

Analysing the Impact of a National Tourism Organization on Tourism Industry

Peng Yang¹, Juho Pesonen¹, Rodolfo Baggio²

¹ University of Eastern Finland, Business School, Yliopistonkatu 2, 80100 Joensuu, Finland

² Dondena Centre for Research on Social Dynamics and Public Policy
Bocconi University, Milan, Italy
peng.yang@uef.fi

Paper presented at the ENTER25
eTourism conference, Wrocław, Poland, 17-21 February

Abstract. This study explores the role of National Tourism Organizations (NTOs), specifically focusing on Visit Finland, and their impact on the tourism industry in Finland. By utilizing hyperlink network analysis, the research investigates the influence of management activities over marketing efforts, a commonly underexplored area in tourism research. The study simulates the removal of Visit Finland from Finland's tourism destination network, analysing the resulting changes in collaboration, knowledge transfer, and innovation capacity within the network. The results reveal that Visit Finland is not only a key marketing organization but also a crucial facilitator of regional cooperation, significantly enhancing the connectivity and efficiency of the Finnish tourism ecosystem. The research highlights the critical leadership role NTOs play in tourism networks, supporting destination management and stakeholder collaboration across regions. The findings suggest that without Visit Finland, the Finnish tourism network would experience significant reductions in information flow, innovation capabilities, and overall network efficiency. This study contributes methodologically by employing network simulation techniques and underscores the importance of continued support and financing for NTOs in fostering a resilient and competitive tourism industry. This study is limited by focusing on Finland as the case study destination and by the network analysis methodology as it only analyses website links and thus provides only one perspective into collaboration happening in the real world.

Keywords: network analysis, destination management, innovation, tourism, DMO

1 Introduction

Many National Tourism Organizations (NTOs) are receiving majority of their funding from national governments. This is also the case of Visit Finland, the NTO of Finland. NTOs must justify the impact of their activities in order to receive funding and

provide evidence that it is worth investing public funds in their activities. Recently, the Finnish government announced budget cuts to Visit Finland that almost cuts their annual budget in half [29]. The managers of the organization now need to decide how those budget cuts are allocated across various functions of the organization. This makes Visit Finland a relevant case to analyse in this study. Finland has also been one of the worst performing countries in Europe regarding tourism recovery from COVID-19 [9].

Visit Finland has many roles and conducts many activities as an NTO. They [11] develop the tourism image of Finland and serve as a platform for commercial country brand communication. They work to increase Finland's recognition as a sustainable and attractive travel destination in selected target markets. They promote the entry of Finnish tourism products and services into international sales channels and activates sales in collaboration with international tour operator partners. Visit Finland also aims to strengthen the competitiveness of Finland's tourism industry by developing digitalization and sustainable business practices. In addition, Visit Finland produces and analyses information and promotes data use for the tourism industry's needs and supports the internationalization of tourism companies and regions by aiding product development and commercialization. Visit Finland has divided Finland into four main regions for tourism activities: Lapland, Lakeland, Coast and Archipelago, and Helsinki region [10].

As can be seen from above, an NTO has both marketing as well as leadership and innovation activities. NTOs are Destination Management or Marketing Organizations (DMOs)[3] that operate on a national level. NTOs coordinate tourism industry activities, promote the country in foreign markets, work on legislation, conduct research, and provide information for tourists [1]. Even though NTOs have many tasks and conduct various activities, it is often difficult to measure the effects these activities have on tourism industry. Various measurements for promotion and marketing activities of DMOs have been developed throughout the years [2] but measuring the effectiveness of other activities remains unexplored in the literature. Most of the effectiveness research has focused on marketing aspects [4], but recently there has been calls to better understand the impact of destination management activities [5, 6].

This study contributes to the literature by examining the impact of an NTO to a tourism ecosystem. The focus is on the leadership and innovation aspects of NTO activities and understanding the contribution of NTO activities for the whole national tourism ecosystem.

