v13.7(63).24

[12] Neligan, A., Baumgartner, R. J., Geissdoerfer, M. and Schöggl, J. P. 2022. Circular Disruption: Digitalisation as a Driver of Circular Economy Business Models. *Business Strategy and the Environment*, no. July 2021: 1–14. DOI: https://doi.org/10.1002/bse.3100

[13] Pagoropoulos, Aris, Daniela C.A. Pigosso, and Tim C. McAloone. 2017. "The Emergent Role of Digital Technologies in the Circular Economy: A Review." *Procedia CIRP* 64: 19–24. DOI:https://doi.org/10.1016/j.procir.2017.02.047

[14] Perez-Vega, Rodrigo, Valtteri Kaartemo, Cristiana R. Lages, Niloofar Borghei Razavi, and Jaakko Männistö. 2021. "Reshaping the Contexts of Online Customer Engagement Behavior via Artificial Intelligence: A Conceptual Framework." *Journal of Business Research* 129 (May): 902–10. DOI:https://doi.org/10.1016/j.jbusres.2020.11.002

[15] Ping, G. 2011. Information Management System with the Application to Tourism Management in the Period of Circular Economy. *Energy Procedia* 5: 1525–29. DOI:https://doi.org/https://doi.org/10.1016/j.egypro.2011.03.261

[16] Ranta, V., Aarikka-Stenroos, L. and Väisänen, J. M. 2021. Digital Technologies Catalyzing Business Model Innovation for Circular Economy—Multiple Case Study. *Resources, Conservation and Recycling* 164. DOI:https://doi.org/10.1016/j.resconrec.2020.105155

[17] Rodríguez, C., Florido, C. and Jacob, M. 2020. Circular Economy Contributions to the Tourism Sector: A Critical Literature Review. *Sustainability* 12 (11). DOI: https://doi.org/10.3390/su12114338

[18] Santos, J D, and Silva Ó L. 2019. *Digital Marketing Strategies for Tourism, Hospitality, and Airline Industries*. Advances in Marketing, Customer Relationship Management, and E-Services. IGI Global. https://books.google.kz/books?id=zq2rDwAAQBAJ

[19] Schröder, P., Lemille, A. and Desmond, P. 2020. Making the Circular Economy Work for Human Development. *Resources, Conservation and Recycling* 156: 104686. DOI:https://doi.org/10.1016/j.resconrec.2020.104686

[20] Schulz, C., Hjaltadóttir, R. E. and Hild, P. 2019. Practising Circles: Studying Institutional Change and Circular Economy Practices. *Journal of Cleaner Production* 237 (November): 117749. DOI:https://doi.org/10.1016/J.JCLEPRO.2019.117749

[21] Sgambati, M., Acampora, A., Martucci, O. and Lucchetti. M.C. 2021. The Integration of Circular Economy in the Tourism Industry: A Framework for the Implementation of Circular Hotels Martina. In *Advances in Global Services and Retail Management*, edited by C. Cobanoglu and V. Della Corte, 1–23. USF M3 Publishing. DOI: https://doi.org/10.5038/9781955833035

[22] Sørensen, F., and Bærenholdt, J. O. 2020. "Tourist Practices in the Circular Economy. *Annals of Tourism Research* 85: 103027. DOI: https://doi.org/https://doi.org/10.1016/j.annals.2020.103027

[23] Sørensen, F., Bærenholdt, J. O., Andreas, K. and Møller, G. 2019. Circular Economy Tourist Practices. *Current Issues in Tourism* 0 (0): 1–4. DOI: https://doi.org/10.1080/13683500.2019.1706456

[24] Sorin, F., and Sivarajah, U. 2021. Exploring Circular Economy in the Hospitality Industry : Empirical Evidence from Scandinavian Hotel Operators. *Scandinavian Journal of Hospitality and Tourism* 0 (0): 1–21. DOI:https://doi.org/10.1080/15022250.2021.1921021