Almost all companies and DMOs now have digital presence through websites and social media. This digital presence enables researchers to identify connections and collaborations happening in destination networks for example by using hyperlink analysis [7, 8]. Network analysis allows examination of the network structure, innovation, and leadership in the network by analysing links between nodes, in this case hyperlinks between websites. Thus, it provides the tools to understand the roles and activities of individual actors in the network, in this case the NTO.

In this study we utilize hyperlink network analysis to understand the impact of management activities of Visit Finland, a Finnish NTO. We create an accurate picture of the Finnish tourism destination network and analyse the impacts of the NTO to the tourism network by creating a what-if scenario about what would happen to the network if the NTO would disappear. This hypothetical approach allows us to understand what

kind of role an NTO plays in domestic tourism destination network and what kind of impacts its activities have on main domestic partners, regional DMOs.

2 Literature review

2.1 Role of a DMOs

How tourism destinations are managed and should be managed has received extensive attention in tourism research starting from Gunn's [12] and Butler's [13] seminal works on the topic. Fyall and Garrod [14] identify performance management as one of the four main topics in destination management research in the future. They state that public funds financing tourism destination management are under constant threat. This means destinations must be increasingly responsible and transparent in explaining their activities' effect. By being able to measure the outcomes of activities, it is possible to provide decision-makers with information for the basis of decisions such as funding.

DMOs have been found to provide many services to the tourism industry. Oggionni and Kwok [5] identified seven categories of activities by studying perceptions of hoteliers on DMO services: membership management, training and education, data and research, lead generation, publications, networking opportunities, and cost sharing. Choy [1] showed that NTOs were involved in coordination, development of tourist facilities, financing, legislative, manpower training, operation of tourist facilities, planning, promotion, regulation, research and statistics, and tourist information. Pike and Page [2] state that destination management is done by various stakeholders such as ministries, developers, and government departments, but literature also shows that DMOs are heavily involved in destination management as well.

Herasimovich and her colleagues [8] studied destinations in Gipuzkoa province in Spain using hyperlink network analysis and webometrics. They found that DMOs act as connectors and mediators within a destination, enhancing network ties and linking various stakeholders. DMOs seem to emerge as leaders in tourism networks because of their orientation to tourism management, fostering collaboration of the destination system. However, the effects of networking capability on DMO success are still not clear as Vogglar and Pechlaner [15] didn't find significant direct influence, albeit an indirect one existed.

Fyall and Garrod [14] also emphasize the importance of technologies and smart tourism for destinations. Technology utilization has a significant impact on destination competitiveness and especially for destination management. DMOs should be able to utilize the possibilities technology creates as they are at the centre of smart tourism development [16]. For the adoption and use of technologies and other innovations, information flow in the network is a critical aspect [6].

In conclusion we can see that performance management needs to be understood better. There is extensive research on marketing and promotion [4] but understanding of the effects of other activities of DMOs is lacking. DMOs are critical actors in tourism networks [8], but the impact they are making has been difficult to quantify.

2.2 Network analysis and tourism destinations

A tourism destination is known to be a complex adaptive dynamic [17, 18]. The study of its characteristics and behaviours is a crucial step for comprehending the tourism phenomenon and for improving the functioning of the entire system and its components. A network model, in which the different stakeholders are the nodes, and the links represent their connections, has proved to be one of the most effective ways for understanding the complex interrelationships and dynamics within the industry and to reveal important insights about the structure and behaviour of a destination. This approach can also help identify the key actors which can influence the operational capabilities of the whole system [19, 20, 21]. Van der Zee et al., [22] strongly advocate destination management perspective based on reciprocity, networks, trust, and personal relationships.

Network analysis is a well-established method to study tourism ecosystems [8, 17, 19]. It allows researchers to examine the relationships and interactions between various tourism stakeholders, such as businesses, tourists, local communities, and government bodies. By mapping these connections, for example through website links [8], network analysis provides insights into how information, resources, and influence flow within the tourism system, enabling a better understanding of collaboration, competition, and dependencies. This method can also highlight the strengths and weaknesses of the ecosystem, facilitating more informed decision-making for sustainable development and management of tourism destinations [19]. Earlier research has explained thoroughly how network analysis works [30].

Moreover, a network analysis can help uncover patterns of cooperation and competition relevant for the design of strategic plans or policy-making and better tailor effective governance practices. In addition, a network study can allow assessing the robustness of a destination system in case of disruptions, such as natural events or economic crises, also highlighting the most vulnerable nodes and links [21, 23].

3 Methodology and data

We utilize Domain-Restricted BFS (Breadth-First Search) Scraping [25] that starts with 64 DMOs, including Visit Finland, using homepages as seed URLs. These 64 DMOs represent all the main destinations developing international tourism in Finland. We collect all the links present on the homepages, then divide the hyperlinks into two categories of internal and external links. Then we repeat the process until the fifth level of depth including the home page [32]. We use this scraped data to create a network of Finnish DMOs. The external links are only kept in the main domain part as targeting nodes from the seed website. The number of links from seed website to external domain are counted as weights of the hyperlink network.

We analysed the dataset with network analysis with and without Visit Finland [26, 27]. Network characteristics presented in Table 1 are calculated in both networks. These network characteristics are deemed the simplest and most descriptive for the study goals [30, 31]. Some network metrics, such as Simmelian brokerage or the relative

importance of the actors, that can be seen as leadership capability, can provide an assessment of the possibilities to facilitate the formation of creative and innovative ideas and of the contributions individual stakeholders can give [24]. There are 167 edges with Visit Finland and 96 edges without Visit Finland. Each edge is counted as having the weight of 1 as we only counted if one website links to another [8]. We did not measure the intensity of linking. We focus now solely on the DMOs and Visit Finland, but the dataset contains complete networks of these organizations. However, analysing those larger networks are out of the scope of this article.

We acknowledge that hyperlink network analysis might not represent accurately real-world collaboration and activities of companies and organizations. However, its usefulness for tourism destination analysis has been demonstrated in many studies [6, 7, 8].

Table 1. Network analysis measurements used in the study.

Network Analysis Metrics	Description
Overall Reciprocity	Ranges from 0 to 1, where higher values indicate a higher tendency for reciprocal relationships.
Global efficiency	Assesses how efficiently information is exchanged over a network.
Assortativity (region)	Positive assortativity indicates that nodes tend to be connected to others with similar attributes, while negative assortativity indicates the opposite. In Finland, there are 4 tourist destination regions such as Lakeland, Lapland, Capital region and archipelago West coast.
Average Clustering Coefficient	Measures the tendency of nodes in the network to form local clusters or neighbourhoods.
Average Edge Betweenness	Typically ranges from 0 to 1, where higher values indicate greater centrality of edges.
Average Simmelian Brokerage	A higher Simmelian brokerage score indicates that a node plays a significant role in connecting nodes that are not directly connected to each other, enhancing the network's overall connectivity and information flow.

Source: Authors' own

4 Results

The main results of the study are presented in Table 2. As the table shows the removal of Visit Finland dramatically changes the topological characteristics of the network. The first effect of the removal is a fragmentation of the network that has strong influence on all the measurements. For what interests this study, we see that global efficiency almost cancels out, meaning that there is practically no more exchange of

information or knowledge in the system. A second relevant outcome is the great reduction in the value of Simmelian brokerage that signals a significant drop in the capabilities of the network to foster that creativity and production of innovative ideas that so much mean for the positive development of the tourism system.