[25] Uçar, E., Le Dain, M. A. and Joly, I. 2020. Digital Technologies in Circular Economy Transition: Evidence from Case Studies. *Procedia CIRP* 90: 133–36. DOI: https://doi.org/10.1016/j.procir.2020.01.058

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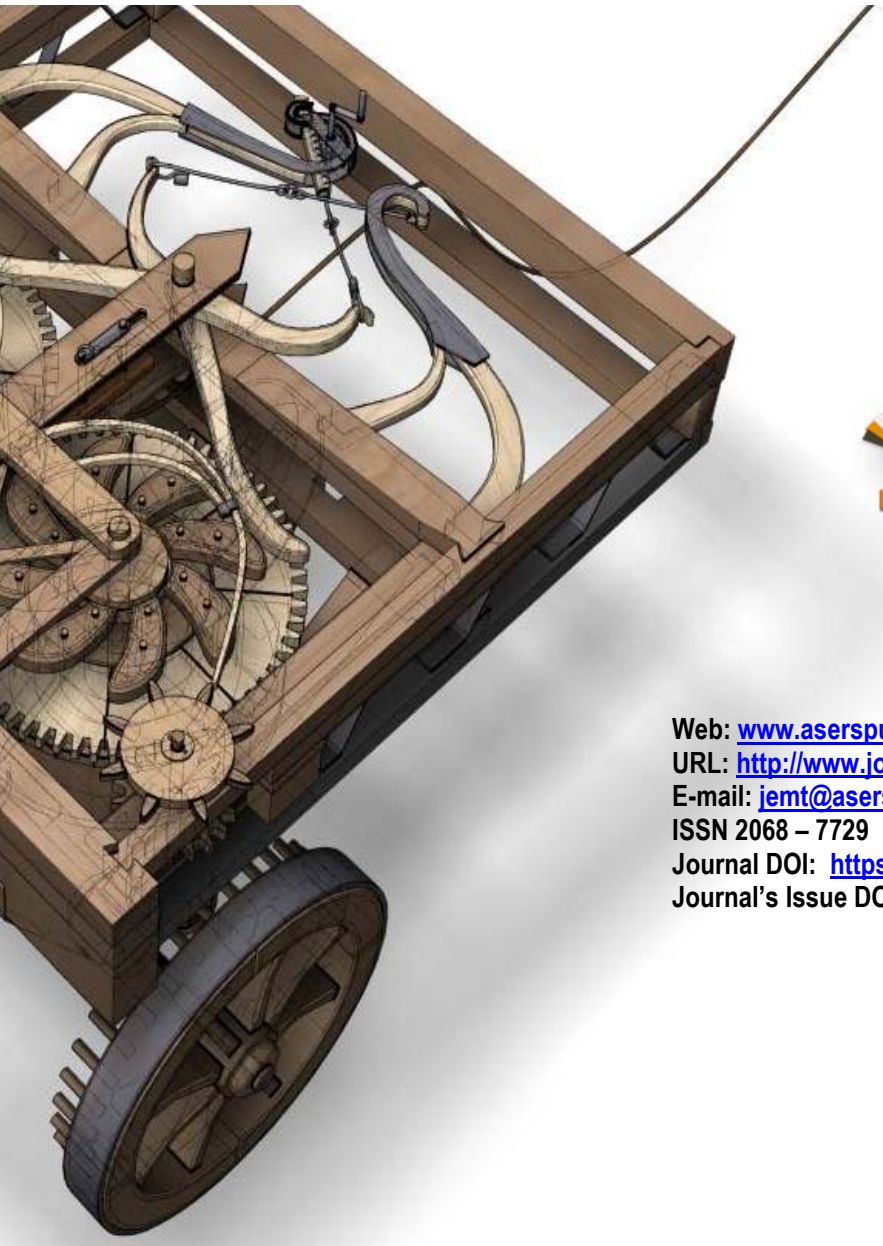

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