Table 2. Finnish DMO network with and without Visit Finland

Network characteristic	With Visit Finland	Without Visit Finland	Percentage change	Interpretation
Overall Reciprocity	0.530	0.421	-20.57%	Visit Finland increases the number of mutual connections between DMOs in the network.
Global efficiency	0.289	0.039	-86.51%	Visit Finland increases information flow in the network.
Assortativity (region)	0.367	0.868	136.51%	Without Visit Finland the difference between the four main regions increases.
Average Clustering Coefficient	0.359	0.153	-57.38%	Visit Finland increases the level of collaboration in the network.
Average Edge Betweenness	0.009	0.001	-88.89%	Visit Finland is the main broker (as well as the main bottleneck) in the network and keeps the network connected. Network disperses without VF.
Average Simmelian Brokerage	4.038	2.662	-34.08%	VF plays an import broker role enhancing the network's overall connectivity. Information brokerage is connected to innovation capability of the network.

Source: Authors' own

Various actors have different roles and importance in the network. To measure the importance of a node for the whole network we calculated the geometric mean of the network characteristics excluding Average Simmelian Brokerage. In addition, we measured the use of digital technologies and tools by DMOs with a digitalization index that measures the frequency of connections to individual domains of social media

services such as Facebook, IT-companies, and cloud services. To study the role of technology for the importance of nodes in the network we correlated the scores with and without Visit Finland. Without Visit Finland the correlation was $r=0.03$ and with Visit Finland $r=0.05$. Digitalization level seems to have a small effect on the importance of the node in the network. Without Visit Finland the effect is smaller, suggesting that Visit Finland helps other DMOs to utilize technologies. The correlations are extremely small, suggesting that more research on the topic is needed.

The results are visualized in Figure 1 and Figure 2 with Figure 1 presenting the network with Visit Finland and Figure 2 without Visit Finland. Visit Finland is connected to almost all DMOs. The four main regions can be identified in the network, but it should also be noticed that these four regions do not form clear clusters. Lakeland has one major cluster and two minor clusters, Lapland has two major clusters, Coast and Archipelago are dispersed, and the Helsinki region is closely clustered. These clusters seem to follow the geographical distribution of DMO regions. This cluster structure is emphasized when Visit Finland is removed. This means that the DMOs tend to work with near-by destinations, and without Visit Finland they would rely on this collaboration even more.

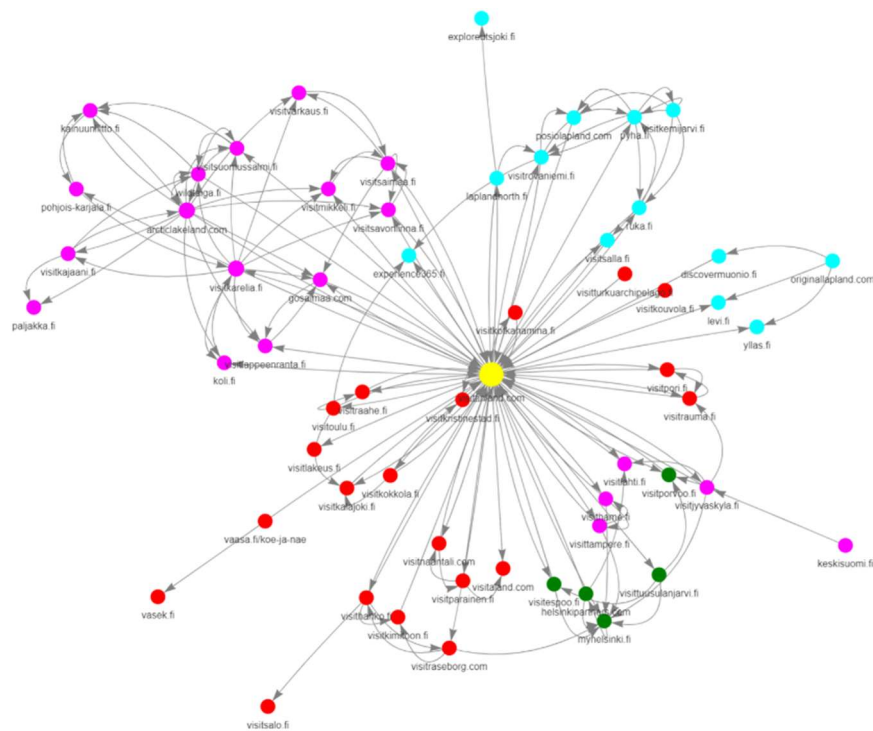


Fig. 1. DMO network with Visit Finland (magenta=Lakeland, cyan=Lapland, green=Helsinki region, red=Coast and Archipelago) Source: Authors' own

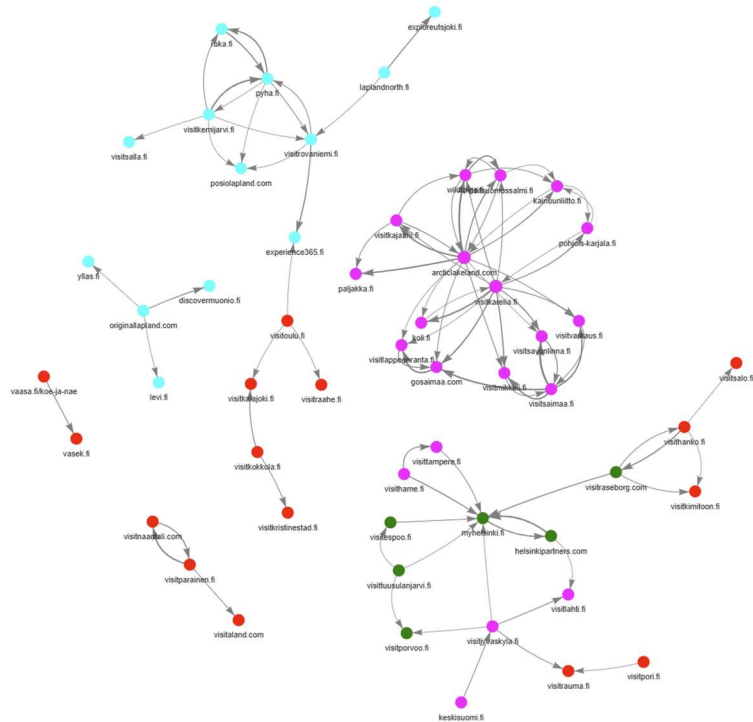


Fig. 2. DMO network without Visit Finland (magenta=Lakeland, cyan=Lapland, green=Helsinki region, red=Coast and Archipelago) Source: Authors' own

5 Conclusions and discussion

The results of this study provide important insights into the effects of a national DMO, in this case Visit Finland, on destination management in a country. Instead of examining the effects of destination marketing and promotion, this study focuses on the effects of other activities that a DMO does. Typically, it has been difficult to quantify the effects of destination management activities that influence DMO stakeholders. Network analysis based on hyperlinks allows us to examine the relationships in the network and examine the effects of Visit Finland by measuring its importance to the network.

The results show that Visit Finland is not only a marketing organization but that it has a critical role in the Finnish tourism ecosystem. Activities of Visit Finland increase collaboration of Finnish DMOs, and Visit Finland is a critical link between DMOs all over the country. DMOs tend to cluster regionally, but Visit Finland manages to connect these clusters with each other and increases collaboration opportunities between regions. Visit Finland makes the DMOs to work as a network.

Especially noteworthy is the reduction of innovation capability and knowledge transfer in the network. Completely removing Visit Finland could reduce the innovation capabilities of the network by 34%. For example, Sustainable Travel Finland programme [33] is one of the NTO lead innovation initiatives that demonstrate the activities that might not happen because of reduced innovation capability in the network. This kind of reduction might be hypothetical, but it shows that Visit Finland budget cuts can have significant negative impact on the whole network. The results show that Visit Finland is the main actor in smart tourism development in Finnish DMO network by being the most important information broker, thus providing empirical support to Gretzel [16]. Smart tourism development requires innovations and capability of the network for innovations would be significantly reduced without Visit Finland. Understanding the effects of Visit Finland demonstrates also how financing the activities of the organization affect the tourism industry in Finland.

The study has elaborated the characteristics of the Finnish tourism network, thus contributing to the discussion on differences and similarities in destination structures [19]. We also answer the call for novel network analysis models and methods in this research stream [19]. We combine standard metrics with a measurement (Simmelian brokerage) of how the system can favour the development of creative and innovative practices. This has seldom been considered in such studies that usually only focus on either the structural characteristics of the network or on the analysis of the single actors' positions.

This study also contributes methodologically to the use of network analysis in tourism research. What-if scenario analysis of the effects of a node by removing it from a network creates a novel research approach. Previously it has been possible to identify what are important nodes [6, 8], but with this approach it is possible to quantify their impact on the network.

Even with this knowledge we still do not precisely know which Visit Finland activities contribute how much to the capabilities of the network. This analysis measures the potential impact of all the activities. With this methodology it is possible to constantly track and measure the changes happening in the network, providing an interesting approach for future research to identify the most relevant activities of NTOs.

The effects of Visit Finland we have identified support the notion of DMOs as leaders of the network rather than managers. Complex tourism systems are difficult to manage [28]. Leadership and innovation focused activities could enhance the capabilities of destinations more than attempts to manage it [22]. Especially for DMOs a leadership approach to stakeholder relationships could enhance competitiveness more than management-based approaches.

We acknowledge also the limitations of the methodology we have used. Website hyperlinks are just one indicator of the relationships between actors and might not accurately represent all aspects of the reality. The study is based on just one country and more comparative analysis between countries could provide deeper understanding of the topic. The data could be enhanced with other forms of qualitative and quantitative data in future research to validate the results of this study.

Acknowledgements

This study was funded by Business Finland in project 4372/31/2023 “Metaverse meets the Experience Industry (2023-2025)”.

References

- [1] Choy, D.J.: Alternative roles of national tourism organizations. *Tourism Management* 14(5), 357–365 (1993).
- [2] Pike, S., Page, S.J.: Destination Marketing Organizations and destination marketing: A narrative analysis of the literature. *Tourism Management* 41, 202–227 (2014).
- [3] Kaurav, R., Baber, R., Chowdhary, N. et al.: Destination Performance: Importance of Redefining DMOs. *Asia-Pac J Innov Hosp Tour* 4(8), 8 (2015). <https://doi.org/10.7603/s40930-015-0008-4>
- [4] Bornhorst, T., Ritchie, J.B., Sheehan, L.: Determinants of tourism success for DMOs & destinations: An empirical examination of stakeholders' perspectives. *Tourism Management* 31(5), 572–589 (2010).
- [5] Oggionni, T., and Linchi, K. A qualitative inquiry of DMO services to hotels: How valuable are they perceived?. *Journal of Destination Marketing & Management* 9, 85–96 (2018).
- [6] Raisi, H., Baggio, R., Barratt-Pugh, L., Willson, G.: A network perspective of knowledge transfer in tourism. *Annals of Tourism Research* 80, 102817 (2020).
- [7] Éber, F.Z., Baggio, R., Fuchs, M.: Hyperlink network analysis of a multi destination region: the case of Halland, South Sweden. *Information Technology & Tourism* 20, 181–188 (2018).
- [8] Herasimovich, V., Alzua-Sorzabal, A., Guereño-Omil, B.: Online networking behaviour of tourism stakeholders in a multi-destination region: A hyperlink network analysis. *Journal of Destination Marketing & Management* 31, 100844 (2024).
- [9] European Travel Commission. ETC Quarterly Report Q1 2024. https://etc-corporate.org/uploads/2024/05/ETC-Quarterly-Report_Q1_2024_Public.pdf Accessed 15.9.2024
- [10] Visit Finland <https://www.visitfinland.com/en/places-to-go/> Accessed 15.9.2024
- [11] Visit Finland <https://www.visitfinland.fi/etusivu/visit-finlandin-tehtava> Accessed 15.9.2024
- [12] Gunn, C.: *Vacationscape*. Bureau of Business Research, University of TX, Austin, TX (1972).
- [13] Butler, R.: The concept of a tourist area cycle of evolution: implications for management of resources. *The Canadian Geographer/Le Géographe Canadien* 24(1), 5–12 (1980).
- [14] Fyall, A., Garrod, B.: Destination management: a perspective article. *Tourism Review* 75(1), 165–169 (2020).
- [15] Volgger, M., & Pechlaner, H. Requirements for destination management organizations in destination governance: Understanding DMO success. *Tourism Management*, 41, 64–75 (2014).
- [16] Gretzel, U. The Smart DMO: A new step in the digital transformation of destination management organizations. *European Journal of Tourism Research*, 30, 3002-3002 (2022).
- [17] Baggio, R.: Symptoms of complexity in a tourism system. *Tourism Analysis* 13(1), 1–20 (2008).
- [18] Sainaghi, R., Baggio, R.: Complexity traits and dynamics of tourism destinations. *Tourism Management* 63, 368–382 (2017).
- [19] Baggio, R.: Tourism destinations: A universality conjecture based on network science. *Annals of Tourism Research* 82, 102929 (2020).

- [20] Casanueva, C., Gallego, Á., García-Sánchez, M.R.: Social network analysis in tourism. *Current Issues in Tourism* 19(12), 1190–1209 (2016).
- [21] Heidari, A., Yazdani, H.R., Saghafi, F., Jalilvand, M.R.: A systematic mapping study on tourism business networks. *European Business Review* 30(6), 676–706 (2018).
- [22] Van der Zee, E., Gerrets, A.M., Vanneste, D.: Complexity in the governance of tourism networks: Balancing between external pressure and internal expectations. *Journal of Destination Marketing & Management* 6(4), 296–308 (2017).
- [23] Brandão, F., Breda, Z., Costa, C.: Network Analysis in Tourism and Hospitality: A Comprehensive Review. In: Okumus, F., Rasoolimanesh, S.M., Jahani, S. (eds.) *Cutting Edge Research Methods in Hospitality and Tourism*, pp. 95–120. Emerald, Bingley (2023).
- [24] Baggio, R.: Creativity and the structure of tourism destination networks. *International Journal of Tourism Sciences* 14(1), 137–154 (2014).
- [25] Bundy, A., Wallen, L.: Breadth-First Search. In: *Catalogue of Artificial Intelligence Tools*, pp. 13–13 (1984).
- [26] Barabási, A. L. (2016). *Network science*. Cambridge, UK: Cambridge University Press.
- [27] da Fontoura Costa, L., Rodrigues, A., Travieso, G., & Villas Boas, P. R. Characterization of complex networks: A survey of measurements. *Advances in Physics*, 56(1), 167–242 (2007).
- [28] Baggio, R., & Ruggieri, G. Collaboration and Cooperation: a Network Analytic Approach. *International Journal of Islands Research*, 5(1), 2 (2024).
- [29] Business Finland. <https://www.visitfinland.fi/ajankohtaista/tiedotteet/2024/business-finland-aloittaa-muutosneuvottelut-visit-finland--toiminnossaan> Accessed 10.10.2024.
- [30] Baggio, R. (2018). Network analysis: Quantitative methods in tourism. *The Sage handbook of tourism management*, 150-170.
- [31] Freitas, S., Yang, D., Kumar, S., Tong, H., & Chau, D. H. Graph vulnerability and robustness: A survey. *IEEE Transactions on Knowledge and Data Engineering*, 35(6), 5915-5934 (2022).
- [32] Sayles, J. S., Furey, R. P., & ten Brink, M. R. How deep to dig: effects of web-scraping search depth on hyperlink network analysis of environmental stewardship organizations. *Applied Network Science*, 7(1), 36 (2022).
- [33] Visit Finland. <https://www.visitfinland.fi/en/liiketoiminnan-kehittaminen/vastuullinen-matkailu/sustainable-travel-finland> Accessed 17.10.2024